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3, 11, AND 18-16 BRIDGES ROAD AND 361 NEWBRIDGE ROAD MOOREBANK NEW SOUTH WALES

ABORIGINAL CULTURAL HERITAGE ASSESSMENT

DRAFT REPORT

LEAMAC PROPERTY GROUP

4 June 2024

DOCUMENT INFORMATION

Project:	3, 11 and 8-16 Bridges Road and 361 Newbridge Road, Moorebank
Services required:	Aboriginal Cultural Heritage Assessment
Client:	Leamac Property Group
Prepared by:	Peta Rice, Carmen Baulch, Felicity Smolenaers, Kara Oakley-Smith. and Elanor Pitt
Project number:	23036

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EXECUTIVE SUMMARY

This report has been prepared for Leamac Property Group on behalf of Joint Landowner Group (JLG), comprised of Coronation Property Co and Leamac Property Group [the proponent], and details the Aboriginal Cultural Heritage Assessment (ACHA) of land situated at 3, 11 and 8-16 Bridges Road and 361 Newbridge Road, Moorebank, New South Wales (NSW) [the study area], within the Liverpool Local Government Area (LGA), and the parish of Holsworthy in the county of Cumberland.

The study area is defined by the boundary of Lot 200 DP1009044, Lot 201 DP1009044, Lot 100 DP 775780, Lot 111 DP 1133744, Lot 10 DP 875626 and Lot 101 DP 827141. The study area is located in the suburb of Moorebank, located one kilometre from Liverpool Central Business District (CBD).

This ACHA was undertaken to assess the archaeological potential for Aboriginal material as part of a Planning Proposal (PP) being prepared under Part 3 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) before the proposed precinct is developed within 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).

A search of the Heritage NSW AHIMS database was undertaken on 5 April 2024 (Client Service ID 879835). The results from the AHIMS search identified 53 previously recorded sites within a 5-kilometre radius of the study area. The search indicates that artefacts and modified trees are the predominant site types, both with 34% (n=18) of known sites belonging to each category. Artefacts and potential archaeological deposits (PADs) were the next most common site type (n=10, 18.9%). The vast majority of sites within this search area are located on elevated flats adjacent to the Georges River. This research revealed no identified Aboriginal sites within the study area; however, one artefact site, Liverpool Weir ocs1 (AHIMS # 45-5-2540), is located directly west of the study area. An archaeological survey of the study area was undertaken on 2 November 2023 and 4 December 2023 with Gandangara Local Aboriginal Land Council (GLALC) in attendance. The most significant disturbance in the study area has been caused by the current Prysmian Cable Factory and Joyce Foam Factory that encompass about 80 percent of the study area. This part of the site has been cut and filled, with underground utilities installed to cater for the industrial practices undertaken within the factory. Additionally, the study area exhibits no evidence of the natural landform that would have existed prior to its use for industrial purposes. The green space to the north of the factory was expected to have the highest archaeological potential, however, upon inspection, the area was severely disturbed, and all visible ground surface presented evidence of imported fill. As a result of the broad disturbance throughout the study area, it was decided that no archaeological test excavation outside of the riparian zone was necessary.

As the proposed works include subsurface works to the sensitive areas along the riparian zone in the north-western portion of the study area, including re-profiling, remediation and stabilisation of the bank in future and subsequent Development Applications, the development will result in future subsurface impacts to potential Aboriginal objects and cultural layers. Previous studies have indicated that *in situ* natural soils and Aboriginal cultural layers may have been preserved beneath fill layers along the elevated flats of the Georges River, likely appearing in isolated 'pockets'; this is particularly pertinent to the north-western area of the riparian zone along the Georges River, which had previously been identified as an area of potential by Eco Logical Australia (Eco Logical Australia Pty Ltd 2020). The alluvial deposition caused by the river, as well as extensive earthworks undertaken within the study area, may also have resulted in the disturbance and displacement of Aboriginal objects; as such, they may appear in historical layers. As such, test excavation will be required in the identified areas of sensitivity along the riparian zone within the study area.

The survey attempted to relocate Liverpool Weir ocs1 (AHIMS #45-5-2540), however, it was unable to be identified.

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	30/06/2023	N/A
	Registration of stakeholders	17/07/2023	10/10/2023
Stage 2	Project information	20/10/2023	N/A
Stage 3	Review of project methodology	20/10/2023	15/11/2023
Stage 4	Review of ACHA by Aboriginal stakeholders	23/04/2024	21/05/2024

Further information on the consultation completed for the project can be found in Section 2 and Volume 2 of this report.

IMPACT ASSESSMENT

The proposed works have no foreseeable impact on known archaeological values within the majority of the study area. There is potential for partial use of the study area by Aboriginal groups linked to the proximity of the site to the adjacent 4th-order Georges River; however, no Aboriginal cultural materials or sites have been recorded as of yet. The extensive and ongoing industrial development of the study area has led to heavy disturbance and modification of the majority of the study area, which has likely had a significant negative impact on any potential archaeological sites. This has limited the potential for *in situ* cultural materials to be present. Due to the lack of identified tangible heritage within the majority of the study area, the impacts of the proposed works on Aboriginal heritage values are considered acceptable.

However, an area identified as potentially preserving 'pockets' of natural soil profiles and Aboriginal cultural objects underneath historical fills lies within the riparian zone in the north-western section of the study area along the Georges River. This area would be impacted by the proposed works despite the retention of this area as 'public space' due to the need to re-profile and remediate the area to become usable public space. However, as the proposed works include subsurface works to the sensitive areas along the riparian zone in the north-western section of the study area, including re-profiling, remediation and stabilisation of the bank in future and subsequent Development Applications, there will be future subsurface impacts to potential Aboriginal objects and cultural layers. As the depth and extent of preservation of the natural soil profiles and Aboriginal cultural heritage layers are currently unknown, the level of impact anticipated in the north-western riparian zone is uncertain. An Aboriginal archaeological testing programme is required in order to identify the depth, extent, nature and significance of the Aboriginal cultural heritage layers, and to assess the impacts resulting from the proposed development.

RECOMMENDATIONS

The following recommendations are derived from the findings described in this ACHA. The recommendations have been developed following a consideration of the archaeological context, environmental information, consultation with the local Aboriginal community 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 aside from the north-western riparian zone along the southern bank of the Georges River within the areas designated as 'public space'. If during the project, unexpected Aboriginal cultural heritage finds or human remains are identified, Recommendation 2 below is to be followed.
2. As subsurface works are proposed in the north-western riparian zone along the southern bank of the Georges River in order to re-profile and remediate the area as a usable 'public space', test excavation will be required to ascertain the depth and extent of preservation of natural soil profiles and Aboriginal cultural heritage (see Figure 9.1 for the identified extent of sensitivity).
3. As a result of consultation with the Registered Aboriginal Parties (RAPs) for this project, the RAPs have recommended that the proposed development uses sustainable materials and that native plants from the local area are planted as part of the landscape design. The RAPs also requested for correct terminology and the present tense to be used in interpretation to acknowledge the ongoing deep connection of Aboriginal communities to the Moorebank area.

4. In the event that unexpected finds occur during any activity within the study area, all works 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:
    a. 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 and an AHIP may be required prior to certain activities recommencing.
    b. If human skeletal remains are encountered, all work must cease immediately, and NSW Police must be contacted. NSW Police will then notify the Coroner's Office. Following this, if the remains are believed to be of Aboriginal origin, the Aboriginal stakeholders and Heritage NSW must be notified.
5. It is recommended that Joint Landowner Group (JLG), comprised of Coronation Property Co and Leamac Property Group [the proponent], 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. If a gap of more than six months occurs, then the consultation will not be suitable to support an AHIP for the project.
6. 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 Leamac Property Group (the Client) on behalf of Joint Landowner Group (JLG), comprised of Coronation Property Co and Leamac Property Group (the proponent), to undertake an ACHA for the property at 3, 11 and 8-16 Bridges Road and 361 Newbridge Road, Moorebank, NSW (the study area).

1.1 THE STUDY AREA

The study area consists of the entirety of Lots 200 and 201 DP1009044, Lot 100 DP 775780, Lot 111 DP 1133744, Lot 10 DP 875626 and Lot 101 DP 827141, located approximately one kilometre from the township of Liverpool. The study area is within the boundaries of Gandangara Local Aboriginal Land Council (GLALC). It is bounded to the north by the Georges River, to the east by Bridges Road and Lake Moore, to the south by Newbridge Road and to the west by the Georges River.

The location of the study area is shown in Figure 1.1, Figure 1.2, and Figure 1.3.

1.2 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 Planning Proposal (PP) under Part 3 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), for the proposed development of the study area.

The project involves the creation of a mixed-use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage items;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and train station; and
- Transport, intersection and collector road improvements.

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 the archaeological survey.
- 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.
- Adequate documentation to accompany an Aboriginal Heritage Impact Permit (AHIP) application.
- 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.

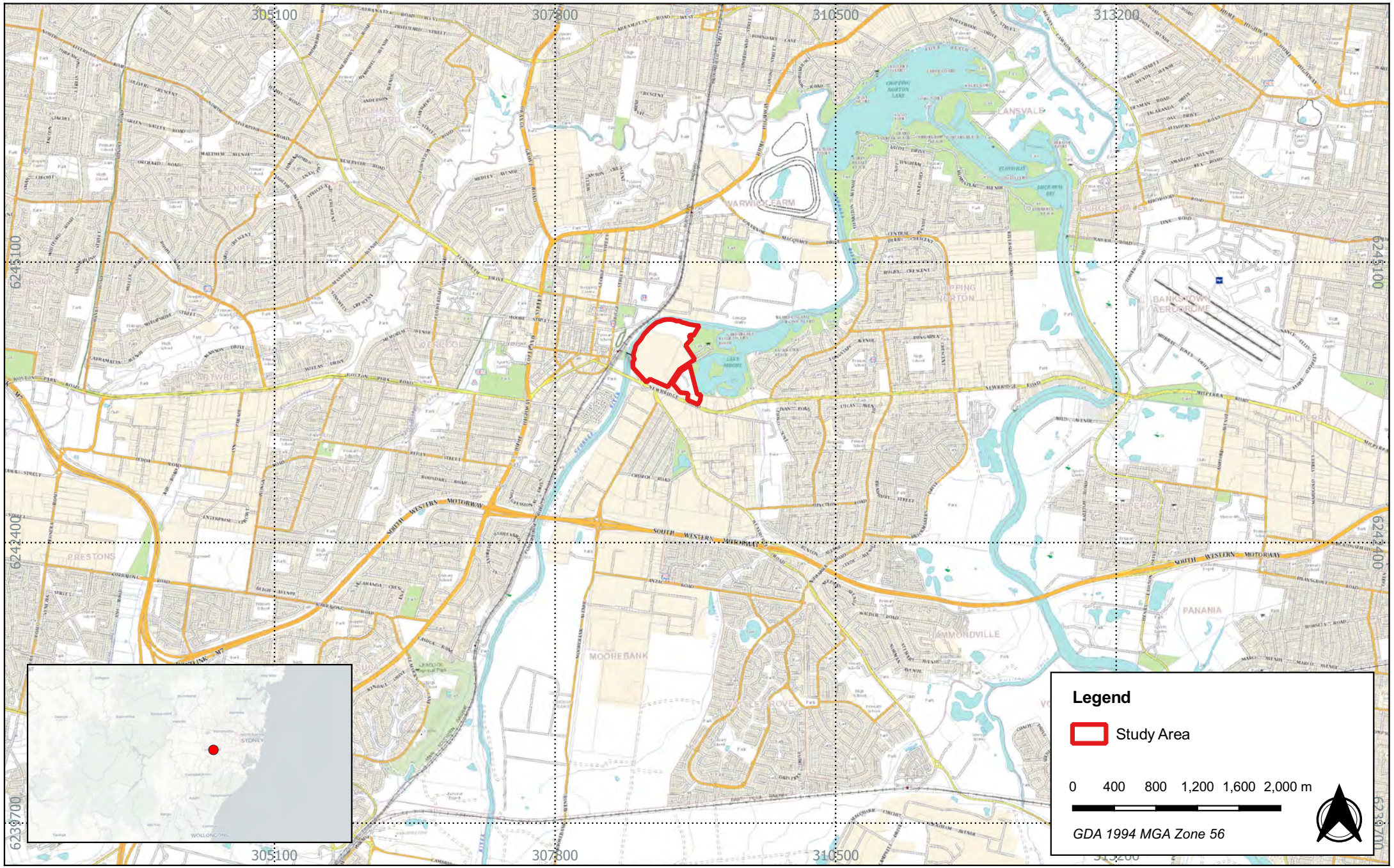

Figure 1.1 - Location of the study area

23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: NSW LPI Basemap, CartoDB Positron *Drawn by: ARH Date: 2023-07-03*

AUSTRAL ARCHAEOLOGY

Figure 1.2 - Detailed aerial of the study area

23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: Nearmap, CartoDB Positron

Drawn by: ARH Date: 2023-07-03

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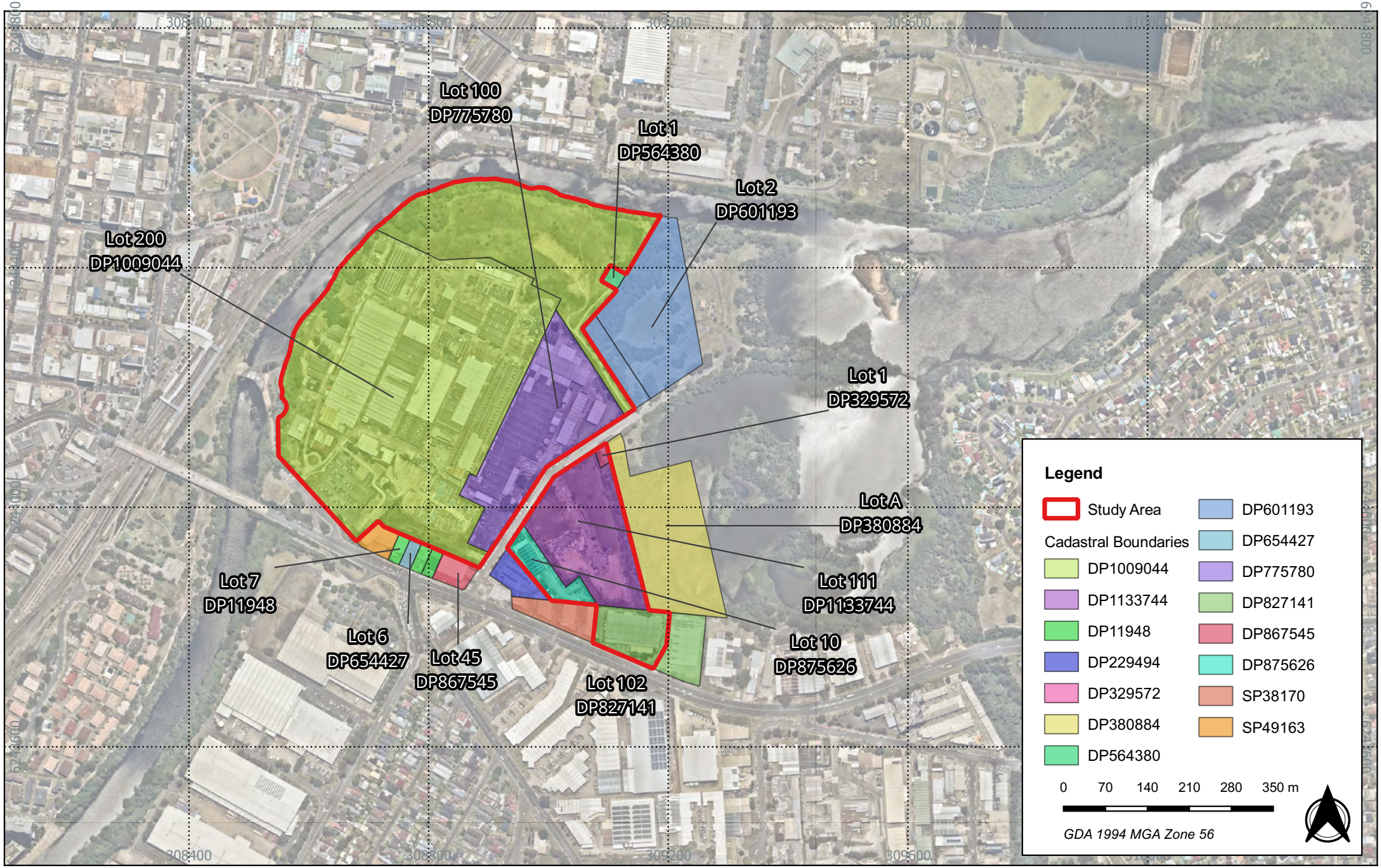

Figure 1.3 - Cadastral boundaries of the study area

23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: Nearmap

Drawn by: ARH Date: 2023-07-03

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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 1.4.

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: • The study area is listed on the National Heritage List (NHL) as 'Sydney Cultural Crescent Rock Art' (Place ID: 106369); however, there is no evidence of sandstone overhangs or outcrops within 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 87 – Allows for activities carried out under an AHIP or following due diligence to be a defence against the harm of an Aboriginal object. • Section 89A – Requires the compulsory notification of any Aboriginal objects discovered to Heritage NSW, within a reasonable timeframe. • Section 90 – Requires an application for an AHIP in the case of destruction of a site through development or relocation.
NPW Regulation 2019	Applies, due to: • Section 80A – Requires the minimum standards of due diligence to have been undertaken. • Section 80C – Requires the Aboriginal community consultation process to be undertaken before applying for an AHIP. • Section 80D – Requires production of a cultural heritage assessment report to accompany an AHIP application.
The Environmental Planning and Assessment Act 1979 (EP&A Act 1979)	Applies, due to: • This project is being assessed under Part 3 of the EP&A Act 1979. • Sections 86, 87, 89A and 90 of the NP&W Act 1974 will apply. • The Part 5 Guidelines will not apply.

State Acts:	Applicability and implications
NSW Heritage Act 1977	The study area is directly adjacent to the 'Liverpool Weir' State Heritage Listing (SHR Listing No. 01804).

Table 1.3 State and local planning instruments

Planning Instruments	Applicability and implications
Local Environmental Plans (LEP)	The following LEP is applicable: • Liverpool LEP 2008
Development Control Plans (DCP)	The following DCP is applicable: • Liverpool DCP 2008

Table 1.4 Aboriginal community consultation guidelines

Guidelines	Applicability and implications
Consultation Requirements	The development is to be conducted in accordance with Part 4 of the EP&A Act. As the project is to be assessed under Part 6 of the NP&W Act, approvals under Section 90 of the NP&W Act 1974 as amended 2010 will be required, S89A of the Act will apply, and the Part 4 Guidelines will apply.

1.5 PROJECT TEAM AND QUALIFICATIONS

The personnel responsible for the preparation of this report are detailed in Table 1.5.

Table 1.5 Personnel involved in the preparation of this ACHA

Name	Qualifications	Title	Responsibilities
Alexander Beben	Bachelor of Arts (Hons) Archaeology MA. Ancient History and Archaeology	Director	Technical assurance
Lindsay Costigan	Bachelor of Science, Anthropology and Sociology	Senior Archaeologist	Technical Review
Peta Rice	Bachelor of Arts, History, Archaeology and Ancient History	Archaeologist	Report author Fieldwork Project Management
Elanor Pitt	Bachelor of Engineering (Civil) (Hons) / Bachelor of Arts (Hons) (Archaeology) MA in the Archaeology of Buildings	Archaeologist	Report author Project Management
Carmen Baulch	Bachelor of Arts (Archaeology) and Bachelor of Science (Zoology) Graduate Certificate in Archaeology (currently studying)	Graduate Archaeologist	Report author
Felicity Smolenaers	Bachelor of Archaeology	Graduate Archaeologist	Report author
Kara Oakley-Smith	Bachelor of Arts, Majoring in Ancient History and Archaeology and Japanese (currently studying)	Student Archaeologist	Report author

1.6 ABBREVIATIONS

The following are common abbreviations that are used within this report:

ACHA	Aboriginal Cultural Heritage Assessment
AHIA	Aboriginal Heritage Impact Assessment
Burra Charter	Burra Charter: Australia ICOMOS Charter for Places of Cultural Significance 2013
CBD	Central Business District
CHL	Commonwealth Heritage List
DCP	Development Control Plan
EIS	Environmental Impact Statement
EPA Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environmental Protection and Biodiversity Act 1999
EPI	Environmental Planning Instrument
GLALC/ Gandangara LALC	Gandangara Local Aboriginal Land Council
Heritage Act	NSW Heritage Act 1977
ICOMOS	International Council on Monuments and Sites
ka	thousand years ago
IHO	Interim Heritage Order
LEP	Local Environmental Plan
LGA	Local Government Area
NHL	National Heritage List
OSL	Optically Stimulated Luminescence
NPW Act	National Parks and Wildlife Act 1974
NSW	New South Wales
PAD	Potential Archaeological Deposit
PP	Planning Proposal
The Proponent	Joint Landowner Group (JLG), comprised of Coronation Property Co and Leamac Property Group
RNE	Register of the National Estate
SSD	State Significant Development
Study Area	3, 11 and 8-16 Bridges Road and 361 Newbridge Road, Moorebank, NSW
Liverpool DCP	Liverpool Development Control Plan 2008
Liverpool LEP	Liverpool Local Environmental Plan 2008

2 CONSULTATION PROCESS

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

2.1 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.

Volume 2, Appendix A1 of this ACHA contains a consultation log and evidence of all correspondence that was sent and received as part of the consultation process.

2.2 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.

2.2.1 IDENTIFICATION OF RELEVANT ABORIGINAL STAKEHOLDERS

In accordance with the Consultation Requirements, the following bodies were notified as part of the PP:

- A response was received from Heritage NSW with a list of stakeholders who may have an interest in the proposed development.
- The Office of the Registrar responded with no registered Aboriginal stakeholders for the study area but requested that we contact GLALC for information.
- The GLALC did not respond.
- The Greater Sydney Local Land Services (previously known as the Catchment Management Authority) replied that they had no list of stakeholders and that they are not the correct knowledge holders for Aboriginal stakeholders in the area.
- The Liverpool City Council did not respond.
- The National Native Tittle Tribunal responded with no Native Title rights to the study area.

A search conducted by the Office of the Registrar, *Aboriginal Land Rights Act 1983* (NSW), listed zero Aboriginal stakeholders for the land within the study area. A copy of these letters and searches are included in Volume 2, Appendix A2 of this ACHA.

2.2.2 PUBLIC NOTICE

An advert was placed in *The Daily Telegraph*, to run on 26 September 2023, requesting the registration of cultural knowledge holders relevant to the project area. A copy of this advert is included in Volume 2, Appendix A4 of this ACHA.

2.2.3 INVITATION TO REGISTER

Letters were also written to the relevant agencies suggested in Section 4.1.2 of the Consultation Requirements (DECCW 2010a) on 17 July 2023 and a search was made of the Native Title Tribunal on the same day.

As a result of the consultation procedure, the following groups shown in Table 2.1 are registered as Aboriginal stakeholders with an interest in this project. This information is also included in Volume 2, Appendix A5 of this ACHA.

Table 2.1 Registered Aboriginal stakeholders

Organisation	Contact person
Wonnarua PBC Yarrawalk Pty Ltd	Scott Franks
Gandangara LALC	Bronwyn Partell
Stakeholder 1	Anonymous
Wailwan Aboriginal Group	Phil Boney
Koori Digs	Korri Currell
Didge Ngunawal Clan	Paul Boyd and Lily Carroll
Mundawari Heritage Consultants	Dean Delponte
Butucarbin Aboriginal Corporation	Jennifer Beale
Stakeholder 2	Anonymous
Yurwang Gundana Consultancy Cultural Heritage Services	Dean Bell and Merekai Bell
Waawaar Awaa Aboriginal Corporation	Rodney Gunther
Gali Heritage Consultants	Helen Slater
Gilay Consultants	Carol Slater
Kamilaroi Yankuntjatjara Working Group	Phil Khan
Ngambaa Cultural Connections	Kaarina Slater
Freeman & Marx Pty Ltd	Clive Freeman
Thomas Dahlstrom	Thomas Dahlstrom
A1 Indigenous Services	Carolyn Hickey
Amanda Hickey Cultural Services	Amanda Hickey
Stakeholder 3	Anonymous
Cubbitch Barta Native Title Claimants	Glenda Chalker
Darug Custodian Aboriginal Corporation	Justine Coplin

2.3 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 20 October 2023.

Stakeholder 2 responded to the Stage 2 documentation stating that:

> *"This area of land (the study area) is still being used by Aboriginal People, there is a group called the coffee club that meet here every Friday they have planted native flora around some of this area"*

Kamilaroi Yankuntjatjara Working Group responded to the Stage 2 documentation stating that:

> *"the study area is highly signifigant [sic] and spiritual to us Aboriginal people, the study area is close by to Georges River which would have been occupied by Aboriginal*

people for hunting, fishing, camping, ceremonies and potentially burial sites. We agree to investigate the area further in the way of testing.

Darug Custodian Aboriginal Corporation responded to the Stage 2 documentation stating that:

Our group is a non- profit organisation that has been active for over forty years in Western Sydney, we are a Darug community group with over three hundred members. The main aim in our constitution is the care of Darug sites, places, wildlife and to promote our culture and provide education on the Darug history.

The Moorebank area is an area our group has a vast knowledge of, we have worked and lived in for many years, this area is highly significant to the Darug people due to the connection of sites and the continued occupation. Our group has been involved in all previous assessments and works in this area as a traditional owner Darug group for the past 40 plus years.

"Aboriginal peoples are the oldest continued culture…the land may have been taken from us for many tens of years and disturbed. However, they still have cultural values, as a culture we have had to adapt to a forever changing landscape, allowance for culture, way of practicing these cultures and even our language is forever changing and adapting."

Key priorities of the development are to use sustainable materials, plant native plants that are from the area, using correct terminology, do not use the past tense and ensure that it is clear throughout the development that this is always has been and always will be Aboriginal land.

Our Darug land can only be assessed by Darug people, we have our song lines and creation places that only our people can identify, our connection to our nura is part of us and our country.

Our histories are held by our people and places, when we are looking for cultural aspects of an area they are not only seen but felt, our spiritual connections are our culture and heritage that connect us to our old people through the evidence that we see on our site visits.

People from other mobs should be respectful of our country and people if they are not respectful that the Darug are the knowledge holders then they are not cultural, therefore should not be involved on cultural heritage on Darug land.

We support the project information and recommendations.

Note that the request for only Darug to assess the land is inconsistent with the consultation requirements and therefore could not be accommodated as part of this project.

Copies of all correspondence relating to the provision of project information to registered Aboriginal stakeholders are included in Volume 2, Appendix A6 of this report.

2.4 STAGE 3: GATHERING INFORMATION ABOUT CULTURAL SIGNIFICANCE

2.4.1 REVIEW OF DRAFT METHODOLOGY

On 20 October 2023, 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. Didge Ngunawal Clan, Mundawari Heritage Consultants, Koori Digs, Cubbitch Barta Native Title Claimants, Kamilaroi Yankuntjatjara Working Group, Waarwaar Awaa Aboriginal Corporation and Ngambaa Cultural Connections replied in support of the methodology. Cubbitch Barta Native Title Claimants requested a hard copy of the Stage 3 document. Stakeholder 2 mentioned that the study area is along the riverbanks and would have been a place where the mob could have camped many years ago. They also support further investigation of this landscape.

Copies of all correspondence relating to the draft methodology from Aboriginal stakeholders are included in Volume 2, Appendix A7 of this ACHA.

2.4.2 INFORMATION GATHERED DURING FIELDWORK

During the archaeological survey, it was agreed between Austral and GLALC that no test excavation would be required in the areas of the proposed works outside of the riparian zone due to severe disturbance within the industrial factory and the vacant green space to the north.

2.5 STAGE 4: REVIEW OF DRAFT ACHA REPORT

The draft ACHA was provided to Aboriginal stakeholders on 23 April 2024 for their review and comment. Aboriginal stakeholders were given 28 days to review the ACHA.

On 1 and 7 May 2024, Austral called all 22 stakeholders to ask for their feedback and comments on the draft ACHA. The majority of the stakeholders agreed with the findings and recommendations included in the ACHA and had no additional comments or feedback.

Mundawari Heritage Consultants responded to the Stage 4 documentation stating that:

> *There is an issue with people polluting the area around the study area;*
>
> *They noticed evidence of fresh scarred trees likely from other Aboriginal groups; and*
>
> *They commented that it would be nice to get the elders' garden remediated and to refresh those cultural gardens.*

All efforts were made by Austral to find out further information about the location and significance of the Coffee Club/elders' garden and the fresh scar trees during the consultation process. Further information was made available to Austral by the stakeholders following the closure of the Stage 4 review period on 21 May 2024.

Mundawari Heritage Consultants responded to Austral's enquiry regarding the Coffee Club/elders' garden and the fresh scar trees on 27 May 2024:

> *There's 2 gardens near the toilet block.*
>
> *- Healing Country Elders Garden*
>
> *- Sorry Garden*
>
> *It would be nice if these gardens got refreshed with some more plants and mulch etc. Note that the Sorry Garden sign has now been removed. This should be replaced with more secured signage to help prevent theft.*
>
> *There are 2 scarred trees and another that was cut, but the bark wasn't removed. Someone has taken it upon themselves in recent times to do this. For what cultural purpose I do not know. I doubt they know the proper Aboriginal protocols to follow.*
>
> *Satyam Ghaat is a place of worship for biodegradable offerings, however some people used it as a rubbish tip. Whilst there is signage providing information to those who frequent this area to keep it clean, sadly that is not always the case. There is no Caring for Country at this site.*
>
> *I've included an aerial overview, photos and other people's reviews (no names) of the area confirming the sad state this site is in. Georges River is a place I used to swim in as a kid, having fun and enjoying what nature provided us. Not anymore!!!*

The aerial overview mentioned is included in the Volume 2, Appendix A8 of this report.

In addition, Stakeholder 2 made the following comment regarding the location of the Coffee Club on 28 May 2024:

> *I have done a little bit more with researching the location and the construction for this project will be over the other side of the river to were the coffee club meet.*

The consultation process has therefore identified that the Coffee Club/elders' garden and the fresh scar trees are located outside of the current study area and are instead located in Haigh Park to the east of the study area.

Copies of all correspondence relating to the review of the draft ACHA are included in the Volume 2, Appendix A8 of this report.

3 LANDSCAPE CONTEXT

The following section discusses the environmental and cultural context of the study area.

3.1 ENVIRONMENTAL CONTEXT

The following section discusses the study area in relation to its landscape, environment and Aboriginal landscape resources. This environmental context has been prepared in accordance with Requirement 2 of The Code (DECCW 2011a, pp.8–9).

The study area is located within the Sydney Basin bioregion, which is characterised by the catchment areas of major rivers such as Shoalhaven, Nepean, Hunter and Crookhaven River systems. The study area is located towards the central portion of the Sydney Basin which has gently undulating terrain. An understanding of the location and associated land-use patterns of natural features play a primary role to identify the rationale for the selection of an area for Aboriginal occupation by the traditional communities within the region. An understanding of these features also assists in identifying the natural processes that impact Aboriginal archaeological and cultural sites. and thereby helpful for drafting conservation and management measures for sites.

3.1.1 TOPOGRAPHY AND HYDROLOGY

Located within the Cumberland Plain, the study area sits on Triassic Wianamatta group shales (*Cumberland Plain Woodland in the Sydney Basin Bioregion - profile | NSW Environment, Energy and Science* n.d.). The landscape is characterised by floodplains, valley flats and low rolling hills. The study area is predominantly located within a modified flat with a local relief of 8 to 10 metres. The study area is located on the Georges River Alluvial Plain Mitchell Landscape, which has a general elevation of 0 to 30 metres with a local relief of 10 metres (Mitchell 2002).

The landform units identified within the study area are identified in Figure 3.1.

The study area is located directly to the east of the Georges River. The Georges River and its surrounds were well-utilised by Aboriginal people, with evidence of their occupation remaining in the form of campsites, middens and artworks (Goodall & Cadzow 2014). Estuaries such as the Georges River were particularly important for fishing and shellfish gathering. Ethnographic accounts record local Aboriginal people gathering resources from the estuary shallows within canoes and using tools such as pronged spears with tips of bone and fish traps consisting of plant materials. A high frequency of middens was historically located along the banks of the Georges River and its tributaries; however, many were destroyed by early Europeans as a source of lime for use in construction and agriculture (V Attenbrow 2010, p.5).

The hydrological systems identified within, and in the locality of, the study area are identified in Figure 3.2.

Figure 3.1 - Landform units identified within the study area

23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: NSW LPI Aerial, Nearmap *Drawn by: FOT Date: 2024-04-10*

AUSTRAL ARCHAEOLOGY

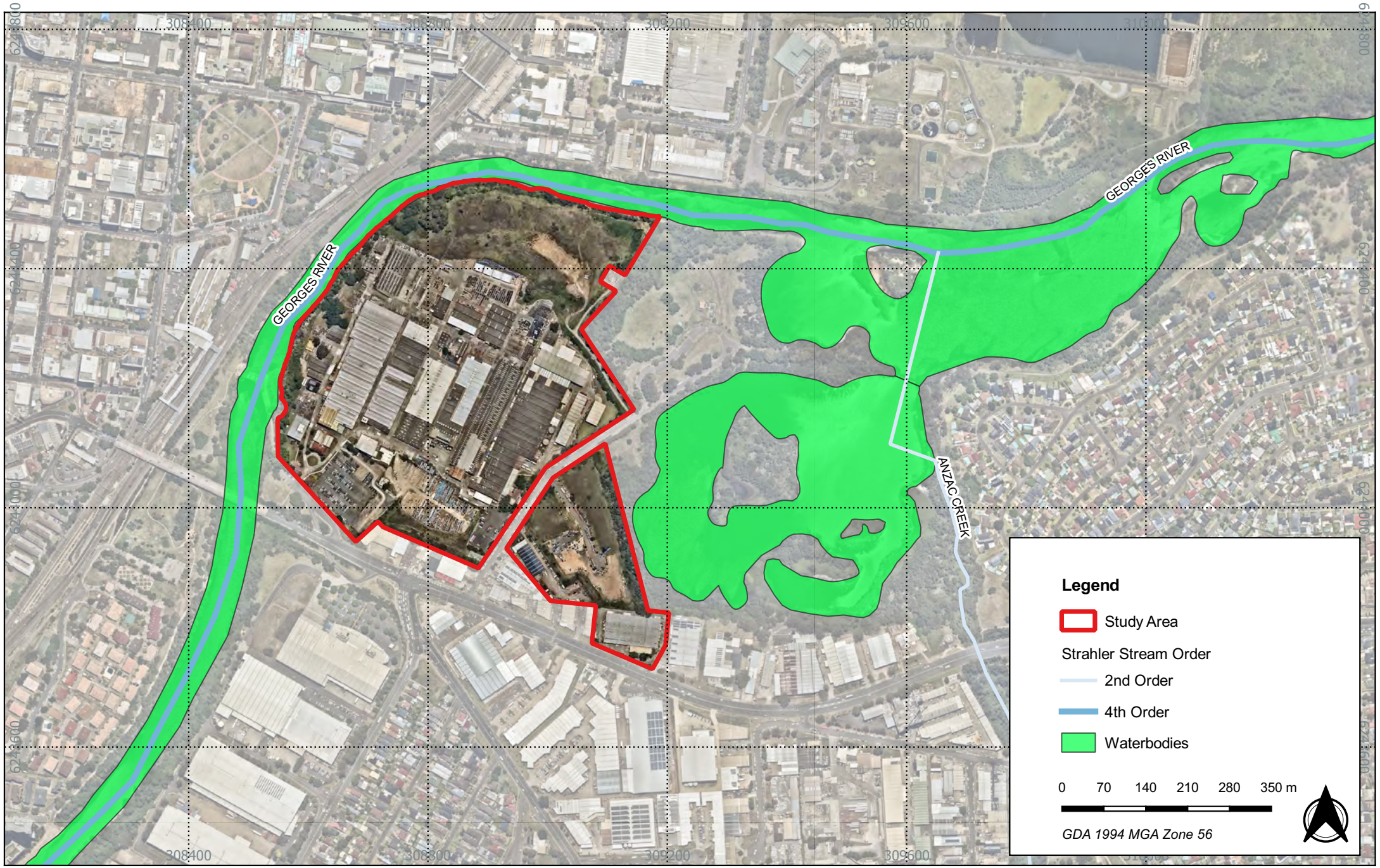

Figure 3.2 - Hydrology of the study area

23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: Nearmap *Drawn by: ARH Date: 2023-07-03*

AUSTRAL ARCHAEOLOGY

3.1.2 GEOLOGY AND SOILS

The majority of the study area is located within the alluvial floodplain deposits (Q_af) geological unit. This geological unit is formed from Quaternary-aged deposits of alluvium origin and is described as having silt, very fine to medium-grained lithic to quartz-rich sand and clay (Colquhoun et al. 2019). A small portion of the study area is located within the alluvial channel deposits – subaqueous (Q_acw) geological unit. This geological unit is characterised by its fluvially deposited sand with gravel, silt and clay inclusions (Colquhoun et al. 2019).

The western portion of the study area is underlain by the Bringelly Shale formation (Twib). The Bringelly Shale formation is described as shale with “carbonaceous claystone, laminate, lithic sandstone, (and) rare coal” (Colquhoun et al. 2019). The eastern portion of the study area is underlain by the Ashfield Shale formation (Twia). The Ashfield Shale formation is characterised by “black to light grey shale and laminate” (Colquhoun et al. 2019). The Bringelly Shale formation has the potential for quartzite deposits within sandstone (STEP INC 2017). Whilst the Bringelly Shale unit can have outcrops of sandstone, there are no deep incised drainage channels that are necessary for the natural creation of rock shelters.

The geological units identified within the study area are shown in Figure 3.3.

The study area is located within the Georges River Alluvial Plain Mitchell Landscape. This soil landscape is characterised by channels, floodplains and terraces (Mitchell 2002). The soils in the Georges River Alluvial Plain Mitchell Landscape are usually yellow-brown to orange clayey sands (Mitchell 2002). The Georges River Alluvial Plain soil landscape is bordered to the west by the Cumberland Plain Mitchell Landscape and to the east by the Ashfield Plains Mitchell Landscape.

The soil landscapes within the study area are identified in Table 3.1 and Figure 3.4.

The study area is located predominantly in the Blacktown soil landscape (Figure 3.4). The Blacktown soil landscape typically comprises shallow to moderately deep (>1m) hard-setting mottled texture contrast soils, and Red and Brown Podzolic Soils on crests, with Yellow Podzolic Soils along drainage lines and lower slopes (Planning Industry & Environment 2024a). Blacktown soil landscapes have moderate erodibility, low to moderate fertility and a slight to moderate erosion hazard for non-concentrated flows and a moderate to high soil erosion hazard for concentrated flows (Planning Industry & Environment 2024a). In areas where surface vegetation has been removed, minor sheet and gully erosion can occur (Planning Industry & Environment 2024a).

For crests, the total soil depth is <1m, while upper slopes, midslopes and lower sideslopes are generally <2m (Planning Industry & Environment 2024a). Lower sideslopes comprise up to 30 cm of friable brownish black loam (bt1) overlying 10–30 cm of hardsetting brown clay loam (bt2), 40–100 cm of strongly pedal, mottled brown light clay (bt3) and >100 cm of light grey plastic mottled clay (bt4) [Planning Industry & Environment 2024].

The Blacktown soil landscape is known to preserve Aboriginal artefacts in the A1 and A2 horizons due to the conditions of the soil, but the acidity often results in the loss of organic materials (Eco Logical Australia Pty Ltd 2022, p.9, Dominic Steele Consulting Archaeology 2019). Temporal collapses can also occur in this soil landscape, leading to objects from multiple phases being preserved in the same soil layer (Eco Logical Australia Pty Ltd 2022, p.9).

The south-eastern section of the study area is located within the Richmond soil landscape and a disturbed soil landscape (Figure 3.4). The Richmond landscape occurs in small pockets along the Georges River (Planning Industry & Environment 2024b). The geology of the Richmond landscape is a quaternary alluvium composed of gravels, silt and sand derived from sandstone and shale (Planning Industry & Environment 2024b). The Richmond soil landscape generally comprises poorly structured orange to red clay loams, clays and sands, with texture increasing with depth (Planning Industry & Environment 2024b). Earthy sands appear on terrace edges, while deep acidic non-calcic brown soils, red earths and red podzolic soils occur on terraces surfaces (Planning Industry & Environment 2024b). The surface soils (horizon A) have moderate erodibility with a low organic matter content and high fine sand fraction, but are not dispersible, while the subsoils have high erodibility due to a high fine sand and silt content with very low organic matter (Planning Industry & Environment 2024b). The erosion hazard for non-concentrated flows is low due to low slopes and vegetation cover, while concentrated flows have moderate to high erosion hazards (Planning Industry & Environment 2024b).

The disturbed soil landscape within the south-eastern area of the study area is a result of the earthworks undertaken during the 2nd half of the 20th century.

Table 3.1 Soil landscapes identified as being within study area

Soil landscape	Description
Georges River Alluvial Plain (Mitchell Landscape)	Characterised by channel, floodplain, and terrace landforms, and yellow-brown to orange clayey sands.
Blacktown (bt) (eSPade - Planning Industry & Environment 2024a).	• bt1—Friable brownish black loam (10YR 2/2 to 5YR 3/2 to 10YR 3/4): Topsoil (A horizon) comprising a friable brownish black loam to clay loam with moderately pedal subangular blocky structure (2-20mm) and rough-faced porous ped fabric. The surface state is friable with a pH ranging between acid (pH 5.5) and neutral (pH 7.0). Inclusions include fine gravel-sized shale fragments, charcoal fragments and roots. • bt2—Hardsetting brown clay loam (7.5YR 4/3 to 2.5YR 3/3 to 10YR 3/3): A2 horizon hard-setting brown clay loam to silty clay loam with apedal massive to weakly pedal structure and slowly porous earthy fabric. Where peds are present, they are weakly developed, subangular blocky and are rough faced and porous (20-50mm). The soil has a pH ranging between moderately acidic (pH 5.0) to slightly acidic (pH 6.5). Platy, iron indurated gravel-sized shale fragments appear commonly, while charcoal inclusions and roots are rare. • bt3—Strongly pedal, mottled brown light clay (7.5YR 4/6 to 2.5YR 4/6 to 10YR 4/6): Subsoil (B horizon) consists of a brown light to medium clay with strongly pedal polyhedral or sub-angular to blocky structure and smooth-faced dense ped fabric (5-20mm). The soil has a pH ranging between strongly acidic (pH 4.5) to slightly acidic (pH 6.5). Frequent red, yellow or grey mottles occur more often at depth. Inclusions include fine to coarse gravel-sized shale fragments, often in stratified bands, while roots and charcoal are rare. • bt4—Light grey plastic mottled clay (10YR 7/1 to 2.5YR 6/2): A deep subsoil (B3 or C horizon) above shale bedrock, comprising a moderately pedal polyhedral to subangular plastic light grey silty clay to heavy clay with smooth dense ped fabric (2-20mm). Red, yellow or grey mottles are common. The pH ranges from strongly acidic (pH 4.0) to moderately acidic (pH 5.5). Inclusions include strongly weathered ironstone concretions and rock fragments. Charcoal fragments are rare, but gravel-sized shale fragments and roots are occasionally present.
Richmond (ri) (eSPade - Planning Industry & Environment 2024b).	• ri1—Loose reddish brown loamy sand (7.5YR 4/4 to 5YR 4/2) A topsoil (A horizon) comprising an apedal single-grained reddish brown loamy sand with porous sandy fabric. Where organic matter is high, the texture can present as a sandy loam. The pH ranges between moderately acidic (pH 5.5) and slightly acidic (pH 7.0). Inclusions comprise roots near the surface. No charcoal fragments or stones are present. • ri2—Brown sandy clay loam (7.5YR 4/4, 4/6, 2.5YR 4/3 to 7.5YR 5/8) A topsoil (A horizon) comprising a brown sandy clay loam to fine sandy clay loam with apedal massive structure and earthy fabric. Porous rough-faced moderately pedal subangular blocky peds (50-100mm) are present at depth. The pH is slightly acidic (pH 6.0). No stones or charcoal fragments are present, although some roots are present. • ri3— Brown mottled light day (2.5YR 3/6 to 10YR 5/2) Subsoil (B horizon) comprising a light medium clay with apedal massive structure, exhibiting porous, rough-faced ped fabric at depth and an earthy fabric increasing to moderate structure. Peds are large (50-100mm) and angular blocky at depth. Mottling of yellow and orange

	occur. The pH ranges from strongly acidic (pH 4.0) to slightly alkaline (pH 8.0). Inclusions of small (2-20mm) iron-indurated gravels are dispersed or appear in concentrated bands, while charcoal and other inclusions are rare. Few roots appear in this horizon. • ri4— Brown mottled stiff medium-heavy clay (2.5YR 3/4 to 10YR 5/8) Subsoil (B horizon) comprising a mottled, occasionally subplastic medium to heavy clay with variable structure and dense smooth-faced ped fabric. The structure of the soil increases with depth, from small (<2mm), weak crumb structure though to strong, subangular blocky with peds ranging from 20 to 100mm. At depth, light grey mottles are particularly common. The pH ranges from strongly acidic (pH 4.5) to neutral (pH 7.0). Inclusions are generally absent.
Disturbed terrain (xx) (eSpade Planning Industry & Environment 2024c).	In areas of disturbed terrain, the original soil has been buried, greatly disturbed or buried with soil, rock, building and waste material.

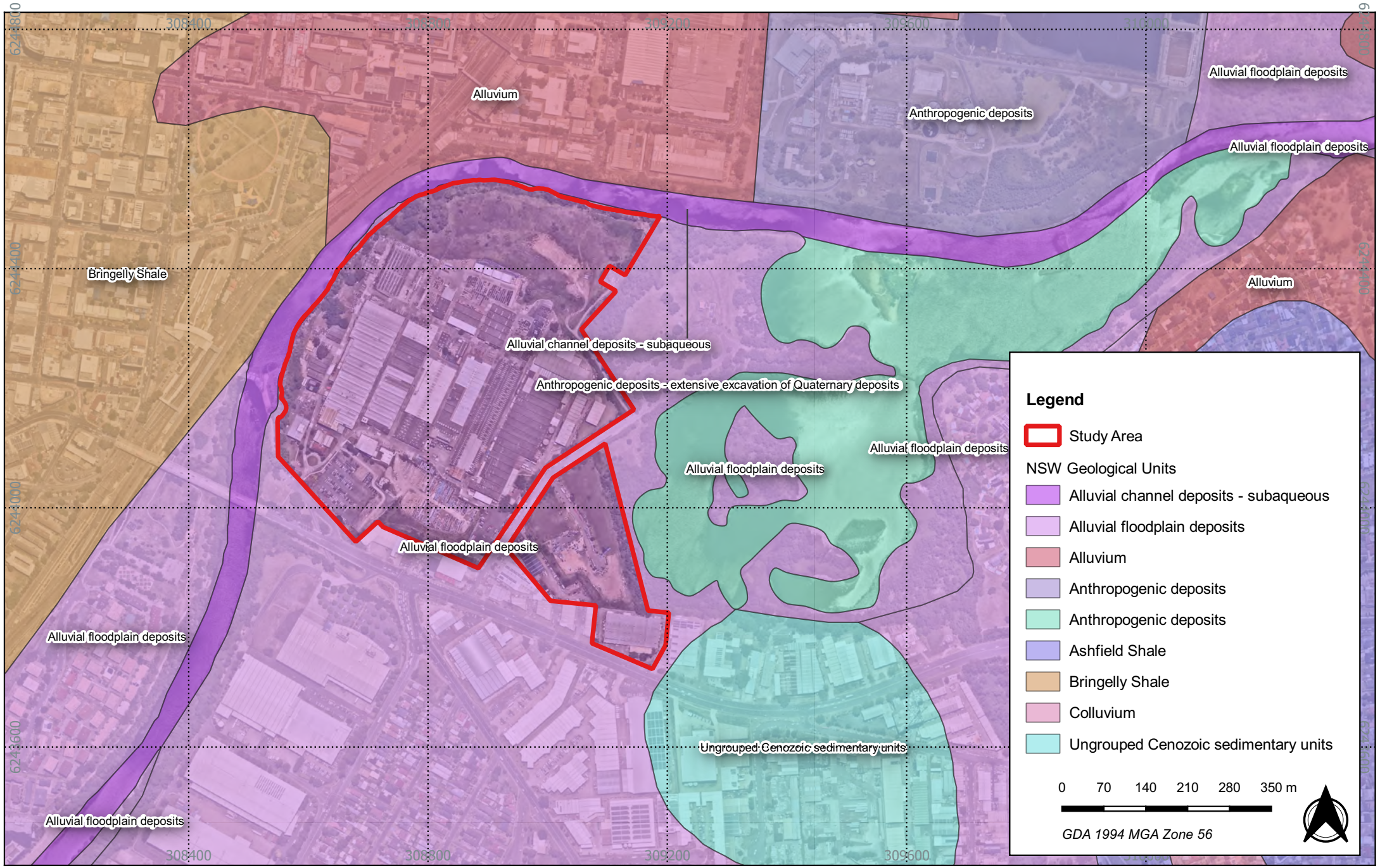

Figure 3.3 - Geology of the study area

23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: Nearmap *Drawn by: ARH Date: 2023-07-03*

AUSTRAL ARCHAEOLOGY

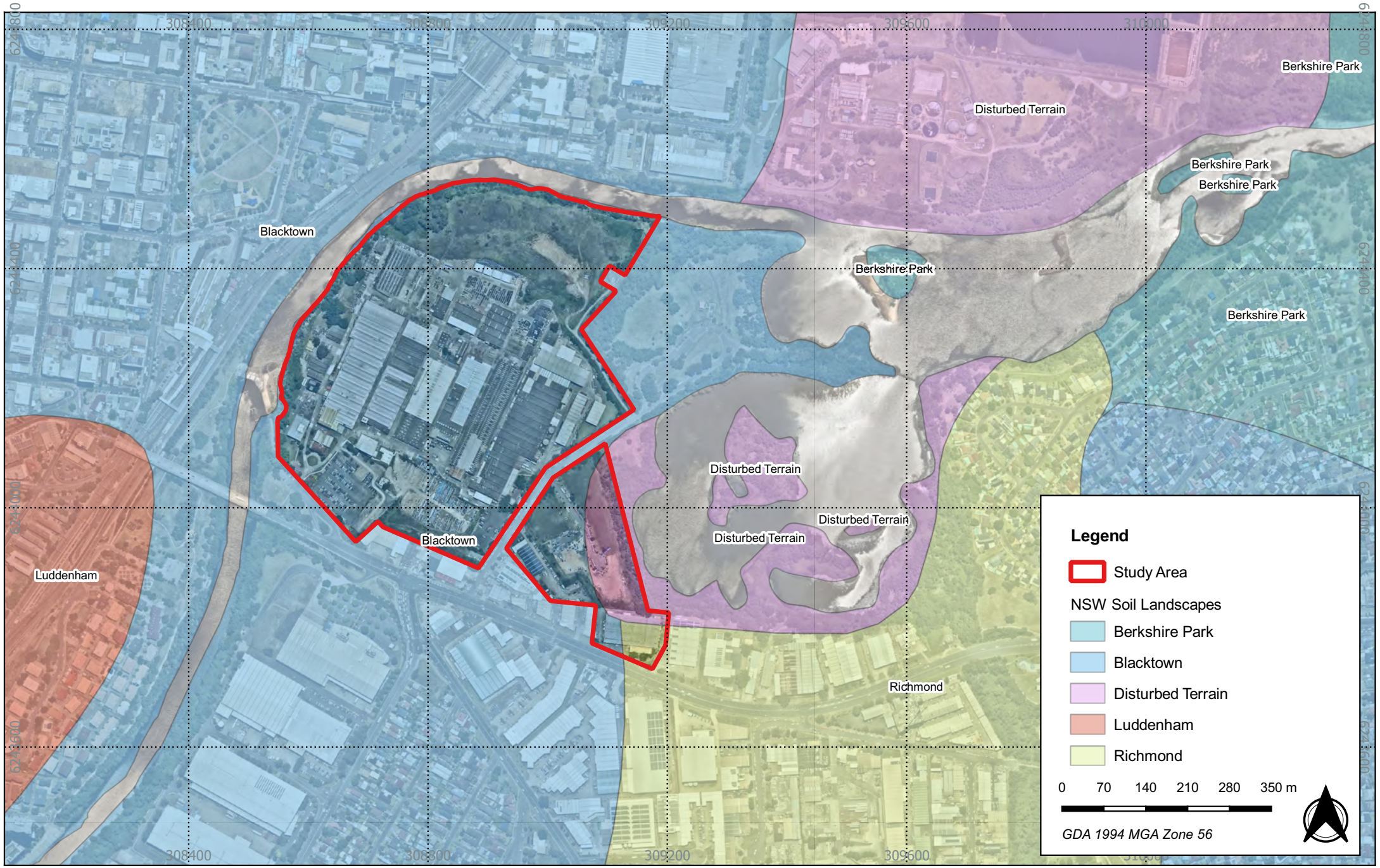

Figure 3.4 - NSW Soils landscape of the study area

23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: Nearmap *Drawn by: ARH Date: 2023-07-03*

AUSTRAL ARCHAEOLOGY

3.1.3 CLIMATE AND VEGETATION

The study area's environmental context is defined by its location within the Sydney Basin Bioregion. Based on climate data from the Liverpool (Whitlam Centre) Weather Station [site number: 067035], located approximately one kilometre southwest of the study area, the local region is characterised by generally hot, wet summers and cool to cold, dry winters. Summer mean temperatures reach highs of 28.2ºC and lows of 17.7ºC (Bureau of Meteorology 2001). During winter, mean average temperatures reach highs of 17.3ºC and lows of 4.8ºC. The highest mean rainfall is recorded during March with 101.1 millimetres, and the lowest mean rainfall is recorded in July with 40.2 millimetres (Bureau of Meteorology 2001).

Although the study area is heavily disturbed due to its location within an industrial landscape, vegetation would have once flourished in the natural landscape. Such vegetation is outlined in Table 3.2.

Table 3.2 Summary of common floral resources in the study area and surrounds

Scientific name	Common name
Avicennia marina subspecies *australasica*	Grey mangrove
Brunoniella australis	Blue trumpet
Pseuderanthemum variabile	Pastel flower
Tetragonia tetragonioides	New Zealand spinach
Laxmannia gracilis	Slender wire lily
Tricoryne elatior	Yellow Autumn-lily
Centella asiatica	Indian pennywort
Hydrocotyle sibthorpiodes	Stinking pennywort
Marsdenia viridiflora	Native pear
Dianella caerulea	Blue flax-lily
Dianella revoluta	Blueberry lily
Ozothamnus diosmifolius	White dogwood
Wahlenbergia gracilis	Sprawiling bluebell
Eindadia hastata	Berry saltbush
Lepidosperma laterale	Variable sword-edge
Hibbertia aspera	Rough Guinea flower
Hibbertia fumana	Wedge Guinea flower
Pultenaea villosa	Hairy bush-pea
Acacia bynoeana	Bynoe's wattle
Acacia decurrens	Black wattle
Cassytha glabella	Long-leaved westringia
Angophora floribunda	Rough-barked apple
Eucalyptus baueriana	Blue box
Eucalyptus fibrosa	Red ironbark
Eucalyptus tereticornis	Forest red gum

3.1.4 LANDSCAPE RESOURCES

In the past, the study area would have been able to support Aboriginal people for 8 to 9 months of the year due to its vicinity to the Georges River, Lake Moore and Chipping Norton Lake. The river and lake would have provided a wide range of fish, aquatic birds and shellfish that could be gathered through an array of methods, with their availability determined by the season.

Ethnographic accounts record local Aboriginal people gathering resources from the estuary shallows in canoes and using fish traps constructed from plant materials and tools such as pronged spears with bone tips (Goodall & Cadzow 2014). Other terrestrial animals that were exploited were marsupials, and reptiles that would have been found along the river. In addition to their use as food source, the skins of marsupials and reptiles were used for constructing clothes and items that aided in transporting goods. A summary of the faunal resources that would have been utilised by the Darug people is provided in Table 3.3 below.

Table 3.3 A summary of the faunal resources within the study area and surrounds from (ACS Environmental Pty Ltd 2016) and (New South Wales National Parks and Wildlife Service 1998)

Scientific name	Common name
Manorina melanocephala	Noisy miner
Cracticus tibicen	Australian magpie
Corvus coronoides	Australian raven
Dacelo novaeguineae	Laughing kookaburra
Coracina novaehollandiae	Black-faced cuckoo shrike
Vanellus miles	Masked lapwing
Malurus cyaneus	Superb fairy-wren
Pseudocheirus peregrinus	Common ringtail possum
Pseudophryne australis	Red-crowned toadlet
Amalosia lesueurii	Lesueur's gecko
Phascolarctos cinereus	Koala
Petauroides sp.	Greater gliders
Petaurus breviceps	Sugar glider
Chalinolobus dwyeri	Large-eared pied bat
Miniopterus schreibersii	Common bent-wing bat

The study area has been entirely cleared of its vegetation due to industrial land-use. Originally, the study area would have predominantly comprised vegetation of the Cumberland Lowland Woodlands. The Cumberland Lowlands vegetation community typically features eucalypt species including the grey box, forest red gum, narrow-leaved ironbark, and spotted gum, although it is the dominance of grey box and red forest gum that makes the community distinctive (Urbis 2016, p.16). Prior to European invasion and the subsequent clearance of vegetation, the array of plant life would have provided habitats for a variety of animals, as well as potential food and raw material sources for Aboriginal people. Species of bats, birds, frogs, mammals, and reptiles have been found to live along the riverbanks, providing both food resources and materials for clothing, tools, ornamentation and other implements.

The geological characteristics of the study area indicate that vegetation belonging to shale communities would have been the most common. The communities typically include *Eucalyptus moluccana, Eucalyptus tereticornis, Eucalyptus saligna, Eucalyptus pilularis* and *Eucalyptus crebra* (Georges River Combined Council's Committee Incorporated 2022, Department of Environment, Climate Change and Water NSW 2010). Eucalyptus trees were a particularly important resource; leaves were crushed and soaked for medicinal purposes, bowls, dishes, and canoes were made from the bark, and spears, boomerangs and shields were crafted from the hard wood.

3.2 PAST LAND USE PRACTICES

Due to the proximity of the study area to the Georges River, Lake Moore and Chipping Norton Lake, the study area may have been used for resource gathering, camping and ceremonial activities for 8 to 9 months of the year. Despite reference to use of the study area for ceremonies

and burials during the Stage 2 consultation process, there is no substantial physical evidence of burials in the study area.

The study area has historically been used for industrial purposes, and it is currently an industrial precinct. The study area was initially granted to Thomas Moore in 1899 as part of a consolidated grant (Figure 3.5).

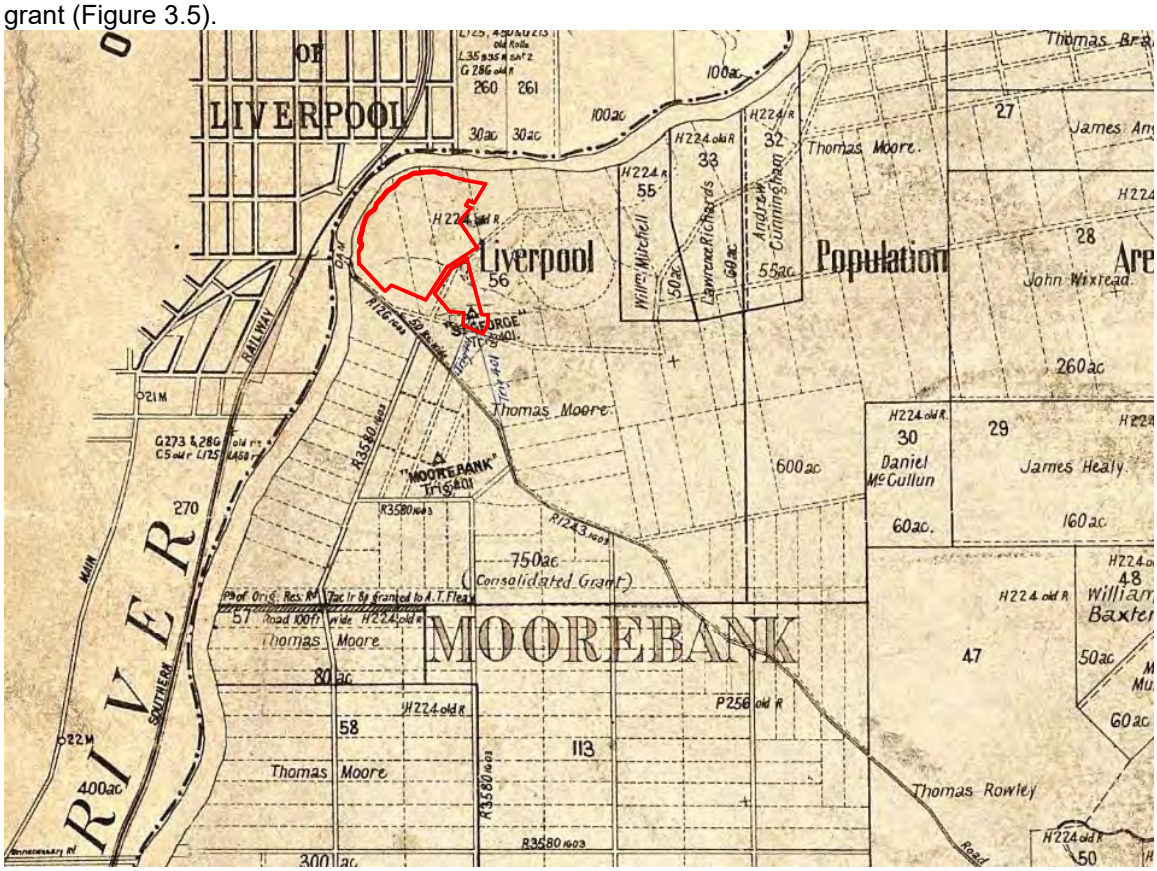

Figure 3.5 1899 parish plan of the Holsworthy Parish with the study area shown in red (Source: HLRV)

The earliest available aerial imagery of the region demonstrates that the study area would have been subject to disturbances associated with agricultural industry, the construction and utilisation of roads and the construction of industrial buildings (Figure 3.6). By 1930, the study area had been heavily cleared and had been partially disturbed through the construction of a road running through the centre. Aerial photography from this time indicates that agricultural plots utilised for cropping covered the study area (Figure 3.6). Small-scale buildings associated with the agricultural plots had also been constructed by this time (Figure 3.6). By 1947, a large-scale industrial building had been constructed in the south-western corner of the study area (Figure 3.7). The rest of the study area appears to have remained largely unchanged by this time, other than earthworks in the south-eastern ancillary portion of the study area. In 1965, the study area had undergone further developments, including the extension of the large-scale buildings to the eastern boundary of the main study area, as well as the construction of a dam in the ancillary south-eastern portion of the study area (Figure 3.8). By 1978, the footprint of the industrial buildings had increased to the north and a new building had been constructed in the south-eastern ancillary portion of the study area (Figure 3.9). Stockpiles and a dam were also present in the south-eastern ancillary portion of the study area. By 1998, a carpark had been constructed in the south-western corner of the study area, and the development had spread to the northern portion, with stockpiles of materials present in this area (Figure 3.10). Since this time, additional carparks and driveways have been constructed in the southern section and the ancillary south-eastern portion of the study area.

The available aerial imagery indicates that the majority of the study area has likely been disturbed due to evidence of land use practices that could have affected any sub-surface archaeological deposits. The grassed areas, however, may have been subjected to less disturbance.

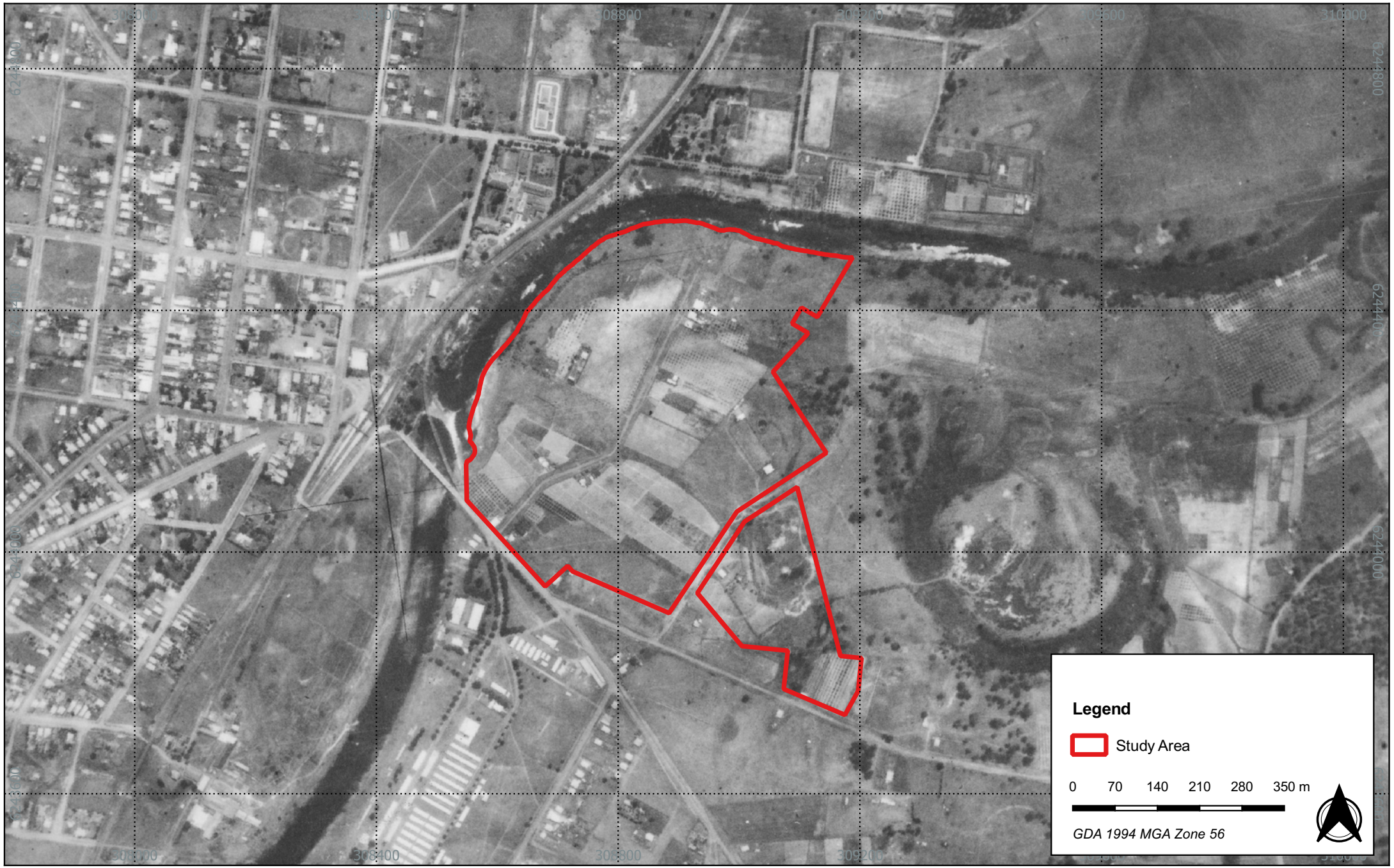

Figure 3.6 - 1930 aerial of the study area

23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: Spatial Services *Drawn by: ARH Date: 2023-07-03*

AUSTRAL ARCHAEOLOGY

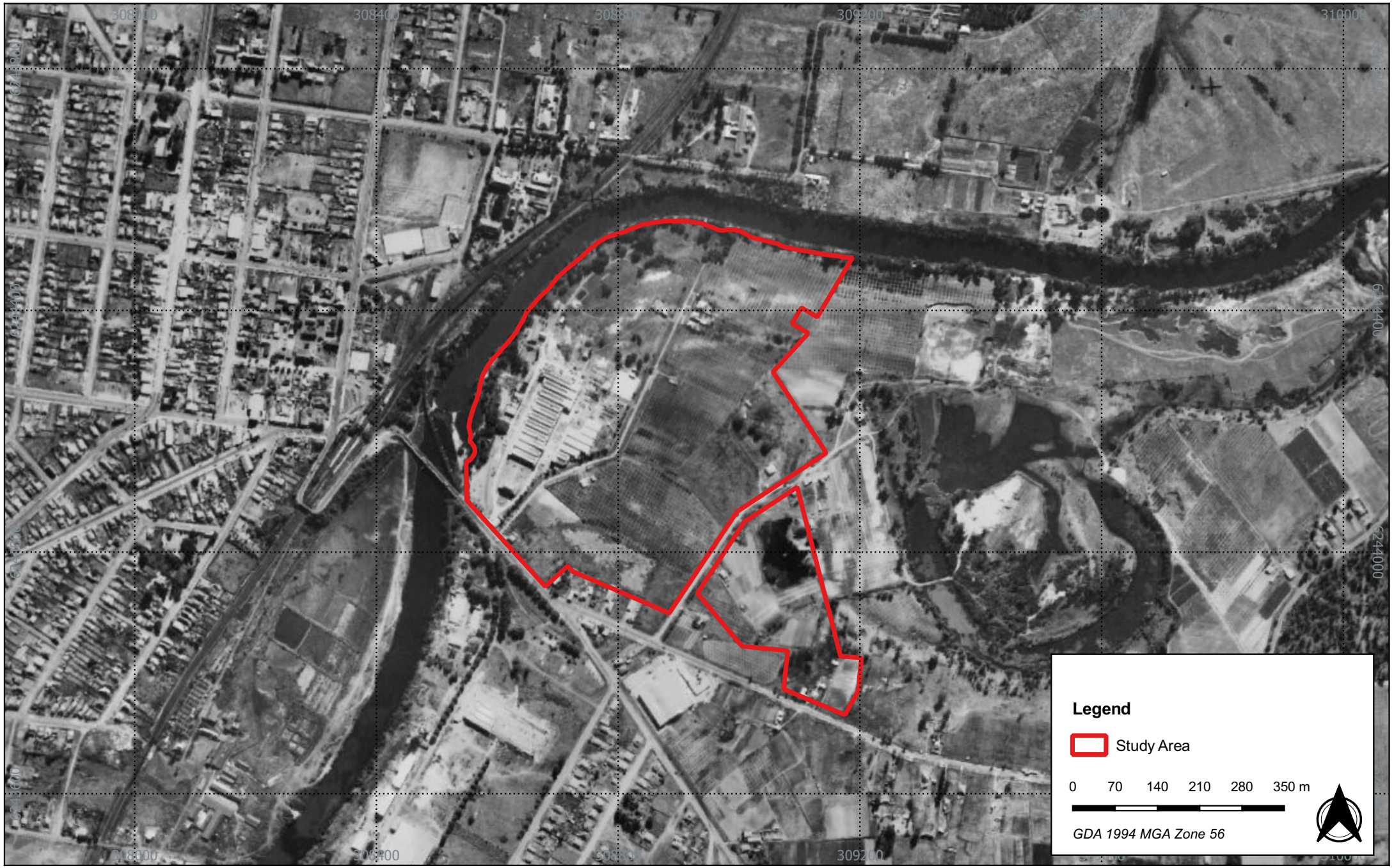

Figure 3.7 - 1947 aerial of the study area

23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: Spatial Services *Drawn by: ARH Date: 2023-07-03*

AUSTRAL ARCHAEOLOGY

Figure 3.8 - 1965 aerial of the study area

23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: Spatial Services *Drawn by: ARH Date: 2023-07-03*

AUSTRAL ARCHAEOLOGY

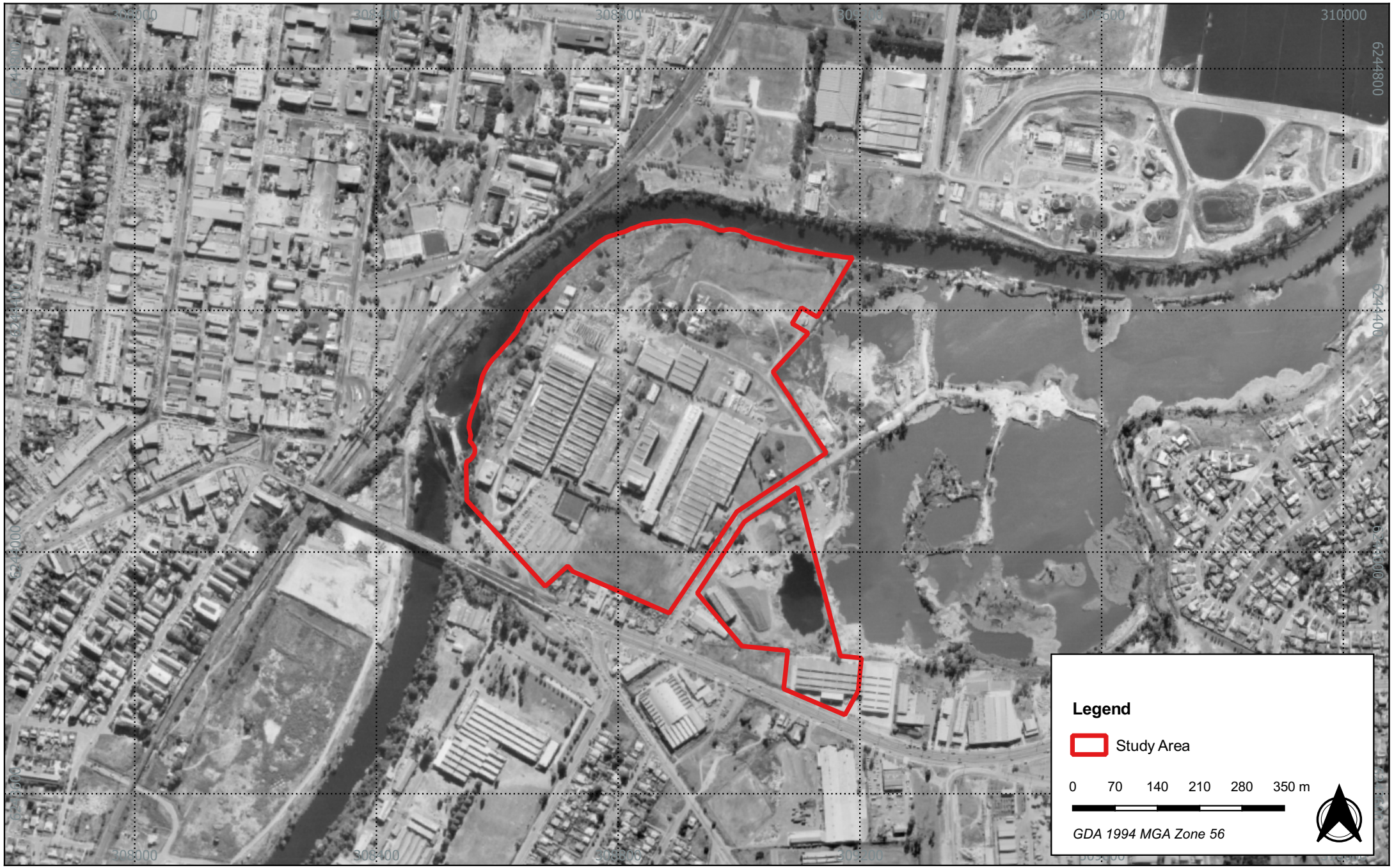

Figure 3.9 - 1978 aerial of the study area

23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: Spatial Services *Drawn by: ARH Date: 2023-07-03*

AUSTRAL ARCHAEOLOGY

Figure 3.10 - 1998 aerial of the study area

23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: Spatial Services *Drawn by: ARH Date: 2023-07-03*

AUSTRAL ARCHAEOLOGY

4 ARCHAEOLOGICAL CONTEXT

The range of environments and landscapes within the Liverpool and Moorebank region had a profound influence on the lives of the Aboriginal people who lived there. Aboriginal people utilised their surroundings to provide food and other resources. Their transitory lifestyle affected population size, social interactions, and degree of mobility, which can be confirmed in the archaeological record.

4.1 POPULATION AND CONTACT HISTORY

The earliest dates for Aboriginal occupation in Australia reach back to at least 65,000 years (Clarkson et al. 2017). Within the Cumberland Plain, the earliest known occupational site is located north of Pitt Town, on the southern bank of the Hawkesbury River, where cultural deposits were dated by optically stimulated luminescence (OSL) to 36,000+/-3000 BP (Williams et al. 2012).

The study area falls within the traditional lands of the Darug people. Darug people occupied lands spanning along the Hawkesbury River to Windsor, Penrith and Campbelltown and were divided into three groups: coastal, mountain and hinterland. The Darug people of the modern Liverpool and Moorebank region were of the hinterland group. Specifically, ethnohistoric accounts indicate the *Gahbrogal* or *Cabrogal* clan were the primary occupants of the Liverpool and Moorebank region, named for their consumption of the cohbra grubs harvested from the banks of the Georges River (V Attenbrow 2010, pp.23–25, 34, Tindale 1974).

Early ethnographic accounts note that local Aboriginal people throughout the Sydney region were grouped as clans or bands consisting of between 25 and 50 people (V Attenbrow 2010, p.29). The Georges River and its associated landscapes were utilised by the local peoples with evidence of their occupation remaining in the form of campsites, middens and artworks (Goodall & Cadzow 2014). Estuaries such as the Georges River were particularly important for fishing and shellfish gathering. Ethnographic accounts recorded local Aboriginal people gathering resources from the estuary shallows in canoes and using tools such as bone-tipped, pronged spears and fish traps made from plant materials. Shellfish were a staple food source for Darug people, evidenced by the high number of middens historically present along the banks of the Georges River. Many of these middens were destroyed following European invasion, as they provided a source of lime used to make mortar for building construction (V Attenbrow 2010, p.5). The presence of sandstone geological formations in the area provided Aboriginal people with overhangs for shelters, art and ceremonial sites. In the absence of rock shelters, semi-permanent huts were constructed of the bark of stringy bark trees supported by a frame of branches. These huts were observed to accommodate 3 to 4 people, although larger cone-shaped dwellings could hold up to 8 people (Turbert 1989, pp.16–17).

With the arrival of British colonists within the wider Sydney area came the destabilisation of local Aboriginal groups, as the land was occupied and transformed for settlement and agricultural purposes. As the colony expanded, Aboriginal people were increasingly denied access to fresh water and traditional hunting grounds. Interactions between the local Aboriginal groups and European colonists became increasingly hostile, with Aboriginal people eventually being largely driven out of their homelands. Aboriginal people were later restricted to living within Camden Park and along Georges River near Liverpool (Liston 1988).

4.2 PREVIOUS ARCHAEOLOGICAL WORK

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

4.2.1 REGIONAL ARCHAEOLOGICAL CONTEXT

Aboriginal occupation of the Sydney region extends into the Pleistocene Epoch (2,580,000 to 11,700 BP). Currently, the oldest date for an archaeological site in the Sydney region is a date of approximately 40,000 years from the Cranebrook Terrace along the Nepean River (V Attenbrow 2010). However, most samples dated by geochronology are much more recent, being less than 15,000 years old and concentrated in the last 2,500 years (DECCW 2011b, p.1). The vast majority of archaeological sites within the Cumberland Lowlands, including Parramatta and the surrounding

districts, comprise dates between 1,000 and 5,000 years (Kelleher Nightingale Consulting Pty Ltd 2017, p.67). The nature of this human occupation has changed through time according to the environmental conditions and the type of society that existed.

MATERIAL CULTURE

The material culture of the Aboriginal people of the Sydney region at the time of European contact was diverse, utilising materials derived from a variety of plants, birds and animals, as well as stone. Below is only a summary of the types of material known to have been used by the Aboriginal people of the Sydney region.

Spears in the Sydney region were usually made of a grass tree spike (for the shaft) with a hardwood point. Stone, bone, shell or wood were sometimes used as barbs. Thin and straight spear-throwers were made from wattle, while fishing spears were usually tipped with four hardwood prongs with bone points. Fish were also caught utilising shell or bird talon fish hooks (Attenbrow 2010, p.177).

Bark of various types was used for making such diverse items as wrappings for new-born babies, shelters, canoes, paddles, shields and torches. Resin from the grass tree was used as an adhesive for tool and weapon production, particularly spears. Similarly, 'Boomerang' is believed to be a Darug word. Various kinds of boomerangs and clubs were made from hardwoods, as were such items as digging sticks (Attenbrow 2010, p.179)

Stone artefacts are often the only physical indication of Aboriginal use of an area due to their durability and survivability in the archaeological record. The knapping of stone artefacts can indicate one of two things: the knapping of stone to create tools; and the discard of these tools once they have been used, or sometimes both. The knapping of stone creates a large amount of stone debris in very little time. Large knapping events tend to occur in proximity to sources of permanent water (Jo McDonald Cultural Heritage Management. 2005). This is likely due to the availability of resources that made such locations good short-term camping sites. Small-scale knapping events can occur anywhere in the landscape and are associated with the manufacture or maintenance of stone tools as a direct result of a specific need.

Stone was commonly used for tools and, apart from the discarded shell in coastal middens, is the most common material found in archaeological sites of the Sydney region. Stone or stone tools were used for axe heads, spear barbs and as woodworking tools, amongst other uses

Small items such as shellfish and plant foods, such as berries, yams and nectar-bearing blossoms, were collected and carried in net bags or baskets. The principal piece of equipment required for gathering plant food was a wooden digging stick used by women to dig out root vegetables such as fern roots, bulbs from numerous orchid species, and tubers from a variety of vines (Australian Museum Business Services 2005, p.36).

Bird feathers, animal teeth, nuts, ochre, animal skins and plant fibres were used to create tools and decorative items including clothing, cloaks and personal ornamentation. Leaves, bark and fibrous stems were used to make nets, bags, traps, baskets, string and rope. In addition, hollow logs were used to construct eel traps around the Parramatta region, but eels were also speared form the shore (Kelleher Nightingale Consulting Pty Ltd 2017, p.26).

Observations made by Francis Barrallier (1773-1853) in 1802 revealed that the local Aboriginal population in Parramatta and the surrounding districts exhibited customs relating to food and hunting that were similar to those of those practised between Nattai and the lower Wollondilly. It was also noted by Barrallier that the local Aboriginal groups utilised the local environment as a source for raw materials for tool and weapon-making, clothing and shelter (Comber 2014, p.21).

From about 1,600 years ago, Bondi points and geometric microliths began to drop out of use in the coastal parts of the Sydney region, although the Elouera continued to be used. This is known as the *Late Bondaian* phase. In coastal areas, and possibly throughout the Sydney Basin, both the use of quartz and the use of the bipolar flaking technique increased over time (V Attenbrow 2010).

Recorded items of material culture in the archaeological record within the greater Western Sydney region include hunting and fishing spears, spear-throwers (at least two types), fishing lines and hooks, stone axes and hatchets, digging sticks, clubs, shields, string and net bags, baskets, bark containers and canoes, scrapers, adzes and awls, animal skin cloaks and a variety of stone tools (Val Attenbrow 2010, p.85).

FOOD RESOURCES

A range of land mammals was hunted for food, including kangaroos, possums, wombats, sugar gliders and echidnas, as well as native rats and mice. Birds, such as the mutton bird and brush turkey were eaten and eggs were recorded as a favourite food of the Aboriginal people in the region surrounding the study area (Attenbrow 2010, p.210). Due to the association of Milperra with the Georges River, Aboriginal groups native to the study area and its surrounds would have made use of the available freshwater and terrestrial resources that inhabited the banks and its environs.

Before European settlement, the study area is likely to have been a rich ecological zone that provided both an abundant and a diverse variety of food resources. A range of different resource habitats was likely to have been readily accessible to Aboriginal groups living within the region. These variable habitats include the riparian freshwater environments associated with the Georges River. According to Tench (1789), inland groups would not often depend on fish yielded by the rivers, given they were an inefficient resource. Rather, they relied on hunting small animals and harvested root species, particularly wild yams, from river banks. J. L. Kohen (1993) notes the Burrawong (*Macrozamia communis*) was a particularly important resource due to its provision of a nut that was processed for making small cakes over open fires.

Attenbrow has noted that “Sydney vegetation communities include over 200 species that have edible parts, such as seeds, fruits, tubers/roots/rhizomes, leaves, flowers and nectar from the river banks” (Attenbrow 2010, p.76). Plant seeds and fruits were important sources of vegetable matter. Observations from the earliest European settlers describe Aboriginal people in the Sydney region roasting fern-roots and eating small fruits the size of cherries, as well as a type of nut and the root of “a species of the orchid”, amongst other types of plant food. As noted by Attenbrow, however, the colonists’ lack of knowledge of the local plant species makes identification of the various plants used difficult (V Attenbrow 2010).

ARCHAEOLOGICAL MODELLING

McDonald has argued that environmental factors, such as stream order, are integral to developing a predictive model for the Sydney Basin (McDonald 1997a). Stream order modelling as a predictive tool can be utilised to anticipate the potential for Aboriginal camp site locations in the landscape based on the order of water permanence. McDonald (McDonald 1997a, McDonald 1997b, McDonald 1999) in particular, has drawn on stream order modelling to forecast the potential nature and complexity of sites in the Sydney Basin. These models can also be used to predict the possible range of activities carried out at a particular site and the frequency and/or duration of occupation.

Analysing stream order can allow researchers to locate areas of water permanence, which would have been vital for Aboriginal people. Abundant food and other resources are more likely to occur in areas of water permanence, which would in turn attract Aboriginal occupation. McDonald’s excavations of open artefact scatter sites at the ADI site in St Marys provided evidence of such a correlation (McDonald 1997b, p.133).

According to McDonald, the range of lithic activities and the complexity of the resulting stone assemblage observed at a location of permanent water also differs depending on stream order. Large knapping events tend to occur in proximity to sources of permanent water (McDonald 2000). This is likely due to the availability of resources that made these good places to camp for short periods. Small-scale knapping events can occur anywhere in the landscape and are usually associated with the manufacture or maintenance of stone tools as a direct result of a specific need. This indicates that knapping sites at locations further away from water courses may be more diffuse.

Overall, artefact scatters in the vicinity of higher order ranking streams reflect a greater range of activities (e.g. tool use, manufacture and maintenance, food processing and quarrying) than those located along lower order streams. Temporary or casual occupation of a site, reflected by an isolated knapping floor or tool discard, is more likely to occur on smaller, more temporary water courses (McDonald 1997a, p.127).

McDonald concludes that stream order modelling could be utilised to make general predictions about the location and nature of Aboriginal sites in the Sydney Basin. Water permanence (i.e. stream order), landscape unit (i.e. hill top, creek flat) and the proximity to artefact raw materials can result in variations in the density and complexity of an Aboriginal archaeological feature

(McDonald 1997a, McDonald 2000). Predictions of site location and duration of occupation relate to stream order in the following ways:

- Archaeological evidence will be sparse and represent little more than a background scatter in the headwaters of upper tributaries (i.e. first-order creeks);
- In the middle reaches of minor tributaries (second-order creeks) archaeological evidence will be sparse but indicate focused activity (e.g. one-off camp locations, single episode knapping floors);
- In the lower reaches of tributary creeks (third-order creeks) will be archaeological evidence of more frequent occupation. This will include repeated occupation by small groups, knapping floors (perhaps used and re-used), and evidence of more concentrated activities;
- On major creek lines and rivers (fourth order), archaeological evidence will indicate more permanent or repeated occupation. Sites will be complex, with a range of lithic activities represented, and may even be stratified;
- Creek junctions may provide foci for site activity; the size of the confluence (in terms of stream ranking nodes) could be expected to influence the size of the site; and
- Ridge top locations between drainage lines will usually contain limited archaeological evidence, although isolated knapping floors or other forms of one-off occupation may be in evidence in such a location (McDonald 2000,p.19).

This predictive model has been refined with a focus on the dominant environment and landscape zones of the Cumberland Lowlands, such as the Wianamatta Group Shales, Hawkesbury Sandstone, Quaternary alluvium, Quaternary Aeolian and Tertiary alluvium. Attenbrow (2010) discovered that the Quaternary alluvial deposits had a greater concentration of archaeological sites, which is likely the result of these deposits being located in the vicinity of major creek lines and rivers, such as Eastern Creek, Second Ponds Creek etc. Areas of alluvial deposits were found by Kohen (1993) to contain artefact scatters of a large and complex nature in close proximity to permanent creeks.

Originally excavated and assessed in 1971, the Henry Lawson Drive Rock Shelter (approximately 4.5 kilometres southeast of the study area) was reassessed by Peter Hiscock in 2003 to investigate patterns associated with stone technologies within the Greater Sydney region (Hiscock 2003). The shelter is approximately 16 by 2 metres and is located at the conjunction of Little Salt Pan Creek and the Georges River. 4 square metres of the floor deposit was originally excavated with 5 distinct stratigraphic levels, in the middle of which was a midden deposit containing oyster (*Saccostrea glomerata*), hairy mussel (*Trichomya hirsuta*) and Hercules Club Whelk *(Pyrazus ebeninus*), and animal bones. Radiocarbon dating of the midden deposit yielded an age estimate of 870 ± 95 years BP. Just outside the shelter, however, another deposit containing datable charcoal samples associated with a backed artefact aged 5240 ± 100 years BP. The assemblage within the shelter contained 2000 flakes 16 non-bipolar cores, 29 bipolar cores, 77 backed artefacts, 40 scrapers and two burins, primarily of silcrete but also containing chert, volcanic material, mudstone, quartz and quartzite (Hiscock 2003, p.66). Hiscock's analysis noted that cores within this shelter were reduced to a significantly smaller scale than what is common throughout eastern New South Wales assemblages. He noted this may be indicative of a "comparatively sedentary residential system" within this portion of the Sydney Basin and that variations in population activities and movements may differ over much smaller distances than originally assumed (Hiscock 2003, p.74).

One of the more comprehensive cultural heritage studies associated with the study area and its surrounds was conducted by Kayandel Archaeological Services (2010). The study aimed to identify known Aboriginal heritage sites and archaeological studies conducted within the Georges River estuary and to compile data that describes the archaeological nature of localities associated with the river. Kayandel Archaeological Services (2010, p.15) noted that ethnographic descriptions indicate that archaeological evidence for shell and fish refuse dumps, spear tips, barbs and fish hooks, fish traps and marked trees have a high potential to be located within the river itself, while terrestrial archaeological sites may yield evidence of "shell processing and domestic sites". They also note that sufficient predictive models for the archaeological record associated with the river are limited due to the lack of subsurface investigations and testing programs that have been

conducted. The models are generally created from surface investigations involving landform surveys (Kayandel Archaeological Services 2010, p.17).

4.2.2 HERITAGE DATABASE SEARCH

A search of the Heritage NSW AHIMS database was undertaken on 5 April 2024 (Client Service ID 879835). The results from the AHIMS search identified 53 previously recorded sites within a 5-kilometre radius of the study area. The search indicates that artefacts and modified trees are the predominant site types, both with 34% (n=18) of known sites belonging to each category (Table 4.2 and Figure 4.1). Artefacts and potential archaeological deposits (PADs) were the next most common site type (n=10, 18.9%). In addition, the vast majority of sites within this search are located on elevated flats adjacent to the Georges River.

Table 4.1 AHIMS sites within 5 kilometres of the study area

Feature Type	Total	%
Aboriginal Resource and Gathering, Potential Archaeological Deposit (PAD)	1	1.9%
Shell	1	1.9%
Potential Archaeological Deposit (PAD)	5	9.4%
Artefact, Potential Archaeological Deposit (PAD)	10	18.9%
Artefact	18	34.0%
Modified Tree (Carved or Scarred)	18	34.0%
Total	**53**	**100.0%**

For the purpose of Figure 4.1, Figure 4.2 and Table 4.2, it is assumed that the correct coordinate system has been registered for each site.

Table 4.2 shows that the most proximal sites to the study area are all artefact sites along the riverbank and flats in the vicinity of Georges River.

Table 4.2 Summary of sites recorded in the vicinity of the study area

Name	AHIMS No.	Type	Location Landform	Cadastral Boundary	Distance to study area (km)
Liverpool Weir ocs1	45-5-2540	Artefact	Riverbank	Crown Land	Adjacent
New Liverpool Public School	45-5-5507	Artefact	Flat	Lot 1, DP1137425	0.45km
Liverpool BHS GHS_AS01	45-5-5789	Artefact	Flat	Lot 1, DP1137425	0.5km
Liverpool BHS GHS_IA02	45-5-5790	Artefact	Flat	Lot 1, DP1137425	0.53km
Liverpool BHS GHS_IA01	45-5-5791	Artefact	Flat	Lot 1, DP1137425	0.38km

Searches of the NSW State Heritage Inventory (SHI) and the Liverpool (LEP) were conducted on 31 October 2023.

The searches identified the following heritage items jointly listed on the State Heritage Register (SHR) and the Liverpool Local Environmental Plan (LEP), located adjacent to the study area:

- *Liverpool Railway Station Group* (SHR # 01181 and LEP # 72) located approximately 18 metres to the west of the study area.

- *Liverpool Weir* (SHR # 01804 and LEP # 87) located directly adjacent to the to the study area to the west.
- *Liverpool TAFE College (former Liverpool Hospital)* (SHR # 01809 and LEP # 80) located approximately 126 metres to the north-west.
- *Liverpool Courthouse (former) and Potential Archaeological Site* (SHR # 01999 and LEP # 73) located 275 metres to the north-west.

The study area is located within a local heritage item on the Liverpool LEP 2008. This site is the *Former MM Cables Factory and Cable Makers Australia Factory Pty Ltd Group* (Liverpool LEP # 76). This site includes “inter-war administration building, factory and interiors” (Heritage Council of NSW n.d.). In addition, there are 30 LEP sites within 900 metres of the study area.

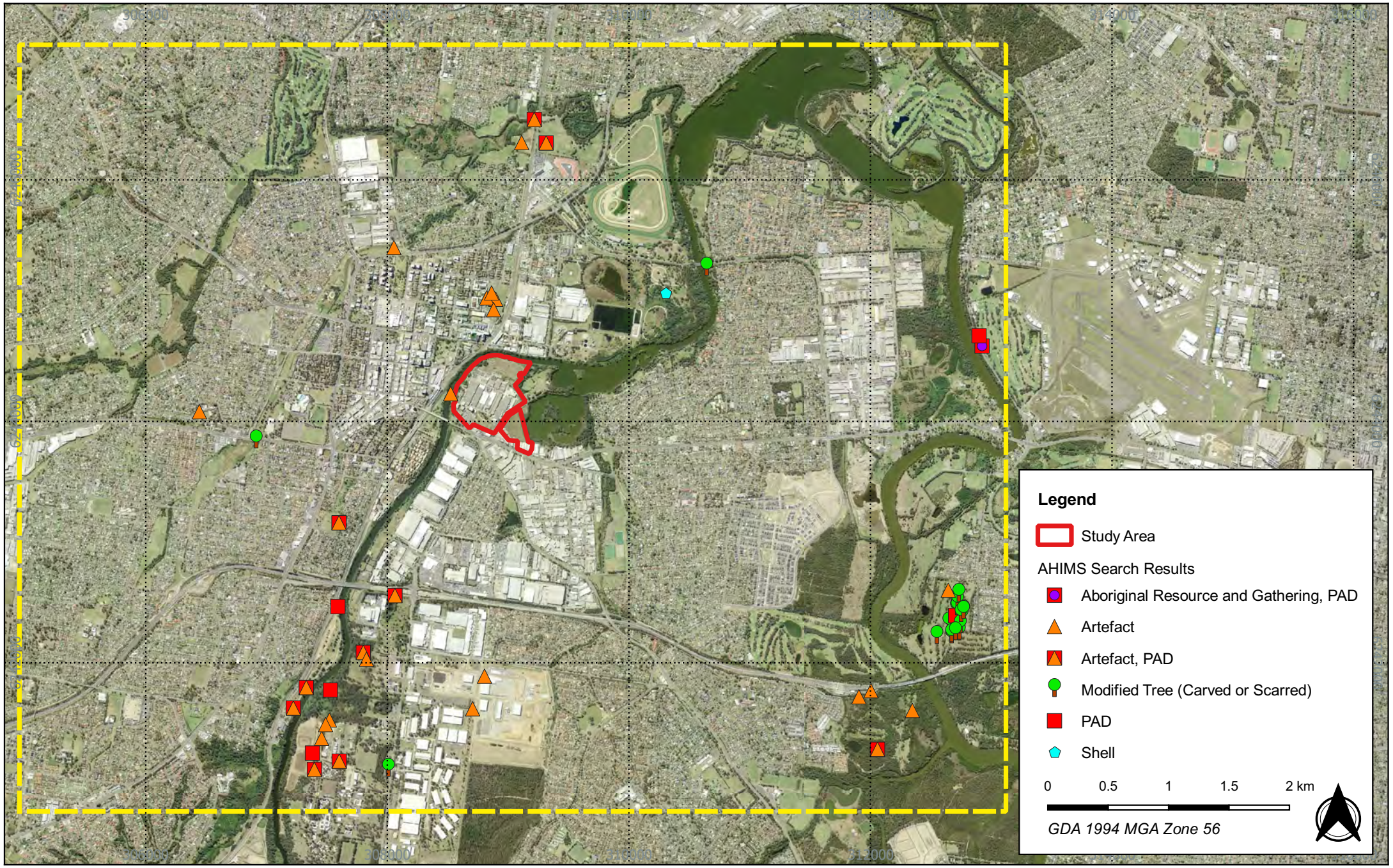

Figure 4.1 - AHIMS search results within a 5 kilometre search buffer

23036 -3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: NSW LPI Aerial

Drawn by: FOT Date: 2024-04-05

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Figure 4.2 - AHIMS sites in close proximity to the study area

23036 -3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: NSW LPI Aerial

Drawn by: FOT Date: 2024-04-05

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4.2.3 LOCAL ARCHAEOLOGICAL CONTEXT

Archaeological investigations of the Sydney Basin bioregion, and, in particular, the suburbs of Liverpool and Moorebank, 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 colonists were once considered the primary source for archaeological enquiry. However, with the recent spread of urban development within the Liverpool and Moorebank environs, archaeological investigations have increased accordingly.

A large volume of studies has been completed in the region, as such, this section presents a synopsis of selected archaeological investigations of direct relevance to the Study Area. These reports have been selected based on their landform context, proximity and in particular, relationship to the Georges River. The reports that have been reviewed are detailed in Table 4.3 and their location in relation to the study area is provided in Figure 4.3.

Table 4.3 Reports selected for review as part of local archaeological context

(Archaeological & Heritage Management Solutions 2015)Author	Date	Relevance to study area	Type of assessment
Haglund and Associates	1984	Archaeological Survey of Freeway No 5 Section Between King Georges Road, Beverly Hills & Heathcote Road, Moorebank – Assessment of 12.7 kilometres of land for proposed freeway. Located approximately 3.6 kilometres southeast of the current study area and within close proximity of the Georges River.	Desktop and Field Assessment
Cain	1991	An Archaeological Survey of the Toll Plaza Site for F5 South Western Freeway near Liverpool – located approximately 3.6 kilometres southeast from the current study area and is located adjacent (west) to the Georges River.	Desktop and Field Assessment
Central West Archaeological and Heritage Services Pty Ltd	2002	An Aboriginal Archaeological Study of the Proposed Hoxton Park Partial Sewerage Transfer Via Liverpool Submain – this site covered in this report is approximately 13 kilometres west of the current study area at its western most point.	Desktop and Field Assessment
Total Earth Care Pty Ltd	2008	Collingwood and Discovery Parks, Liverpool: Aboriginal Cultural Heritage and Archaeological Assessment – is located approximately 1.4 kilometres southwest of the current study area and is on the same geological formation.	Desktop and Field Assessment
Australian Museum Business Services	2008	Rosehill Recycled Water Scheme: Preliminary Cultural Heritage Assessment – is located on the Cumberland Plain like the current study area; the predictive model for this region could provide insight in the current area.	Desktop Assessment
Kayandel Archaeological Services	2010	The Georges River Estuary Cultural Heritage Desktop Assessment - Assessment was focused on the Georges River estuary zone, a 1st and 2nd order branch of which exists directly to the west of the study area.	Desktop Assessment
Artefact Heritage Services	2011	Light Horse Park, Liverpool: Aboriginal Heritage Due Diligence Assessment and Statement of Heritage Impact for non-Indigenous heritage for the proposed route of electricity feeder lines – located approximately 450 metres west of the current study area.	Desktop and Field Assessment

(Archaeological & Heritage Management Solutions 2015)Author	Date	Relevance to study area	Type of assessment
Archaeological & Heritage Management Solutions	2012	Aboriginal Heritage Study of Riverlands Golf Course, Milperra – Assessment of lands associated with the Riverlands Golf Course located on the terraces and slopes parallel to the main branch of the Georges River. Contains unmodified landforms with the potential to yield information regarding Aboriginal land use in a relatively undisturbed context. Located approximately 4 kilometres south-east of the study area.	Desktop and Field Assessment
Archaeological & Heritage Management Solutions Pty Ltd	2012	SIMTA Moorebank Intermodal Terminal Facility Part 3A Concept Application: Aboriginal Cultural Heritage Assessment – Located between 1.5 and 4.5 kilometres south of the current study area, it is adjacent to, and crosses, the Georges River.	Desktop and Field Assessment
Navin Officer	2014	Moorebank Intermodal Terminal: Aboriginal Heritage Assessment – Located between 1.5 and approximately 4.5 1.5 kilometres south-west of the current study area, located along the eastern bank of Georges River.	Field Assessment and Test Excavation
Navin Officer	2014	Moorebank Intermodal Terminal Facility Addendum Archaeological Subsurface Testing – MRSA2 – Located approximately 2.5 kilometres south-west of the current study area, located along the eastern bank of Georges River.	Field Assessment and Test Excavation
Navin Officer	2014	Moorebank Intermodal Terminal Liverpool City Council Northern Powerhouse Land – Aboriginal Heritage Assessment – Located 1.8 kilometres south of the current study area, located on the western bank of Georges River.	Field Assessment and Test Excavation
Archaeological & Heritage Management Solutions	2015	SIMTA Intermodal Terminal Facility, Moorebank NSW: Stage 1 Aboriginal Heritage Impact Assessment (AHIA) – Located approximately 2.5 kilometres and 4.4 kilometres south-west of the current study area.	Field Assessment and Test Excavation
Archaeological & Heritage Management Solutions	2015	SIMTA Intermodal Terminal Facility, Moorebank NSW: Stage 1 AHIA Addendum – An addendum to the SIMTA AHIA to account for an amendment to the Rail link. Located approximately 3.5 kilometres south of the current study area.	Desktop Assessment
Bankstown Bushland Society Inc.	2015	The scarred trees of Riverlands Forest, Milperra, New South Wales – summary of characteristics of scarred trees associated with the Riverlands Forest, at the time containing 1,300 remnant culturally marked trees. Located approximately 3 kilometres south-west of the study area.	Desktop and Field Assessment
Navin Officer	2015	Moorebank Intermodal Terminal Aboriginal Heritage Assessment – Addendum Scarred Tree Assessment (MA6 and MA7) – A study of culturally significant trees within the IMT precinct, located between 2.0 and 2.3 kilometres to the south-west of the current study area, located along the eastern bank of Georges River.	Desktop and Field Assessment
Artefact Heritage Pty Ltd	2016	Moorebank Precinct West (MPW) Stage 2 Proposal: Aboriginal Heritage Impact Assessment – Located approximately 1.8 southeast of the current study area and situated adject to the Georges River.	Desktop Assessment

(Archaeological & Heritage Management Solutions 2015)Author	Date	Relevance to study area	Type of assessment
Biosis Pty Ltd	2017	Moorebank Intermodal Terminal: Aboriginal Cultural Heritage Salvage Strategy - Located approximately 1.8 southeast of the current study area and situated adject to the Georges River.	Salvage Strategy
Eco Logical Australia	2016	Prysmian Site, Bridges Road, Moorebank – Aboriginal Heritage Assessment – An assessment of the Aboriginal heritage values within a portion of the current study area .	Desktop and Field Assessment
Extent Heritage Pty Ltd	2017	Moorebank Intermodal Terminal Development (Package 1): Aboriginal Archaeological Salvage Strategy - Located approximately 1.8 southeast of the current study area and situated adject to the Georges River.	Salvage Strategy
Comber Consultants Pty Ltd	2020	Riverlands Milperra Aboriginal Archaeological Assessment - Assessment of 83 hectares of land intended for residential subdivision located within landforms associated with the Georges River and associated streams. Located approximately 3 kilometres south-west of the study area.	Desktop and Field Assessment
Eco Logical Australia	2020	Moore Point Precinct Plan – Aboriginal Heritage Due Diligence Assessment – A Due Diligence report prepared for the current study area as part of the proposed redevelopment.	Desktop and Field Assessment
Kelleher Nightingale Consulting Pty Ltd	2020	Henry Lawson Drive, Hume Highway to M5 Upgrade ACHA – Assessment conducted along 7.5 kilometres of the Hume Highways running parallel to the Georges River, approximately 5 kilometres to the east of the study area.	Desktop and Field Assessment

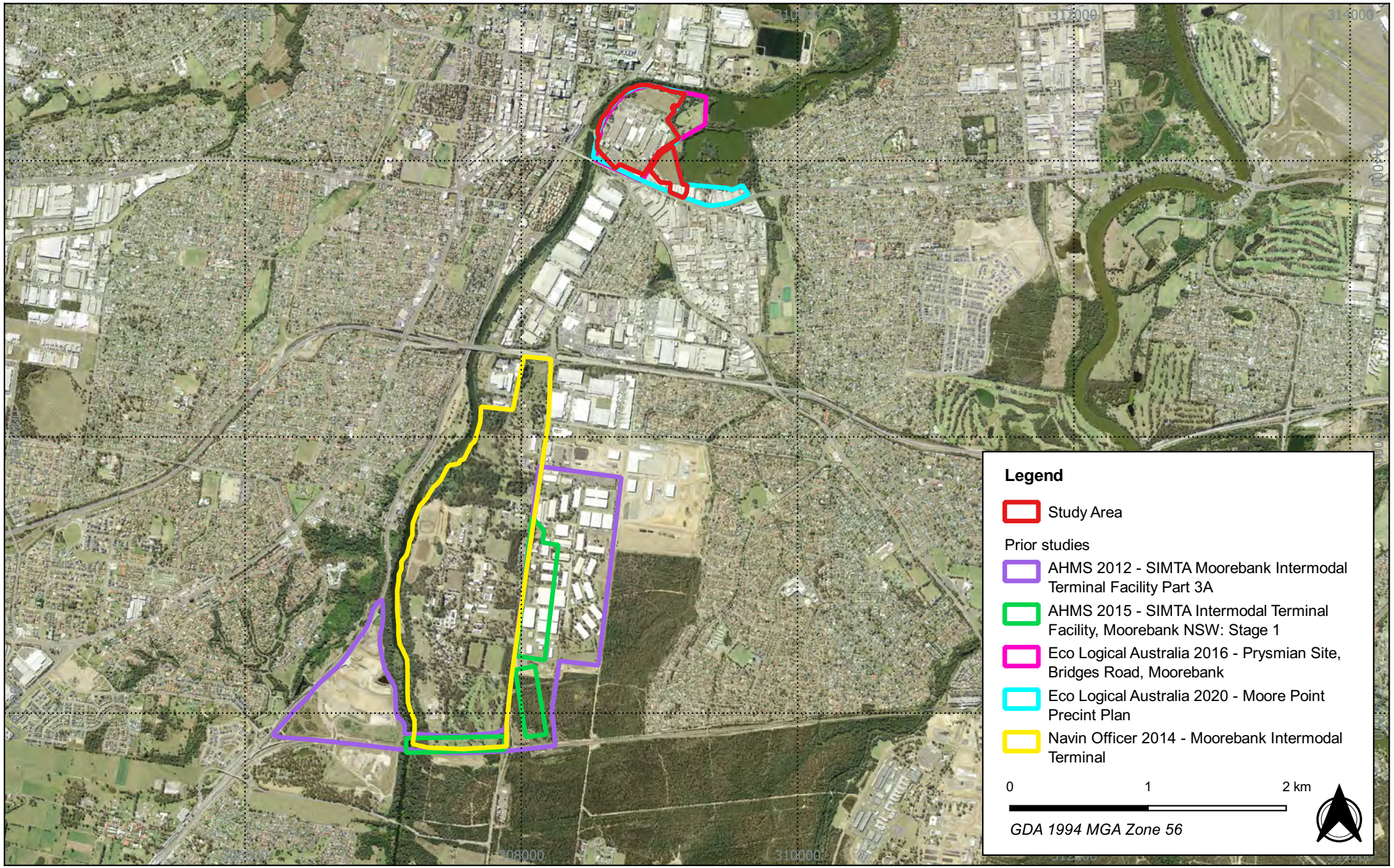

Figure 4.2 - Key studies undertaken in the vicinity of the study area 23036 - 3, 11, and 8-16 Bridges Road and 361 Newbridge Road, Moorebank - ACHA

Source: NSW LPI Aerial, Nearmap *Drawn by: FOT Date: 2024-04-09*

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ARCHAEOLOGICAL SURVEY OF FREEWAY NO 5 SECTION BETWEEN KING GEORGES ROAD, BEVERLY HILLS & HEATHCOTE ROAD, MOOREBANK - HAGLUND AND ASSOCIATES (1984)

Haglund and Associates conducted an Aboriginal archaeological survey of a section of road between King Georges Road, Beverley Hills and Heathcote Road, Moorebank. The study aimed to identify of the impact of the proposed development on Aboriginal sites.

The assessment area was located in a level to gently undulating landscape, with alternating low ridges and low-lying, poorly drained areas running across the Wianamatta shales. The area had previously been set aside for infrastructural development, but the land has not been utilised in this manner. Much of the land has been modified and used for drainage lines, grazing, gardens and recreation areas (Haglund and Associates 1984).

A pedestrian survey conducted on the open site identified dense vegetation cover (mostly grass) with poor ground surface visibility. The assessment identified and recorded 2 Aboriginal sites: an isolated artefact (n=1); and an artefact scatter (n=1). The artefact scatter, known as Greenwood 1., is located immediately to the west of Georges River within the area of the disused Greenwood Golf Course. It was recorded that occasional scatters and isolated artefacts were observed over an area approximately 750 metres in length. The scatters were interpreted as part of a much larger scatter that has since been partially destroyed by the Greenwood Golf Course. Approximately 39 artefacts make up the Greenwood 1. scatter, with a range of raw materials, including silcrete, mudstone, milky quartz and other volcanic rocks. Of the artefacts recorded, most were flakes and fragments, along with scrappers and blade flakes (Haglund and Associates 1984).

In contrast, the Isolated Find 1. site identified and recorded one greyish-pink silcrete flake in an area that had previously been disturbed by machinery. Two small, fragmented pieces of yellow and red silcrete were also located in the area, however, there is doubt as to the nature of the two fragments, as they exhibit no diagnostic features to allow for their interpretation as artefacts. It has been suggested that these silcrete fragments may have been introduced to the area in road material. They concluded that a reduced range of site types was present as a result of the absence of well-consolidated sandstone close to the surface and the lack of large mature trees. The highly modified and disturbed landscape was also considered and was interpreted as contributing to the lack of additional archaeological sites, even under the vegetated areas (Haglund and Associates 1984).

AN ARCHAEOLOGICAL SURVEY OF THE TOLL PLAZA SITE FOR F5 SOUTH WESTERN FREEWAY NEAR LIVERPOOL - CAIN (1991)

Cain conducted and archaeological investigation on behalf of Roads and Traffic Authority, NSW for the proposed development of a Toll Plaza adjacent to the F5 Freeway near Liverpool. This report is supplementary to the report completed by Haglund (1984), expanding on previously undertaken archaeological excavations to identify any additional unlocated Aboriginal sites within the Toll Plaza study area.

The study area is located on a remnant terrace of the Georges River, with alluvial deposits of podzolic soils over the Wianamatta shales. The area surveyed was mostly flat but sloped gently in the south-western corner in the location of the remnant terrace. Significant ground disturbance was evident in the area due to grazing and parts of the north-western margin having been graded as an access road to the F5 construction site, this disturbance also extended to the modifications made by the Greenwood Golf Course (Cain 1991).

On 27 May 1991, the 2.2-hectare study area was surveyed, resulting in 3 new Aboriginal sites being identified and recorded.

- Toll Plaza Site 1 (TPS1) was located on gently sloping alluvial soils at the eastern end of the study area with 5 artefacts observed in the artefact scatter.
- Toll Plaza Site 2 (TPS2) on the same alluvial soils as TPS1 contained a total of 10 artefacts within the scatter.
- Toll Plaza Site Isolated Find is the result of a small exposure from cattle disturbance on the same alluvial flats as TPS1 and TPS2.

- Toll Plaza Site Scarred Tree was located outside the study area, but markings were observed on the tree. After close examination by both archaeological and Aboriginal consultants it was concluded that the marks were made from a steel axe and therefore not included in the registered Aboriginal site for this survey (Cain 1991).

The artefact density for the study area is considered low, with 1 artefact per 15-20 metre square, likely resulting from the heavy disturbance of the area. The range of raw materials discovered at Toll Plaza included silcrete (62.50%), mudstone (31.25%) and quartz (6.25%) and comparison was drawn with the results of Haglund's (1984) survey showing similarity in their results (Cain 1991).

It was concluded that the surface artefact scatters did not appear to be *in situ* with no evidence of open camp site activities in the area. No subsurface excavation was undertaken or recommended for this survey as it was determined that artefacts discovered were most likely exposed because of lag deposits (Cain 1991).

AN ABORIGINAL ARCHAEOLOGICAL STUDY OF THE PROPOSED HOXTON PARK PARTIAL SEWERAGE TRANSFER VIA LIVERPOOL SUBMAIN - CENTRAL WEST ARCHAEOLOGICAL AND HERITAGE SERVICES PTY LTD (2002)

Central West Archaeological and Heritage Services Pty Ltd conducted an archaeological survey on behalf of Sydney Water for the proposed development of its sewerage transfer portion from Hoxton Park to Liverpool Sewerage Treatment Plant.

The study area to be surveyed is located on the highly disturbed Cumberland Plain, with landforms that consist of alluvial floodplains, river/creek banks and floodplain terraces. A 3.5-kilometre section of the alignment for the proposed pipeline was surveyed on foot over a 2-day period, with no Aboriginal sites identified. Based on the field survey and desktop assessments completed prior to the survey, it was concluded that the potential for Aboriginal artefacts occurring undetected on the surface or in sub-surface deposits was very low to nil, with no sub-surface testing taking place (Central West Archaeological and Heritage Services Pty Ltd 2002).

COLLINGWOOD AND DISCOVERY PARKS, LIVERPOOL: ABORIGINAL CULTURAL HERITAGE AND ARCHAEOLOGICAL ASSESSMENT - TOTAL EARTH CARE PTY LTD (2008)

Total Earth Care Pty Ltd completed an Aboriginal Cultural Heritage and Archaeological Assessment on behalf of Liverpool City Council for the proposed subdivision of Collingwood Park into residential subdivisions, with the remaining area to be retained as parklands/ open public space.

The study area is located on land that was once within the grounds of Collingwood House, Liverpool, a historic building dating from 1810. The area is on the Bringelly Shale geological landform with areas to the south of the study area composed of Minchinbury Sandstone and Ashfield Shale. Much of the landscape has been completely cleared with modifications that will have impacted the soil profile of the study area, with plantings of both native and introduced tree species.

A pedestrian survey was conducted on the study area with ground visibility between 2-5% throughout the entire area. The study area was broken into 4 survey areas that covered different landforms (level ridgetop, crest of a hill, steep mid-slope and gradual mid-slope).

No Aboriginal cultural heritage was identified during this survey, largely due to the disturbance of top soil from existing construction, heavily landscaping, unsealed roads from historical Collingwood House and car parks (Total Earth Care Pty Ltd 2008).

The desktop assessment identified that parts of this site and study area had been the subject of a previous survey by McDonald (1997) relating to the Collingwood House precinct. That survey recorded a bifacially ground hatchet head that had been found previously in the grounds, but this hatchet head was not registered on the Aboriginal Sites Register. A further 77 AHIMS registered sites were located in a 10 kilometre by 10 kilometre area of the study area, comprising artefact scatters (n=40), isolated finds (n=22), scarred trees (n=10), PADs (n=4) and middens (n=1) (Total Earth Care Pty Ltd 2008).

Total Earth Care Pty Ltd (2008) concluded that the site containing the hatchet head would be listed due to the extensive research present in McDonald's (1997) report, the archaeological potential of the site as assessed by the survey and consultation with the Aboriginal stakeholders involved.

ROSEHILL RECYCLED WATER SCHEME - PRELIMINARY CULTURAL HERITAGE ASSESSMENT - AUSTRALIAN MUSEUM BUSINESS SERVICES (2008)

Australian Museum Business Services conducted a preliminary cultural heritage assessment for the proposed Rosehill Recycled Water Scheme pipeline between Camellia and Fairfield NSW in 2008. The desktop study aimed to identify if the area of proposed development would impact any cultural heritage.

The study area covered a route of 20 kilometres over 4 LGAs (Parramatta, Bankstown, Fairfield and Holroyd). The route lay on the Cumberland Plain, which has been extensively investigated due to archaeological assessments being undertaken in response to expanding urban development. These studies have resulted in predictive models relating to Aboriginal occupation and the occurrence of Aboriginal sites in this landscape. The most common trends indicate that most Aboriginal sites are located close to permanent water sources on landforms such as alluvial flats, or on high ground that is close to water sources, food and raw material resources. Potential Archaeological Deposits (PADs) are more likely to be situated along low slopes and valley floors, and silcrete will dominate the raw materials utilised for tool manufacture.

The desktop study identified 116 previously recorded sites within 5 kilometres of the study area. Only 1 of these sites is located within the study area (AHIMS #45-5-3272) between Prospect Creek and Honour Avenue, Fairfield Park. No site card is available for this site, but AHIMS lists an isolated artefact and PAD. Based on the results of the AHIMS site search collectively with local and regional archaeological reports, a predictive model was created relating specifically to the study area. The predictions include but are not limited to: scarred trees in the vicinity of watercourses; rock shelters on high ground above water courses; and surface artefact contexts not being a reliable indicator of the presence of subsurface sites.

It was concluded based on their preliminary investigations that there are 6 locations of low to medium levels of archaeological significance within the Rosehill Recycled Water Scheme study area based on predictive modelling, the proposed depth of works against AHIMS registered sites and sensitivity mapping.

THE GEORGES RIVER ESTUARY CULTURAL HERITAGE DESKTOP ASSESSMENT - (KAYANDEL ARCHAEOLOGICAL SERVICES (2010)

Kayandel Archaeological Services (Kayandel) conducted a combined Aboriginal and historical heritage study of Georges River estuary spanning from Botany Bay to Liverpool Wier including its tidal waterways, bays, foreshores, and adjacent lands. The study aimed to collate and synthesise the available information on the Georges River estuary to allow for management measures to be generated.

The assessment of Aboriginal heritage values throughout the study area involved an AHIMS database search of the river spanning from Liverpool Weir to Kogarah Bay with an 80-metre buffer. The assessment identified 112 sites. Open middens were the most common site type (n=27), followed by middens in association with shelters (n=21) and middens in association with shelters and art (n=21) (Kayandel Archaeological Services 2010, pp.17–19). Middens were noted to be less common towards the western end of the study, determined to be a result of the ecology of shellfish and/or cultural factors in the ways estuaries were utilised by local Aboriginal populations.

Additionally, Kayandel identified 17 archaeological field assessments that had been conducted prior to their assessment, 10 of which located Aboriginal cultural material. A common comment amongst the assessments was that there was difficultly in generating predictive models of the study area due to a lack of subsurface investigation throughout the area. Many of the predictions made were based on desktop assessment and pedestrian surveying. Consequently, archaeological deposits, particularly within flood zones, are yet to be accurately assessed (Kayandel Archaeological Services 2010, p.17).

LIGHT HORSE PARK, LIVERPOOL: ABORIGINAL HERITAGE DUE DILIGENCE ASSESSMENT AND STATEMENT OF IMPACT FOR NON-INDIGENOUS HERITAGE FOR THE PROPOSED ROUTE OF ELECTRICITY FEEDER LINES - ARTEFACT HERITAGE SERVICES (2011)

Artefact Heritage Services conducted a due diligence assessment of Aboriginal heritage and an assessment of non-Indigenous heritage on behalf of Endeavor Energy for the proposed development of electricity feeder lines within Light Horse Park in Liverpool.

The study area is bound by Riverpark Drive to the west, Newbridge Road to the north, Georges River in the east and a residential area in the south. The area has been subject to high levels of disturbance with municipal landfill that included the dumping of household and building waste and intensive agricultural practices. The proposed development planned to cause further ground disturbance with the installation on 5 underground feeder lines (Artefact Heritage Services 2011).

Prior to the field survey, a desktop assessment was completed for the due diligence and the statement of heritage impact. The research for the statement of heritage impact identified the following heritage listed sites.

- The Liverpool Weir on the Register of National Estate, National Heritage Register, State Heritage Register and the Liverpool Environmental Plan (LEP) 2008 (#87).
- The Liverpool Railway Station Group on the State Heritage Register, LEP (#72) and the Section 170 Register.
- Light Horse Park on LEP (#70).
- Liverpool Railway Bridge on LEP (#86).
- Bigge Park Conservation Area on LEP.
- Liverpool Town Centre Archaeological Precinct on the State Heritage Inventory (#1970552) (Artefact Heritage Services 2011).

Background research for the due diligence on AHIMS of a 1.5-kilometre radius from the study area resulted in the identification of 2 new registered Aboriginal sites:

- 1 Aboriginal place within the vicinity of the study area. Collingwood Precinct, located 1 kilometre south-west.
- 1 Aboriginal site to the north of the study area. This site is the Liverpool Weir OCS1, which is an open camp site with 2 stone artefacts (Artefact Heritage Services 2011).

A pedestrian survey was completed within the study area on 18 April 2011. All exposure areas were surveyed for stone artefacts and shells, and riverbanks for scarred trees and rock engravings. High levels of disturbance and modifications were observed with landscaping and infrastructure potentially impacting any archaeological surface or sub-surface deposits. No Aboriginal sites were identified during the survey and the study area was assessed as having low archaeological potential and significance (Artefact Heritage Services 2011).

ABORIGINAL HERITAGE STUDY OF RIVERLANDS GOLF COURSE, MILPERRA - ARCHAEOLOGICAL & HERITAGE MANAGEMENT SOLUTIONS PTY LTD (2012)

Archaeological & Heritage Management Solutions (AHMS) conducted an Aboriginal Cultural Heritage study of the Riverlands Golf Course located within the boundaries of Georges River, the Southwestern Motorway and council parkland. The landscape is noted to contain Quaternary terraces associated with the river with a soil profile of several metres.

Geotechnical investigations indicated that the soil units within the area were largely related to fluvial, river basal deposits, with a single pit exhibiting characteristics of Aeolian and fluvial deposition (Archaeological & Heritage Management Solutions 2012, p.15). AHMS noted that the regular flooding of the river would have provided an abundance of resources for Aboriginal people, at the same time as causing extensive disturbance to the context of deposits and their overall integrity (Archaeological & Heritage Management Solutions 2012, p.20).

A pedestrian survey was conducted to locate landforms and characterise the overall environment of the assessment area. AHMS noted that the area was situated amongst lower slopes that

increased in elevation with increased distance from the Georges River. The area contained no areas of exposure allowing for the observation of soil profiles. The assessment area was mostly cleared of vegetation with small numbers of remnant trees, which were interpretated as indicating that some of the natural soil profile would be present throughout the study area and would potentially contain Aboriginal sites or objects. An elevated area within a few hundred metres of the study area was observed and noted to have been a likely area of occupation due to being less flood-prone than the remainder of the study area. No Aboriginal sites were located during the survey (Archaeological & Heritage Management Solutions 2012, pp.50–51).

AHMS assessed the area to have moderate to high potential for artefact scatters, middens and hearths within elevated landforms adjacent to the river. They also concluded via comparison of analysis between soil profiles adjacent to the Georges River, Parramatta River, and Hawkesbury-Nepean River, that the assessment area was likely to consist of 3000-year-old alluvium, although there was potential for deep alluvial deposits between 10,000 to 30,000 years old containing Aboriginal archaeological material (Archaeological & Heritage Management Solutions 2012, p.64).

SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY PART 3A CONCEPT APPLICATION: ABORIGINAL CULTURAL HERITAGE ASSESSMENT - ARCHAEOLOGICAL & HERITAGE MANAGEMENT SOLUTIONS PTY LTD (2012)

Archaeological & Heritage Management Solutions (AHMS) was commissioned by Hyder Consulting on behalf of SIMTA to prepare an Aboriginal Cultural Heritage Assessment for the works undertaken as part of the Sydney Intermodal Terminal project in Moorebank, covering an area of 83 hectares occupied by the Defence National Storage Distribution (Archaeological & Heritage Management Solutions Pty Ltd 2012).

The desktop assessment identified that the study area was located within the Cumberland Plain and a search of AHIMS identified 30 previously recorded sites (artefact scatter n=21, culturally modified trees n=6, PAD n=3 and rock shelter n=1) in the vicinity. None of these sites were recorded as being within the current study area.

A site survey was conducted in 2 phases, with phase (2010) identifying a large gentle hill displaying extensive modifications for defence activities. The Phase 2 pedestrian survey focused on the rail corridor and areas adjacent to Georges River and Anzac Creek. This survey covered creek flats, riverbanks, and river terraces, resulting in the dentification and recording of 7 new Aboriginal sites and 3 PADs (Archaeological & Heritage Management Solutions Pty Ltd 2012).

MOOREBANK INTERMODAL TERMINAL ABORIGINAL HERITAGE ASSESSMENT - NAVIN OFFICER (2014)

Navin Officer was commissioned by Parsons Brinckerhoff, on behalf of the (Commonwealth) Department of Finance and Deregulation, in 2010 to conduct an Aboriginal cultural heritage assessment of the Moorebank Defence precinct as part of the Moorebank Intermodal Terminal (IMT) Project. A series of field surveys and subsurface test excavations were conducted by Navin Officer as part of this project from 2010 to 2014. The IMT site is located between 1.5- and 4.5-kilometres south-west of the current study area, located along the eastern bank of Georges River.

The investigations led to the identification of areas of archaeological potential in landscape units comprising 100 metre zones either side of the Georges River, 100 metre zones either side of minor tributary drainage lines and 100 metre zones along the elevated slopes and riverside margin of the locally elevated tertiary alluvial terrace edge (Navin Officer Heritage Consultants Pty Ltd 2014a, p.21). Subsurface test excavation was undertaken within the PADs identified by AHMS in 2012 and Navin Officer in 2010, the sensitive landform units identified during the survey and representative sample areas. The following locations were excavated in 2012, involving the excavation of 59 test pits measuring 0.5 metres by 1 metre:

- MA1: tertiary terrace edge and Georges River riparian zone (4 test pits);
- MA5: tertiary terrace edge (11 test pits);
- PAD2: upper catchment of a minor tributary riparian zone along Anzac Creek (21 test pits);
- MAPAD1 (MA9): natural lake basin within a minor tributary riparian zone adjacent to a tertiary terrace edge (10 test pits);

- MRSA1 (MA10): Representative sample location 1 in a relatively undisturbed context along edge of the tertiary terrace and the Georges River (6 test pits); and
- MRSA3: Representative sample location 3 in a low archaeological potential area with minimal disturbance on the tertiary terrace away from edge and riparian zones (7 test pits).

264 artefacts were recovered from 26 pits, with the majority of artefacts from MAPAD1 (n=130) and MA5 (n=110), which were located within the vicinity of a natural lake basin within a minor tributary riparian zone adjacent to a tertiary terrace edge and within 100 metres of a tertiary terrace edge, respectively (Navin Officer Heritage Consultants Pty Ltd 2014a, p.61). No artefacts were identified in PAD2 along the minor tributary zone along Anzac Creek or in MRSA3 in a low archaeological potential area with minimal disturbance on the tertiary terrace away from edge and riparian zones (Navin Officer Heritage Consultants Pty Ltd 2014a, p.61). The majority of artefacts (n=245) were located within Spits 1-5, within the upper 500 millimetres of intact deposits (Navin Officer Heritage Consultants Pty Ltd 2014a, p.61). Pit 7 in MA5 along the tertiary terrace edge exhibited the highest artefact count (n=62), while the average density across the excavation was 20.31 artefacts per square metre (Navin Officer Heritage Consultants Pty Ltd 2014a, p.61).

Ten artefact types were identified, but the dominant artefact categories were flakes (n=183), of which 13 were retouched and 7 were utilised flakes, and flaked pieces (n=55) [Navin Officer Heritage Consultants Pty Ltd 2014, p.61]. Cores (n=12) and backed artefacts (n=6) were also identified (Navin Officer Heritage Consultants Pty Ltd 2014a, p.61).

The dominant material of the artefact assemblage was silcrete (n=135), with quartz (n=46), quartzite (n=40) and basalt (n=10) making up the majority of the rest of the assemblage, with small amounts of fine grained silicious (FGS), siltstone, mudstone, tuff, dolerite, fine grained igneous, limestone and chert (Navin Officer Heritage Consultants Pty Ltd 2014a, p.62).

The results demonstrated recent disturbance in the upper sections of the profiles excavated due to slope grading and 100-300 millimetres fill cover across the site, with removal/truncation of A0 and A1 profiles, infilling around former channels and wetter depressions, and use of machines to truncate and compress sediments (Navin Officer Heritage Consultants Pty Ltd 2014a, p.81). Where fill cover capped undisturbed A1, A2 (E) and B horizons, surface distribution was not a reliable indicator for subsurface archaeological remains (Navin Officer Heritage Consultants Pty Ltd 2014a, p.82)

Artefact densities for the test excavations in the Moorebank area identified intact deposits to be focussed along the edge of the tertiary terrace, as well as along the elevated flats along the Georges River (a high order stream) and at the confluence of resources (Navin Officer Heritage Consultants Pty Ltd 2014a, p.v). As such, a moderate to high density of artefacts comprising a range of artefact types was found at MAPAD1 (MA9) in proximity to the freshwater lake within a tertiary terrace along Georges River (Navin Officer Heritage Consultants Pty Ltd 2014a, pp.83–84). However, the variable densities along the eastern side of the Georges River demonstrate that occupation along the terrace was variable, but it is unknown if this is related to disturbance or due to occupation patterns (Navin Officer Heritage Consultants Pty Ltd 2014a, p.83).

The study concluded that soil and deposit sequence preservation in the investigated areas was highly variable and difficult to predict due to land use, development and ongoing geomorphic processes (Navin Officer Heritage Consultants Pty Ltd 2014a, p.82). The artefact assemblages at MA5 and MA9 (MAPAD1) along the eastern side of Georges River were identified as being representative of diverse and large assemblages associated with permanent water sources in well-drained aggrading landforms in a valley floor context (Navin Officer Heritage Consultants Pty Ltd 2014a, p.95). The assemblages were also identified as having archaeological research potential as undisturbed areas of tertiary terraces along the Georges River; as such, the sites were considered locally and regionally rare (Navin Officer Heritage Consultants Pty Ltd 2014a, p.95).

MOOREBANK INTERMODAL TERMINAL FACILITY ADDENDUM ARCHAEOLOGICAL SUBSURFACE TESTING - MRSA2 - NAVIN OFFICER (2014)

As part of the IMT project, Navin Officer conducted a separate test excavation in 2014 for MRSA2 due to safety concerns during the 2012 excavation program of the IMT site (Navin Officer Heritage Consultants Pty Ltd 2014b). MRSA2 (representative sample location 2) was located in a relatively

undisturbed context along the tertiary terrace edge. MRSA2 is located approximately 2.5 kilometres south-west of the current study area.

The 7 test pits, measuring 0.5 by 1 metres, varied between 170- and 500- millimetre depths, resulting in the recovery of 34 artefacts (Navin Officer Heritage Consultants Pty Ltd 2014b, p.5). The majority of the artefacts came from pit 3 (n=23), followed by pit 2 (n=9) and pit 6 (n=2), but those in pits 2 and 6 were recovered from fill deposits. The artefacts generally comprised flakes (n=23), with 1 retouched flake (n=1) identified, and were composed of silcrete, chert, FGS and quartz (Navin Officer Heritage Consultants Pty Ltd 2014b, p.5). The assemblage in pit 3 was recovered from 200 millimetre to 450 millimetre depths and was identified as an archaeological deposit (MA14) (Navin Officer Heritage Consultants Pty Ltd 2014b, p.12). The deposit in pit 3 indicated the presence of pockets of intact archaeological deposits along the tertiary terrace edge, supporting the results of the 2012 excavation program (Navin Officer Heritage Consultants Pty Ltd 2014b, p.12)

MOOREBANK INTERMODAL TERMINAL LIVERPOOL CITY COUNCIL NORTHERN POWERHOUSE LAND - ABORIGINAL HERITAGE ASSESSMENT - NAVIN OFFICER (2014)

In 2013, Navin Officer conducted a test excavation of site MAPAD2 in the Liverpool City Council Northern Powerhouse land as part of the IMT project (Navin Officer Heritage Consultants Pty Ltd 2014c). Site MAPAD2 is located 1.8 kilometres south of the current study area, located on the western bank of Georges River (Figure 4.4). Figure 4.4 also shows the location of the other sites and PADs recorded and excavated throughout the IMT project.

The test excavation involved the excavation of 45 test pits across MAPAD2, with three additional pits for geomorphological investigation in areas with archaeologically sterile upper layers (1200mm) (Navin Officer Heritage Consultants Pty Ltd 2014c, p.76). The deposits across the area comprised introduced poorly sorted clayey gravels in the southern and northern area (Unit 3), well-sorted light grey or light brown clean sands with well-preserved bedding structures and minimal soil development (Unit 2) and dark grey-brown silty sands with abundant charcoal (Unit 1) [Navin Officer Heritage Consultants Pty Ltd 2014c, p.76]. Artefacts were recovered from only 9 pits, comprising only 14 artefacts of silcrete (n=8), FGS (n=5) and quartz (n=1). The artefacts were identified as complete flakes (n=4), incomplete flakes (n=7), flaked pieces (n=2) and a broken core (n=1) (Navin Officer Heritage Consultants Pty Ltd 2014c, p.76). The artefacts were predominantly found within a 125-metre-long section in the southern area of MAPAD1 (n=13), while most artefacts (n=10) were found in spits 1-7 within the upper 700 millimetres of deposits (Navin Officer Heritage Consultants Pty Ltd 2014c, p.76).

The artefacts associated with Unit 3 fill in the southern end of MAPAD2 (MA11 - Pits 1 and 5) were interpreted as recent redeposition as a result of mechanical earthworks (Navin Officer Heritage Consultants Pty Ltd 2014c, p.77). The artefacts within Unit 2 fluvial sands in the centre were interpreted as intact (MA12 – Pits 9, 10. 12-14 and 42), as was a single artefact in the Unit 1 silt at the northern end of the area (Pit 34, Spit 9) (Navin Officer Heritage Consultants Pty Ltd 2014c, p.77). As Unit 1 was not able to be fully tested due to its depth below safe working depths (over 1.2m deep), MAPAD2 was assessed as retaining its archaeological potential (Navin Officer Heritage Consultants Pty Ltd 2014c, p.77). The test pits demonstrated well-preserved bedding structures, which has been interpreted as reflecting active sand mobilization and redeposition associated with 19th and 20th century flood events (Navin Officer Heritage Consultants Pty Ltd 2014c, p.77).

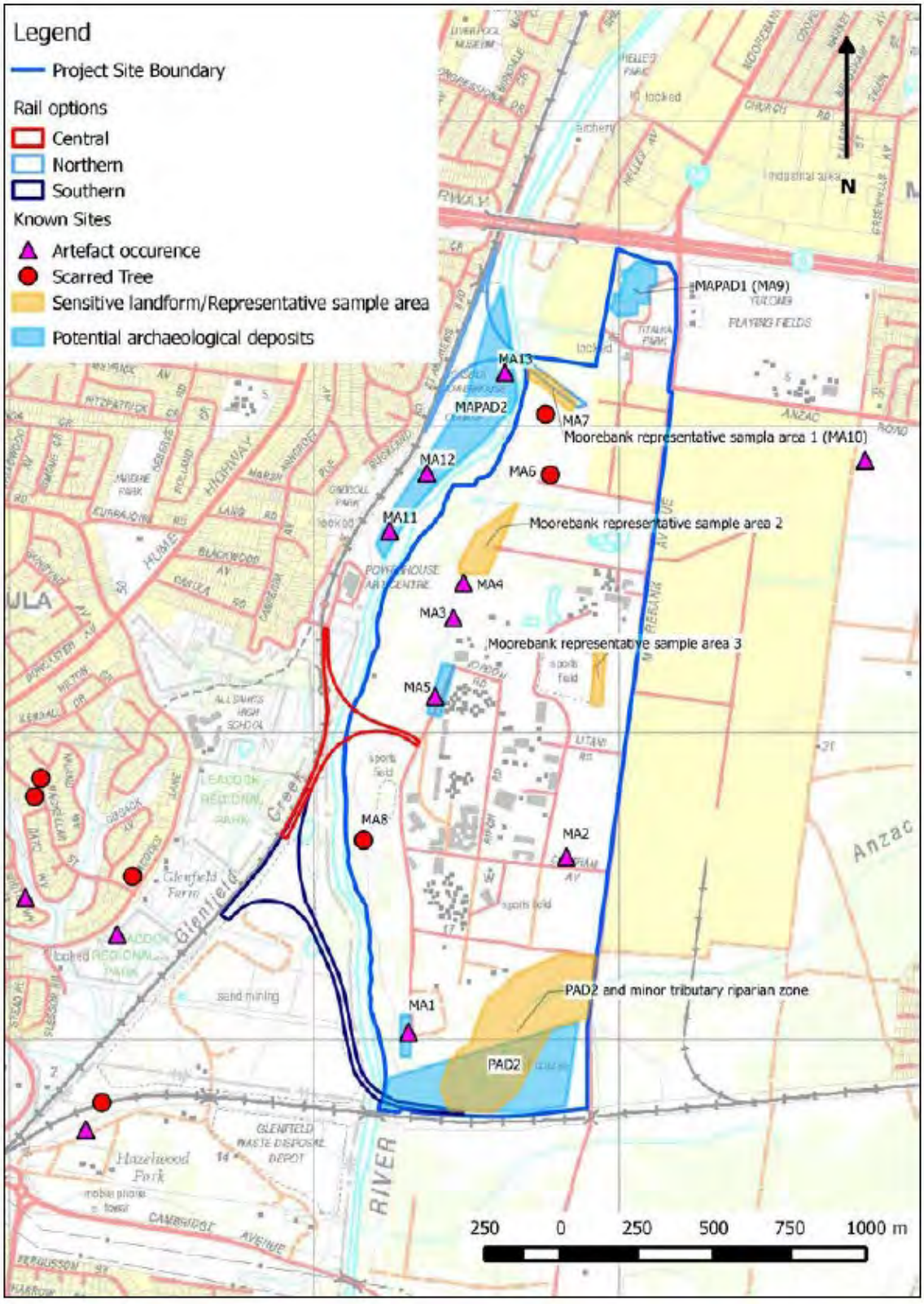

Figure 4.4 Map of the artefact sites and PADs recorded as part of the IMT/SIMTA project (Source: Navin Officer Heritage Consultants Pty Ltd 2014b, p.8).

SIMTA INTERMODAL TERMINAL FACILITY, MOOREBANK NSW – STAGE 1 AHIA - ARCHAEOLOGICAL & HERITAGE MANAGEMENT SOLUTIONS PTY LTD (2015)

AHMS Prepared an Aboriginal Heritage Impact Assessment (AHIA) for works being undertaken as part of the Sydney Intermodal Terminal Alliance (SIMTA) at Moorebank (Archaeological & Heritage Management Solutions 2015b). The site is located approximately 1.8 kilometres south-west of the current study area. The Stage 1 AHIA created a predictive model of the likely subsurface assemblages of the PADs identified in the 2012 ACHA.

Based on the predictive model, the Stage 1 works involved test excavations along the Stage 1 rail corridor, comprising 13 test pits, measuring 1 metre by 1 metre, with 20 metre spacings along the banks of the Georges River and Anzac Creek within PADs 2 and 3 (Archaeological & Heritage Management Solutions 2015b). 6 test pits were excavated along Anzac Creek (PAD3) and a further 7 test pits on the landscape overlooking Georges River (PAD2). Maximum depths for these test pits ranged from 500 – 900 millimetres and contained coarse silt soil overlying coffee rock clay subsoils, which is characteristic of flooding events along the Georges River. 28 Aboriginal cultural heritage objects were excavated from the test pits associated with Georges River, suggesting that this area experienced low occupation activity (Archaeological & Heritage Management Solutions 2015b, p.36). The objects were primarily recovered from spits 3 and 8/9, indicating at least two periods of occupation. Artefacts in the upper spits, including thumbnail scrapers and backed artefacts,_ were identified as middle Bondaian (3-0.2ka BP), whilst the core and tool scrapers in the lower spits were typologically dated to >5ka BP. The artefacts were made from milky quartz, silcrete, chert and tuff (Archaeological & Heritage Management Solutions 2015b, p.38). Optically stimulated luminescence (OSL) dating was completed on the assemblage resulting in 2 date ranges, further suggesting 2 different occupation periods. The artefacts from the upper level were found to have date to 3.8 ka BP, while the lower-level artefacts were dated to 18ka BP; this represents some of the earliest evidence of activity and potential occupation on the Georges River (Archaeological & Heritage Management Solutions 2015b, p.36).

The excavations at PAD3 resulted in no Aboriginal cultural objects being identified and the PAD2 site at Georges River was renamed MA14 in reflection of the Aboriginal cultural objects identified. It was concluded that the proposed works in the areas at Anzac Creek and Georges River (MA14), the proposed works had a potentially high risk of impacting Aboriginal sites (Archaeological & Heritage Management Solutions 2015b).

SIMTA INTERMODAL TERMINAL FACILITY, MOOREBANK NSW – STAGE 1 AHIA ADDENDUM - ARCHAEOLOGICAL & HERITAGE MANAGEMENT SOLUTIONS PTY LTD (2015)

In 2015, AHMS prepared an addendum AHIA for works being undertaken as part of the Sydney Intermodal Terminal Alliance at Moorebank in order to provide further information and an environmental assessment of an amendment to the rail link (Archaeological & Heritage Management Solutions Pty Ltd 2015).. This AHIA followed on from 2 previous investigations that AHMS undertook for the same project: an ACHA in 2012; and an AHIA (Stage 1) in 2015.

The works relating to the AHIA addendum involved the realignment of the Rail Link to the south of the Anzac Creek Crossing with the new alignment, retaining a 20-metre corridor in a sensitive landscape. The addendum comprised a desktop assessment of the results of the earlier surveys and excavations associated with the SIMTA project. The addendum noted that the 2012 ACHA previously identified the bushland to the south of the proposed realignment as a mostly undisturbed landscape with limited previous archaeological investigation (Archaeological & Heritage Management Solutions Pty Ltd 2012).. The ACHA also identified that there was heavy disturbance in the cleared area due to the construction of the East Passenger Railway Line of the amended Rail Link area (Archaeological & Heritage Management Solutions Pty Ltd 2012). The addendum looked at two sites within the riparian corridor of Georges River, located away from the amended rail link (Archaeological & Heritage Management Solutions 2015a, p.5).

The addendum concluded that the ridge overlooking Georges River and the riparian zone along Georges River were likely to contain Aboriginal objects and cultural material, while the area surround Anzac Creek would have little to no cultural material (Archaeological & Heritage Management Solutions 2015a, p.5). The rest of the Rail link area displayed extensive disturbance due to the construction of Moorebank Avenue, the golf course and the East Hills Railway Line. The Rail link crossings at Georges River and Anzac Creek were identified as having a high risk of

impact Aboriginal objects, with only the crossing at Georges River likely to result in impacts to significant cultural deposits.

THE SCARRED TREES OF RIVERLANDS FOREST, MILPERRA, NEW SOUTH WALES - BANKSTOWN BUSHLAND SOCIETY INC. (2015)

Bankstown Bushland Society compiled a list of culturally scarred trees within the Riverlands Forest of Milperra, detailing their characteristics based on a small sample group (6 trees) within the locality. The Riverlands environs contain 1300 remnant trees, including Forest Red Gum, Cabbage Gum, Scribbly Gum, Red Mahogany, Grey Box, Coast Grey Box, Blue Box, Ironbark, Thin-leaved Stringybark, White Stringybark, Rough-barked Apple, Heart-leaved Apple and Swamp Oak. A large proportion was noted to contain hollows used for animal habitation, indicating ages of over 200 years old. Trees within the locality often exhibited examples of multiple scarring, indicating they were impacted by several processes. Most scars were identified on Forest Red Gum trees due to their hard and durable outer bark. Although some scars were observed near the base of Scribbly Gums, the purpose of these scars were inconclusive (Bankstown Bushland Society Inc. 2015, pp.2–3).

Bankstown Bushland Society Inc. (2015, p.3) identified and categorised the following scar groups:

- Group 1 – 400-500 millimetres x 120-330 millimetres, oval or oblong in appearance likely used for food and water containers, digging shovels and other utensils.
- Group 2 – 1020-1600 millimetres x 270-320 millimetres, scars resulting from shield manufacturing.
- Group 3 – 3000 millimetres x 480-580 millimetres, large enough for the construction of small canoes (*nowies*) and covered shelters.

Bankstown Bushland Society Inc. (2015, p.5) observed that the density of natural tree hollows with human-made scars indicated that the area was likely an ideal location for hunting, camping and large seasonal gatherings. Variations in the sizing of scars within Group 2 indicate the potential creation of shields used for settling conflict rather than combat. They conclude that additional surveying and anthropological assessment should be carried out within the Riverlands to accurately characterise the region from a cultural heritage standpoint.

MOOREBANK INTERMODAL TERMINAL ABORIGINAL HERITAGE ASSESSMENT – ADDENDUM SCARRED TREE ASSESSMENT (MA6 AND MA7) - NAVIN OFFICER (2015)

Navin Officer was commissioned in 2015 to prepare an addendum Aboriginal Heritage Assessment to assess two trees of potential Aboriginal cultural significance within the IMT precinct (Navin Officer Heritage Consultants Pty Ltd 2015). The trees assessed, MA6 and MA7, are located 2.0 and 2.3 kilometres, respectively, to the south-west of the current study area.

MA6 and MA7 are located within 250 metres of the eastern bank of Georges River (Navin Officer Heritage Consultants Pty Ltd 2015). Both trees exhibited scars and, although the physical evidence was inconclusive, the trees were interpreted as having Aboriginal cultural significance by the consulted RAPs who attended the site survey (Navin Officer Heritage Consultants Pty Ltd 2015).

MOOREBANK PRECINCT WEST (MPW) STAGE 2 PROPOSAL: ABORIGINAL HERITAGE IMPACT ASSESSMENT - ARTEFACT HERITAGE PTY LTD (2016)

Artefact Heritage was commissioned to prepare an Aboriginal Heritage Impact Assessment for Arcadis for the development of intermodal freight terminal facilities at Moorebank. This is the stage 2 report that proceeds the approved Concept Plan (SSD 5066) for the above-mentioned development.

Stage 2 involves the construction, operation of the intermodal facility, and any associated warehousing. The study area is bounded by Georges River to the west, Moorebank Avenue to the east, the East Hills Railway Line to the south and the M5 Motorway to the north forming Lot 1 DP 1197707. An extensive search of the AHIMS database identified 16 previously recorded Aboriginal sites (artefact n=5, artefact; PAD n=5, modified tree n=4, and PAD n=2). Based on these results and that from previous archaeological reports in the area a predictive model has been created predicting that the site types likely to be identified within the study area will include scar trees,

isolated finds, open artefact scatters and PADs within sensitive landscapes of the Georges River and minor tributary riparian corridors and elevated slopes.

As part of this report, recorded scar trees MA6 and MA7 were revisited to assess the condition of these trees and discuss the management recommendations of them as works are likely to impact these 2 sites. It was proposed the trees could be moved to an area of protection or that the scarred portion only could be removed and relocated to protected traditional land. Dendrochronological dating of the trees has MA6 listed as between 265-219 years placing the creation of the scar to just before or shortly after European arrival to Australia. MA7 on the other hand has been put at 86 years of age, with the scar having been created after the military took over the land.

The Aboriginal cultural significance of both these scarred tree sites is high despite their age difference and circumstances. However, archaeologically MA6 has been listed as high while MA7 has been listed as low (Artefact Heritage Pty Ltd 2016).

PRYSMIAN SITE, BRIDGES ROAD, MOOREBANK – ABORIGINAL HERITAGE ASSESSMENT - ECO LOGICAL AUSTRALIA (2016)

In 2016, Eco Logical Australia were commissioned by LAC JV Pty Ltd to prepare an Aboriginal Heritage Assessment for the redevelopment of the former Prysmian sites at 11 Bridges Road, Moorebank, which included the majority of the current study area.

The desktop assessment and field assessment identified significant subsurface disturbance within the current study area as a result of the industrial use of the study area as an industrial site during the 20th century, the excavation of zig-zag shaped trenches along Georges River in World War II, as well as the expansion and mining of the lakes for topsoil within the south-eastern portion of the current study area (Eco Logical Australia Pty Ltd 2016). The report also noted that the western section of the study area along Georges River was mined for the rich topsoil during the 20th century, causing erosion of the riverbanks, and resulting in rehabilitation works to restore the riverbanks from 1977 onwards (Eco Logical Australia Pty Ltd 2016). The assessment noted that the south-western portion of the study adjacent to the Liverpool Weir had been filled and levelled, while the southern portion contained a cable factory site which had likely resulted in the removal of topsoil. The northern area of the study area within 11 Bridges Road was identified as an area of archaeological with low to moderate levels of disturbance due to land clearance, cropping and rubbish dumping (Eco Logical Australia Pty Ltd 2016).

The report concluded that Aboriginal test excavations would only be required in works would require excavation below the existing full to the natural soil horizon (Eco Logical Australia Pty Ltd 2016).

MOOREBANK INTERMODAL TERMINAL: ABORIGINAL CULTURAL HERITAGE SALVAGE STRATEGY - BIOSIS PTY LTD (2017)

Liberty Industrial on behalf of SIMTA commissioned Biosis to complete an Aboriginal cultural heritage salvage strategy for the Moorebank Intermodal Terminal.

The Aboriginal cultural heritage values for the project were assessed via an archaeological survey, test excavation, literature and database review, Aboriginal consultation and the assessment of significance and proposed impacts or which 14 Aboriginal sites were identified and recorded. Of the 14 sites identified, only 4 surface sites (MA1, MA2, MA3 and MA4) required salvage, and 2 surface sites (MA5 and MA9) required salvage excavation.

MA5 is situated on a river terrace associated with the Georges River of which previous excavations recovered 110 artefacts from a total of 11 test pits with the most common raw material being silcrete. In contrast, MA9 located near an unnamed lake and within tertiary terrace recovered 133 artefacts from 11 test pits with flakes the most common type and silcrete the most common raw material.

The salvage excavation endeavoured to answer the following research questions:

- *Is there evidence of taphonomic processes evident in the soil profile?*
- *Do sites MA5 and MA9 have stratified deposits that could be used for dating? Specifically deep deposits?*

- *Do sites MA5 and MA9 represent a place where specific activities took place, such as production, resource exploitation, or trade?*
- *Can the lithics assemblage provide evidence of the type of occupation at this site? Is the site considered a camp site or was the occupation transitory?*

The salvage pits for both MA5 and MA9 were proposed to extend to a maximum size of 10 metres x 10 metres to ensure that the highest amount of Aboriginal cultural materials was recovered (Biosis Pty Ltd 2017). As the subsequent test excavation report is not currently available, the results of this salvage excavation have not been included in the current report.

MOOREBANK INTERMODAL TERMINAL DEVELOPMENT (PACKAGE 1) ABORIGINAL ARCHAEOLOGICAL SALVAGE STRATERGY - EXTENT HERITAGE PTY LTD (2017)

Extent Heritage (formerly AHMS Pty Ltd) was commissioned to undertake the Aboriginal archaeological salvage strategy for the SIMTA Intermodal Facility at Moorebank following their involvement in the Concept Approval and formal AHIA portion of the project.

The AHIA resulted in the identification of 13 Aboriginal cultural objects (MA14) from a levee bank that is located on a ridgeline overlooking Georges River, and that extends over the rail corridor construction area. OSL dating was completed on the assemblage that included backed artefacts and thumbnail scrapers, resulting in 2 date ranges, further suggesting 2 different occupation periods. The artefacts from the upper level have an age of 3.8 ka while the lower-level artefacts were aged at 18ka, this also represents some of the earliest evidence of activity and potential occupation on the Georges River. MA14 is considered a site of local significance with high potential to be of state importance if further Aboriginal material culture is found. Recommendations of archaeological salvage to be undertaken at this site were put forth in the AHIA.

This report considers a revised salvage location for MA14 so as to avoid unnecessary impacts to the archaeological deposit that is outside the rail corridor and to also avoid disrupting Ecologically Endangered Community (EEC) vegetation. The revised location is still within the MA14 site and in sight of the test pit #3 where the Aboriginal objects were recovered, but within the rail corridor. The new methodology for excavation will focus on an area 100m² approximately 10 metres south of TEST PIT #3 WITH MANUAL EXCAVATION OF 1 METRE X 1 METRE PITS (EXTENT HERITAGE PTY LTD 2017).

RIVERLANDS MILPERRA ABORIGINAL ARCHAEOLOGICAL ASSESSMENT - COMBER CONSULTANTS PTY LTD (2020)

Comber Consultants conducted an Aboriginal archaeological assessment of approximately 83 hectares of land along Prescott Parade and Martin Crescent Milperra, intended for residential subdivision and development.

The assessment area was located within an undulating alluvial floodplain and a low ridgeline sloping west toward the Georges River. The area was used as a golf course for 60 years before the assessment, which resulted in extensive landscaping. A portion of the area was also used for sand mining. This, along with the frequent flooding evens of the Georges River, indicated that while archaeological evidence may have been present, *in situ* deposits were considered to be a highly unlikely discovery (Comber Consultants Pty Ltd 2020, p.12).

The assessment area was surveyed by four people, covering river flats (20% effective coverage) and undulating rises (30% effective coverage). The river flats were noted to be bare of topsoil likely due to regular inundation and sand mining. The rises were noted to generally not have been affected by flooding events due to their elevation. Prior testing indicated evidence of Aboriginal cultural material to be present within these landforms and, as such, the landforms were treated as culturally sensitive. No Aboriginal sites were located during the outlined survey (Comber Consultants Pty Ltd 2020, p.19).

MOORE POINT PRECINCT PLAN – ABORIGINAL HERITAGE DUE DILIGENCE ASSESSMENT - ECO LOGICAL AUSTRALIA PTY LTD (2020)

In 2020, Eco Logical Australia was engaged by Moore Point Landowners Group to prepare an Aboriginal Due Diligence report for the current study area as part of the Moore Point Precinct

redevelopment. This assessment also included additional areas along Newbridge Road which are outside of the scope of the current assessment.

The report noted the location of the study area within the Blacktown Residual Soil landscape, with a small section in the south-eastern portion within the Richmond Alluvial Soil landscape (Eco Logical Australia Pty Ltd 2020, p.16). The report noted the high survivability of artefacts within the Blacktown landscape, but the low survivability of organic materials due to the high acidity levels (Eco Logical Australia Pty Ltd 2020, p.16). The assessment also noted that the Blacktown and Richmond soils tend to deflate or erode, resulting in temporal collapse and accumulation of archaeological objects from multiple phases in a single cultural layer (Eco Logical Australia Pty Ltd 2020, p.16).

The Due Diligence report identified 4 survey units across the study area (Figure 4.5). Survey Unit 1 contained the Prysmian Cable Factory and the Joyce Foam Factory, as well as the riparian corridor along the eastern bank of the Georges River (Figure 4.5). This unit was identified as exhibiting heavy disturbance due to the construction of the factory buildings, roads and related infrastructure, as well as the introduction of fill material in areas of exposed soil to establish a flat landscape above the height of the Georges River (Eco Logical Australia Pty Ltd 2020, p.21).

Survey Unit 2 contained the vacant, grassed area to the north of the Prysmian Cable Factory, along Georges River (Figure 4.5). The assessment noted that the area contains a gravel road, dumped rubbish and mounding across the unit, as it was previously used as landfill site (Eco Logical Australia Pty Ltd 2020, pp.22–23). However, the north-western area of the survey unit within the riparian zone was identified as having moderate archaeological potential due to the likelihood of an intact natural soil profile beneath the fill material (Eco Logical Australia Pty Ltd 2020, pp.22–23).

Survey Unit 3 within a vacant property adjacent to Lake Moore in the south-eastern portion of the study area was assessed as exhibiting heavy mounding in the northern portion of the survey unit, likely associated with the earthworks for the adjacent Lake Moore. The assessment also noted that the landscape unit has been disturbed due to soil movement, farming and building construction (Eco Logical Australia Pty Ltd 2020, pp.22–23).

Survey Unit 4 within the southern section of the study area along Newbridge Road, of which only a small section is within the current study area, was assessed as significantly disturbed due to the construction of the commercial buildings and underground infrastructure in this area (Eco Logical Australia Pty Ltd 2020, p.24).

The report concluded that any works within the north-western riparian corridor area in Survey Unit 2 should be avoided, but if not possible, that test excavation would be required to determine the presence of Aboriginal objects (Eco Logical Australia Pty Ltd 2020, p.27). A stop works procedure was recommended for the rest of the study area (Eco Logical Australia Pty Ltd 2020, p.27).

Figure 4.5 Survey units recorded as part of the IMT/SIMTA project (Source: Eco Logical Australia Pty Ltd 2020, p.25)

HENRY LAWSON DRIVE, HUME HIGHWAY TO M5 UPGRADE ACHA - KELLEHER NIGHTINGALE CONSULTING PTY LTD (2020)

KNC was commissioned to conduct an archaeological assessment of a 7.5-kilometre section of Henry Lawson Drive, the M5 and a portion of Milperra Road intended for an upgrade as part of a larger upgrading program. The assessment area contained an array of landforms, including low-lying hills, floodplains, slopes, spur lines and ridgelines.

Before KNC's assessment, a survey was conducted by GML heritage that identified 12 sites within the Preliminary Environmental Investigation for the Henry Lawson Drive Upgrade (Hume Highway to M5): three surface artefact scatters with associated areas of PAD (HLD Site 1 (AS+PAD), HLD Site 3 (AS+PAD) and HLD Site 4 (AS+PAD)); two isolated surface artefacts (HLD Site 2 (IF) and HLD Site 5 (IF)); and seven areas of Potential Archaeological Deposit (PAD) where surface artefacts were not identified (HLD PADs 1-6 and HLD Resource Zone 1 with PAD).

KNC conducted archaeological test excavations following GML's recommendations, the results of which are summarised in Table 4.4. All pits were 50 x 50 centimetres, dug by hand and dry sieved.

Table 4.4 Summary of KNC test excavations

Site	Landform	No. of test pits	No. of Artefacts	Discussion of results
HLD Site 1 (AS+PAD)	Slope	4	0	The area was variably disturbed, test pits in the north were shallow and test pits in the south contained a fill above the natural soil profile.
HLD Site 3 (AS+PAD)	Crest	9	1	The area was variably disturbed with portions of the area containing additional fill material or, in some

Site	Landform	No. of test pits	No. of Artefacts	Discussion of results
				cases, no natural soils. The single artefact was a yellow silcrete distal flake.
HLD Site 4 (AS+PAD)	Crest	7	1	Testing confirmed the presence of a low-density subsurface deposit subjected to variable levels of disturbance. Test pits generally exhibited shallow soils with iron-manganese nodules indicating the area may have been subject to waterlogging. The low density of the site was considered to be unusual due to its proximity to Prospect Creek and Georges River, although it was consistent with other investigations throughout the area.
HLD PAD 1	Crest	2	0	Excavations detected very shallow soils with no potential for archaeological deposits at depth. The site was declassified.
HLD PAD 2	Ridgeline Slope	4	1	A single milky quartz flake was detected at a depth of 20-30 centimetres, confirming the presence of a very low-density archaeological deposit. The area generally contained shallow- to medium-depth remnant soils on elevated locations in the vicinity of higher order streams.
HLD PAD 3	Terrace	5	12	PAD 3 had an average artefact density of 2.4 artefacts per square metre, yielding silcrete (66.7%), tuff (25%), and chert (8.3%) flakes and fragments. The artefacts did not reflect the underlying geology, indicating that they were imported from the North Western Cumberland Plains' St Mary's Formation and Rickaby's Creek Gravels. Despite evidence of disturbance to the soil profile, the findings indicate the site was relatively intact.
HLD PAD 4	Spur Crest	6	8	The distribution of artefacts within the testing area was described as low density, with an average artefact density of 5.3 artefacts per square metre. Artefacts consisted of silcrete (75%) and tuff (25%) flakes and fragments. The artefacts did not reflect the underlying geology, indicating they were imported from the North Western Cumberland Plains' St Mary's Formation and Rickaby's Creek Gravels. Despite evidence of disturbance to the soil profile, the findings indicate the site was relatively intact.
HLD PAD 5	Floodplain	5	0	Excavations determined that the area had been entirely disturbed and contained fill material. The site was declassified.
HLD PAD 6	Floodplain	5	0	Excavations determined the area had been entirely disturbed and contained fill material. the site was declassified
HLD Resource Zone 1 with PAD	Low-lying Flat	11	0	The soil profile was extremely disturbed due to past farming practices. Minor traces of remnant soils were located, but these did not retain any archaeological remains. The site was declassified.

KNC noted that the preservation of archaeological materials was highly influenced by geology, soil landscape, fluvial activity and ground surface disturbance. They noted that raw materials were likely to have originated from cobbles of St. Mary's and Rickaby's Gravel units distributed on the Nepean River on the south coast. 4 of the 12 sites were declassified as Aboriginal sites as archaeological material was not detected. These areas were highly disturbed, low lying and likely to have been regularly impacted by flooding events associated with the Georges River. Sites containing cultural material were generally located on elevated areas approximately 150-200 metres from the main branch of the river and contained sufficient levels of the natural soil profile to be effectively analysed (Kelleher Nightingale Consulting Pty Ltd 2020, p.64).

5 PREDICTIVE MODEL

Austral has used the information produced as part of the archaeological and environmental context sections to formulate a broad predictive model that identifies the type and character of Aboriginal cultural heritage sites that may be present within the study area.

The predictive model is based upon the analysis of the following key variables:

- Relationship between site types and their spatial distribution within the landscape.
- Raw site types, raw material types and site densities and their relationship to salient environmental features.
- Information in ethnohistorical sources that may indicate important natural resources or landscape features that may have been exploited.
- Potential chronological and spatial relationships between sites

A predictive model has been developed based on the consideration of the variables outlined above that indicates the lively site types that will be encountered during the archaeological survey and archaeological testing.

5.1 ANALYSIS OF KEY VARIABLES

The AHIMS search completed in association with this project has identified several trends in Aboriginal site types and distributions throughout the region. Artefacts and modified trees were the most common site feature recorded, each comprising 34.0% of the sample (n=18), followed by sites exhibiting both artefacts and potential archaeological deposits (PADs) [n=10, 18.9%]. Overall, 52.8% (n=28) of the nearby sites contained artefacts, including independent sites and composite sites containing multiple features. Of these, 64.3% (n=18) of artefact sites were noted to occur independently of other site features, noting that 79.2% of total sites (n=42) were recorded as independent features within the landscape, rather than composite sites containing multiple features. Overall, 30.2% (n=16) were found to include PADs, but only 31.3% (n=5) of the PAD sites were recorded as independent features.

It should be noted that any analysis using AHIMS data will be prone to biases, as it relates to sites that have been recorded over the past 40 years. During this time, varying methodologies have been used to identify sites and a large portion of the surrounding landscape may have been subject to limited or no assessment. Therefore, site distribution is likely to be reflective of survey methods and patterns and should not be considered a comprehensive list of all Aboriginal sites within a given region.

A summary of Aboriginal heritage sites within 5 kilometres of the study area is included in Table 5.1.

Table 5.1 Summary of sites recorded within a 5 kilometres radius of the study area.

Feature Type	Total	%
Aboriginal Resource and Gathering, Potential Archaeological Deposit (PAD)	1	1.9%
Shell	1	1.9%
Potential Archaeological Deposit (PAD)	5	9.4%
Artefact, Potential Archaeological Deposit (PAD)	10	18.9%
Artefact	18	34.0%
Modified Tree (Carved or Scarred)	18	34.0%
Total	**53**	**100.0%**

5.1.1 SOIL LANDSCAPE

The study area is primarily within the Blacktown soil landscape; however, small portions in the southeastern contexts of the study area are noted to be located within either disturbed terrain or the Richmond soil landscape.

The Richmond soil landscape is noted as containing the highest density of sites in proximity to the study area (n=23, 43.4%), with modified trees (n=9) and artefacts (n=5) recorded as the most common site feature, followed closely by sites of PAD (n=4) and combined artefact and PAD sites (n=4). Similar trends are recorded within the nearby Blacktown soil landscape contexts. Within 5 kilometres of the study area, 12 sites were identified within Blacktown soils (22.6%). As with the Richmond landscape, modified trees were the most common site feature (n=7, 58.3%), followed by artefacts (n=5, 41.7%). It is noted that the sample lists 100% of sites recorded within the Blacktown landscape as occurring independently of other site features, compared to 78.3% (n=18) of sites from the Richmond landscape. This is likely representative of sample bias, rather than indicative of sites throughout the region as a whole.

It is also noted that artefacts (n=1) and shell (n=1) sites were found within disturbed terrain, representing a total 3.8% of the sites within 5 kilometres of the study area. However, such sites would have been found *ex situ* in disturbed contexts rather than *in situ,* and so may represent objects from the study area that were redeposited during earthworks, or else, introduced to the study area from off-site.

A visualisation of recorded site distributions by soil landscape is provided in Figure 5.1.

Figure 5.1 Site distributions in the vicinity of the study area by soil landscape.

5.1.2 GEOLOGY

The given geological unit within an area determines the availability of raw materials and conditions suitable for habitation and artefact manufacture. As such, there is a profound interrelation between geological formation and the presence and composition of tangible sites. In proximity to the study area, the majority of sites are found within the various alluvial units found amongst the local landscape (n=36, 67.9%). This is likely due to the proximity of the study area to the Georges River. This high volume of sites in contexts prone to post-depositional movement of sediment suggests a lower probability of rediscovering artefact materials in *in situ* contexts, or a loss of preservation potential associated with the waterlogging of soils.

The alluvium landscape is the individual geological unit containing the greatest density of recorded sites (n=17, 32.1%), followed by the Ashfield Shale landscape](n=15, 28.3%). Alluvial floodplain

deposits, in which the entire study area is located, also has a high density of recorded sites in the nearby area (n=14, 26.4%). An overview of these distributions is provided in Figure 5.2.

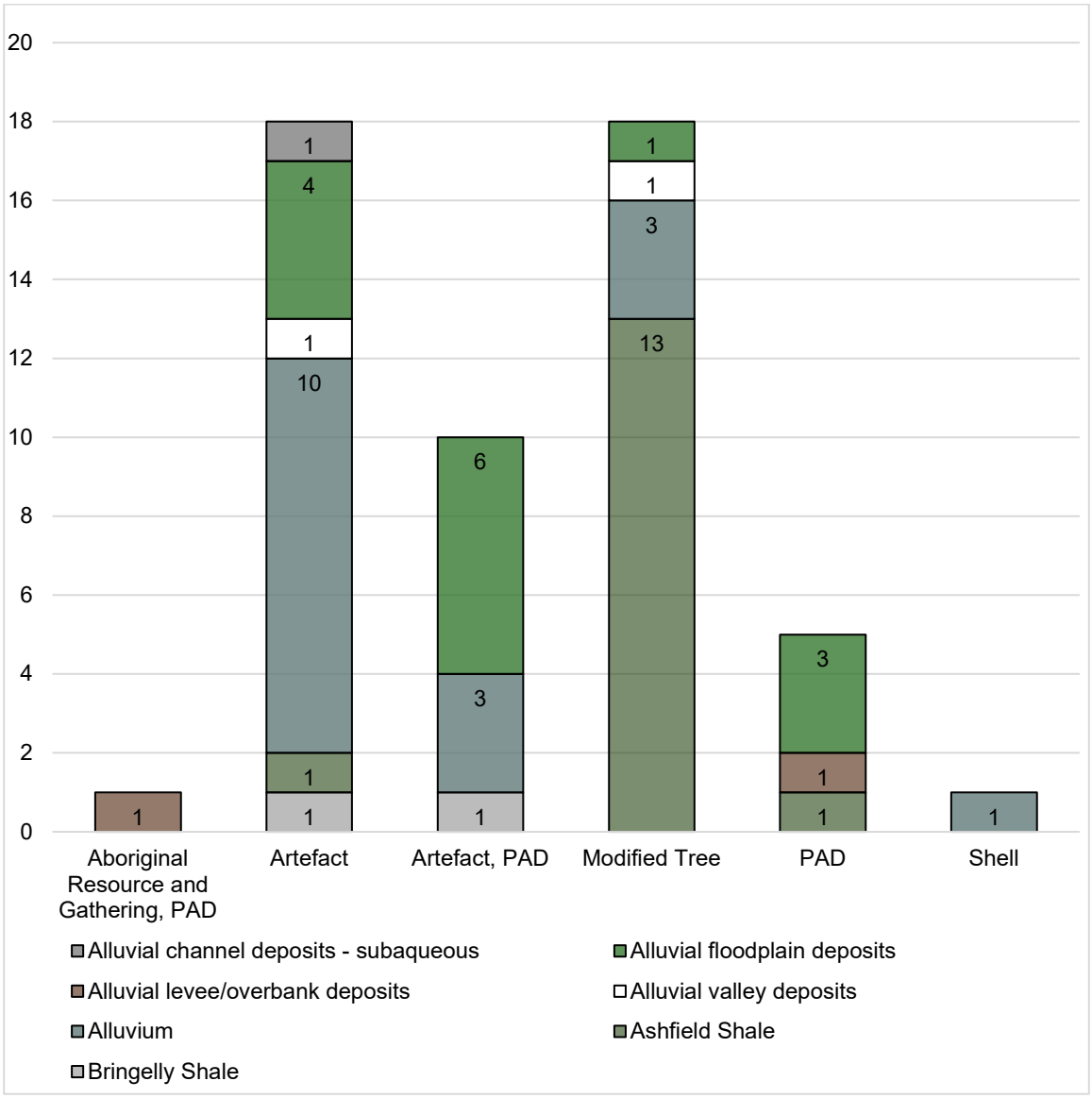

Figure 5.2 Site features in proximity to the study area by geological unit.

5.1.3 HYDROLOGY

There is a strong interrelationship between the distribution of recorded sites and proximity to water. Put simply, sites are more likely to occur in close proximity to waterways. *The Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010b) states that the given archaeological sensitivity of a site increases within 200 metres of a watercourse. With regard to the study area and surrounds, 30.2% of recorded sites (n=16) are located within 200 metres of a watercourse. However, the majority of recorded sites are located between 200 metres and 650 metres from a watercourse (n=37, 69.8%). No sites were recorded beyond 650 metres from a watercourse, however, this may be a result of data collection biases rather than a demonstration of actual trends.

The study area is noted to be in the immediate vicinity of the Georges River, a 4th order stream, with the southeastern extent of the study located 730 metres from the Georges River. The study area is also located between 450 metres 1.1 kilometres of a 2nd order tributary of Georges River known as Anzac Creek. The AHIMS dataset shows that, in the surrounding landscape, sites are most commonly in proximity to 1st order streams (n=21, 39.6%), followed by 4th (n=18, 34.0%) and 2nd (n=11, 20.8%). Few sites were recorded in the vicinity of 3rd order streams (n=3, 5.7%). An

overview of these distributions is provided in Figure 5.3. The most common site types in the vicinity of 4th order streams are artefacts (n=10), followed by composite artefact and PAD sites (n=5), with few examples of PADs (n=2) and modified trees (n=1). Modified trees were the most common site type in the vicinity of 2nd order stream (n=6), followed by artefacts (n=3).

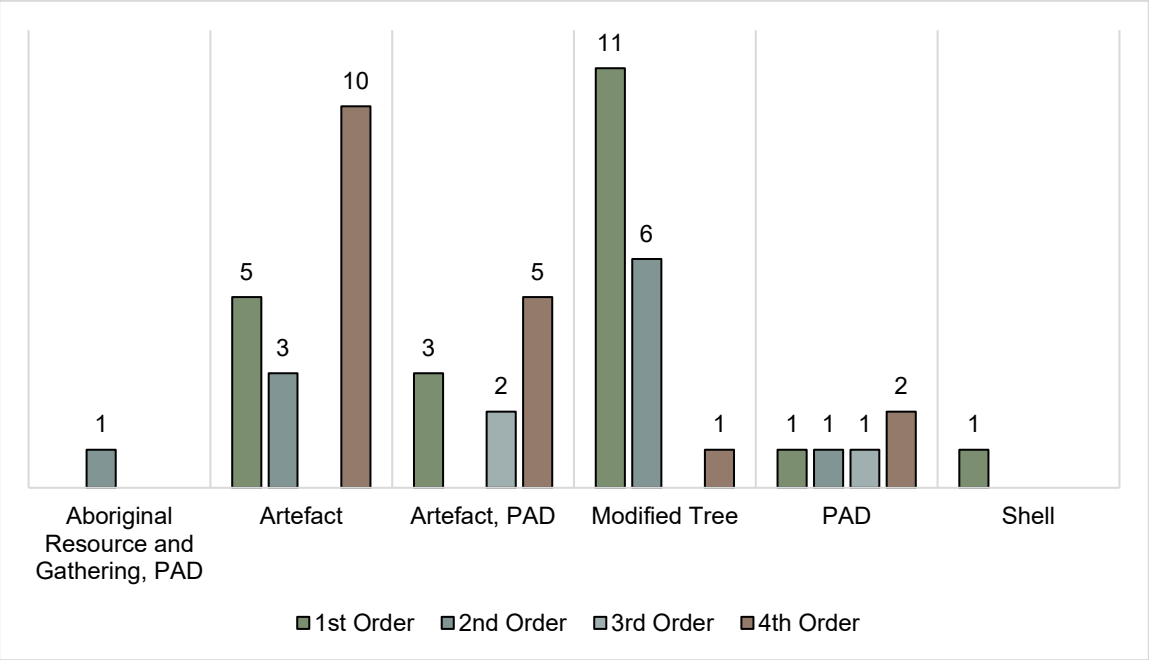

Figure 5.3 AHIMS site distributions by Strahler stream order.

Within the 5-kilometre search buffer, 83.0% of sites (n=44) were found to have been in closer proximity to perennial waters than non-perennial contexts. Typically, landforms in proximity to perennial waters are more prone to flooding and inundation. The prevalence of sites within this context are likely due to the proximity of the study area to the Georges River. This could further explain the prevalence of sites recorded between 400-600 metres from perennial waterways (n=21, 39.6%). An overview of site distributions by their proximity to perennial or non-perennial waters is visualised in Figure 5.4.

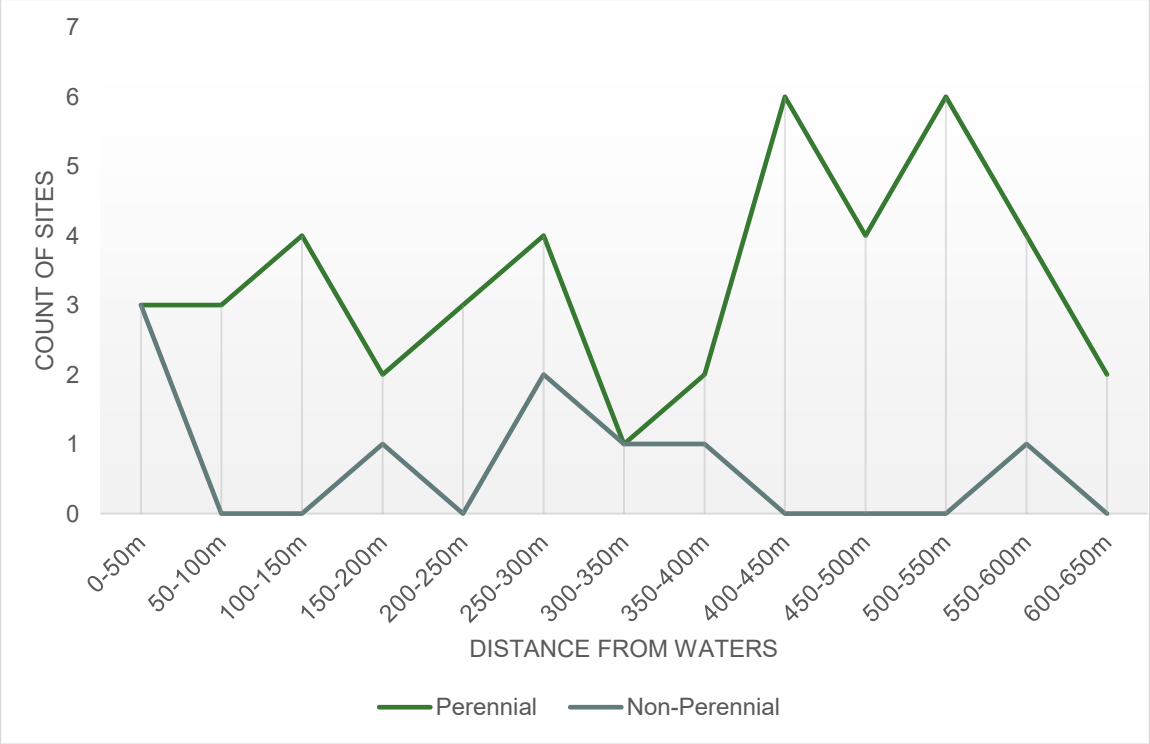

Figure 5.4 Distribution of sites from perennial and non-perennial waters.

5.1.4 TOPOGRAPHY

An analysis of the distribution of local sites in comparison to terrain has been undertaken using a spatial tool that classifies landforms using a range of parameters including slope, elevation and form (Stepinski & Jasiewicz 2011, Jasiewicz & Stepinski 2013).

Based on these landform definitions, sites occurred most commonly on 'flats' (n=33, 62.3%). Moreover, there was a significant disparity between flats, as the landform exhibiting the greatest density of artefacts, and all other landforms. For example, the 2nd most common landform with recorded sites was slope, which accounted for only 13.2% of the sites (n=7) This may be due to the prevalence of alluvial landscapes in contexts surrounding the study area, as there is diminished potential for the post-depositional movement of materials in alluvium as gradient decreases. Such conclusions are supported by findings published by Speight (2009), which concluded that the alluvial movement and overflow of creek-lines has potential to result in the burial of cultural materials on flats, particularly those flats formed by the self-same alluvial processes. The probability of such events is further supported by the high prevalence of nearby sites in proximity to perennial waters, as outlined in Section 5.1.3 above.

It is also noted that 88.9% of modified trees (n=16) were identified within 'flat' topographical contexts. This accounted for 53.3% of sites recorded on flats. Meanwhile, 61.1% (n=11) of individual artefact sites recorded were identified within 'flat' topographical contexts, as were 40.0% (n=2) of PADs and 40.0% (n=4) of combined artefact and PAD sites.

An overview of site distribution data is provided in Figure 5.5 and Figure 5.6 below.

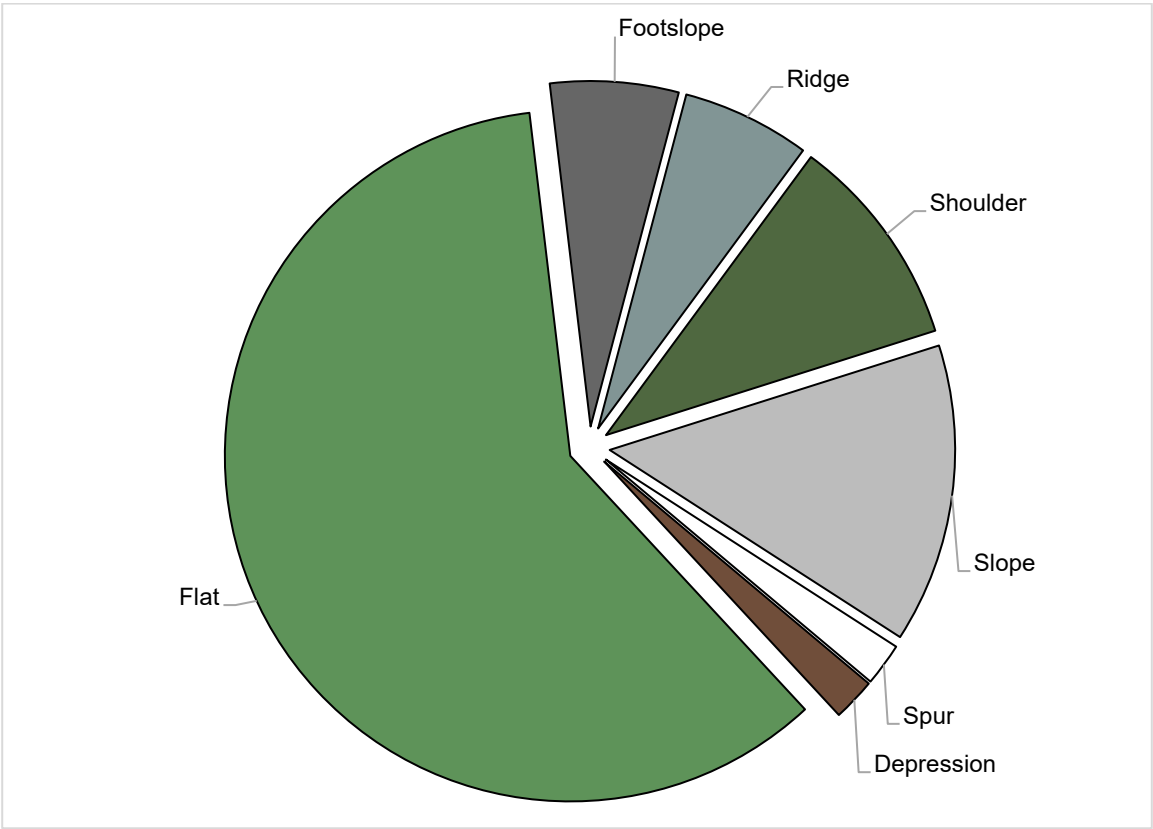

Figure 5.5 Distribution of site location by landform.

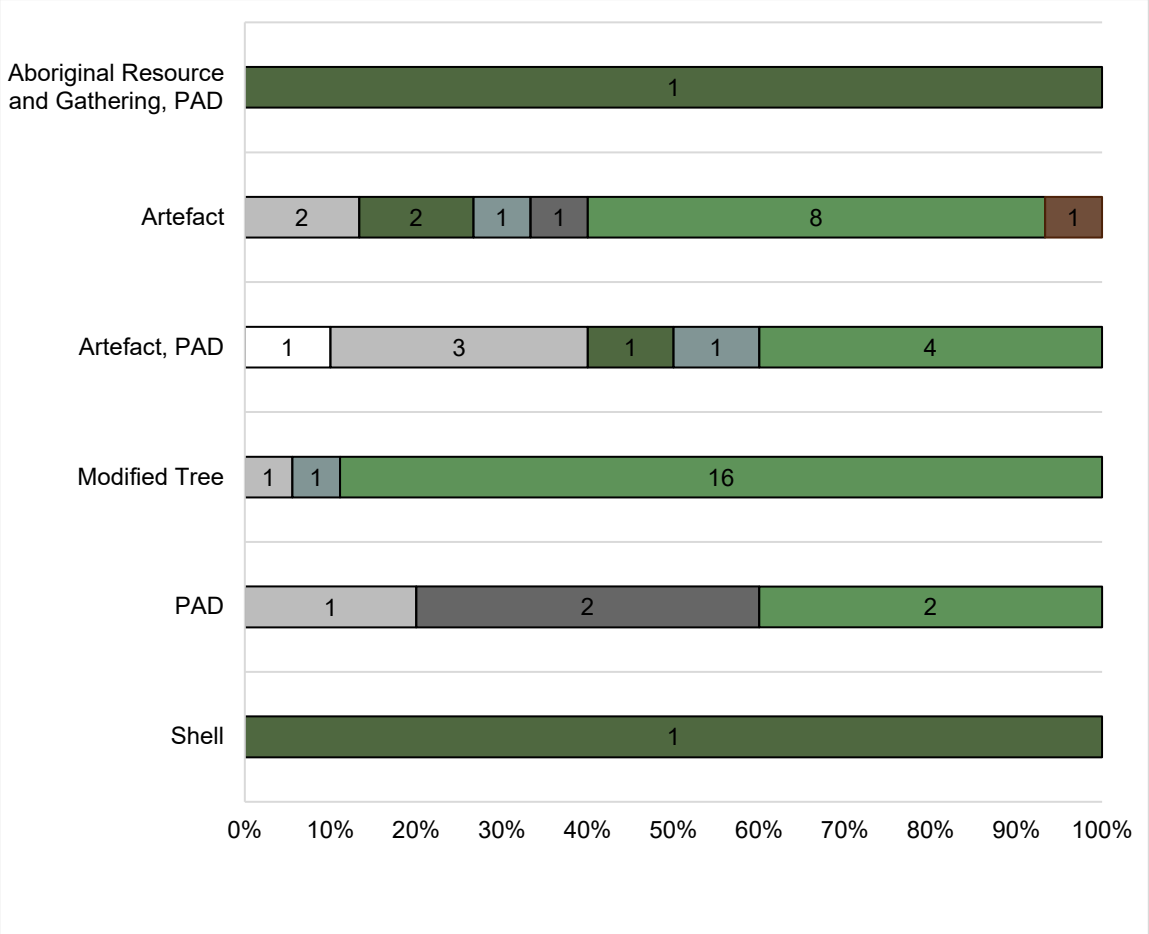

Figure 5.6 Site feature distribution by landform.

5.1.5 ANALYSIS OF THE KNOWN SITES IN THE LOCALITY

As most known sites within the locality are artefacts, Austral has undertaken an analysis of excavated sites associated with the Moorebank area to provide a detailed breakdown of the anticipated density and composition of lithic assemblages in the locality. Given the density of excavations within the vicinity of the study area, sites from along the Georges River within 5 kilometres of the study area have been subject to this analysis. Note that only test excavations with available reports were included in this analysis. This identified 10 sites that had been subject to archaeological excavation. Details from these excavations are summarised in Table 5.2.

Table 5.2 Composition and density of nearby local lithic assemblages from nearby test excavations

Site name	No. test pits	Test pits w/ artefacts	Total ex. (m²)	Total artefacts	Max. artefact density	Average artefact density
MA1	4	4	2	8	6	4.0
MA5	11	8	5.5	110	124	20.0
PAD 2	21	0	10.5	0	0	0.0
MAPAD1 (MA9)	10	10	5	130	54	18.7
MRSA1 (MA10)	6	4	3	16	14	5.3
MRSA2 (MA14)	7	3	3.5	34	46	9.7
MRSA3	7	0	3.5	0	0	0.0
MAPAD2 (MA11, MA12 and MA13)	45	9	22.5	14	6	0.6
PAD 2	7	5	7	28	13	4.0
PAD 3	6	0	6	0	0	0

The sites included in the table above exhibit a broad range of average artefact densities, spanning from an average of 0 to 20.0 artefacts per square metre. Maximum densities varied from 0 to 124 artefacts per square metre, with an average of 17.7 artefacts per square metre across all of the sites. Although the highest density site was a site with previously recorded surface artefacts (MA5), surface artefacts were not always a reliable indicator of high densities of subsurface artefacts. Where fill cover capped undisturbed A1, A2 (E) and B horizons close to the surface, surface distribution was not a reliable indicator for subsurface archaeological remains (Navin Officer Heritage Consultants Pty Ltd 2014a, p.82). Excavations along the western bank of Georges River, for example, identified historical fluvial landforms and stratigraphy produced as a consequence of the construction of the weir downstream in the 19th century, resulting in the retention ad preservation of “early historic and prehistoric archaeology at much greater depths than was anticipated” (Navin Officer Heritage Consultants Pty Ltd 2014c, p.75). Although the majority of the current study area is upstream of the weir, similar depositional events may have occurred along the banks of the Georges River within the study area

Artefact densities for the test excavations in the Moorebank area identified intact deposits along the edge of the tertiary terrace, as well along the elevated flats along both the eastern and western sides of the Georges River (a 4th order stream) (Navin Officer Heritage Consultants Pty Ltd 2014a, p.v). Notably, one location in the vicinity of the confluence of resources, that being, the confluence of Georges River and a freshwater lake (MAPAD1 [MA9]), contained the highest artefact density (Navin Officer Heritage Consultants Pty Ltd 2014a, p.v). As such, a moderate to high density of artefacts comprising a range of artefact types was found in proximity to the freshwater lake within a tertiary terrace along Georges River (Navin Officer Heritage Consultants Pty Ltd 2014a, pp.83–84). Excavations along Georges River indicate the presence of pockets of intact archaeological deposits along the river and the tertiary terrace edge (Navin Officer Heritage Consultants Pty Ltd 2014b, p.12). However, the variable densities along the eastern side of the Georges River demonstrate that occupation along the terrace was variable, but it is unclear as to whether or not this is related to disturbance or due to intentional occupation pattens (Navin Officer Heritage Consultants Pty Ltd 2014a, p.83).Based on the archaeological investigations within 5 kilometres of the current study area, the most common artefact type recovered are complete flakes (n=200, 56%). Partial flakes (n=84, 23%) were also well represented in these assemblages, while retouched flakes (n=20) and cores (n=22) both represented 6% of the assemblages. A representation of artefact types is provided in Figure 5.7.

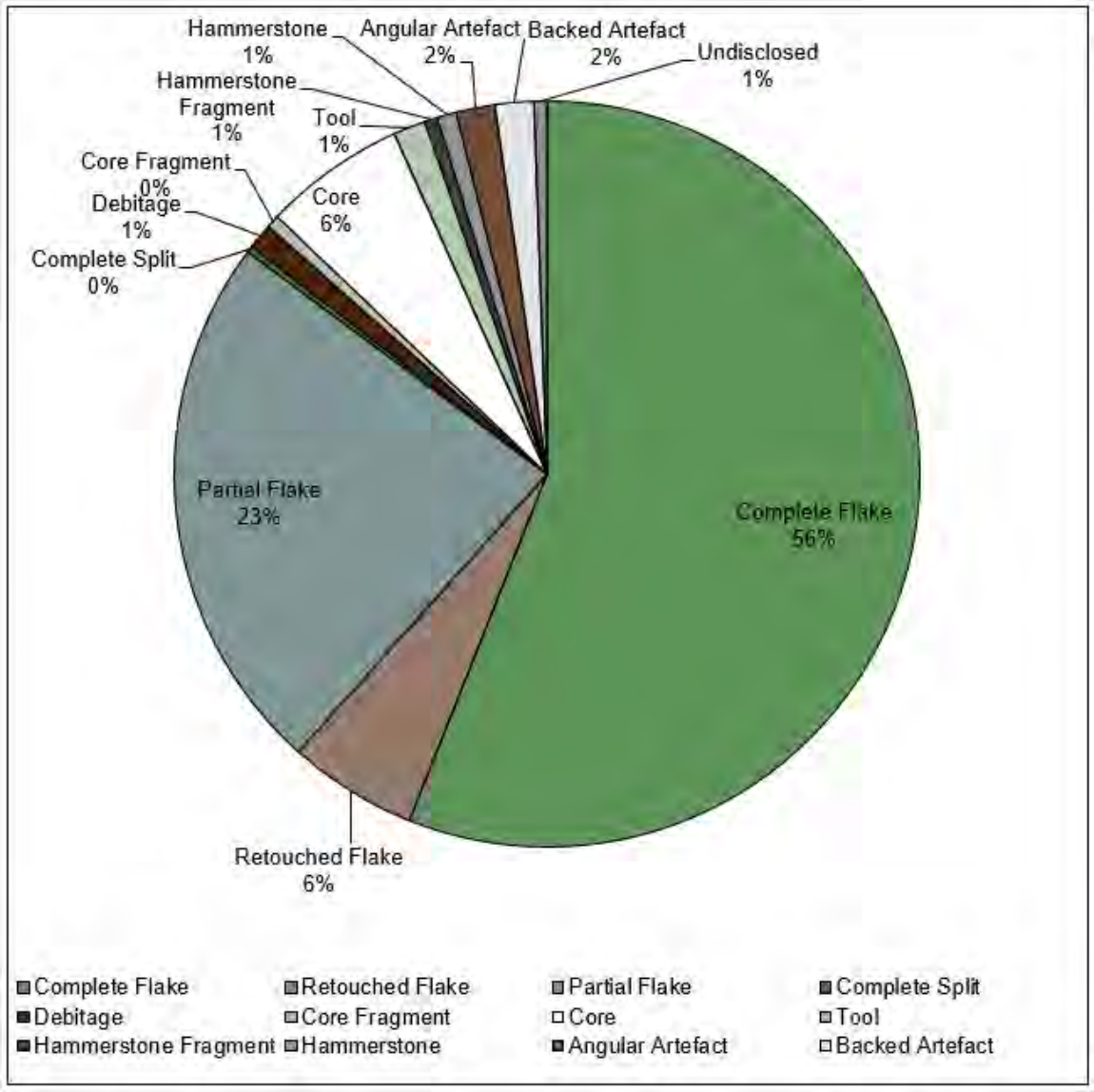

Figure 5.7 Artefact types from locally excavated assemblages within 5 kilometres of the study area.

In terms of raw material types, over half of the artefacts excavated within 5 kilometres of the study area were manufactured from silcrete (n=189, 53%). Quartz (n=52, 15%) and quartzite (n=41, 11%) were the next most common materials, with only small amounts of fine grained siliceous (FGS) [n=18, 5%), tuff (n=15, 4%) and basalt (n=11, 3%). All other materials represented between 0 and 2% of the assemblages. A representation of raw material types is provided in Figure 5.8.

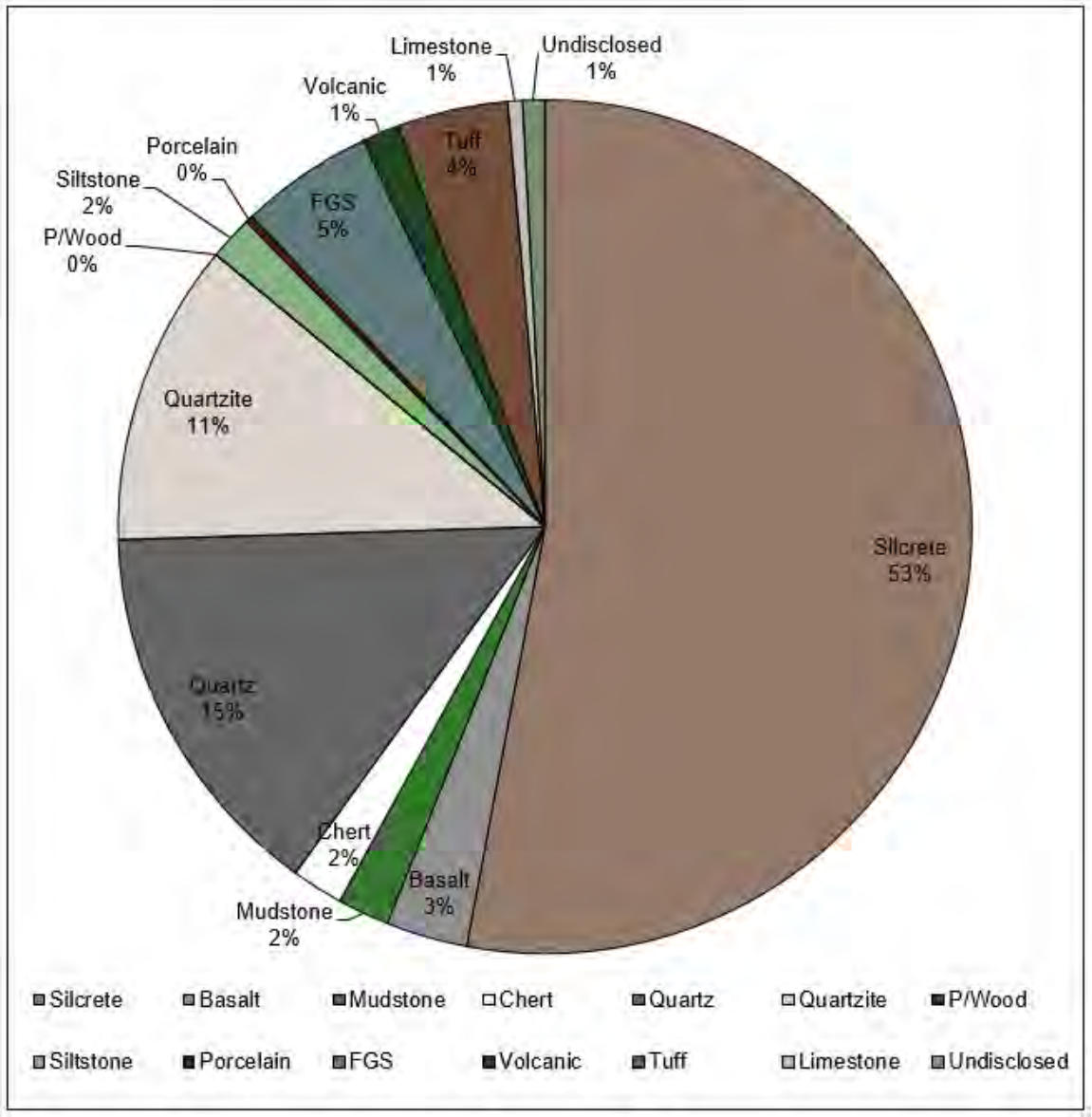

Figure 5.8 Raw material types from locally excavated assemblages within 5 kilometres of the study area.

5.2 PREDICTIVE STATEMENTS

Based on the analysis presented in Section 5.1, the following predictive statements can be made:

- The known sites within the region are dominated by artefacts, combined artefacts and PADs and culturally modified trees.
- Artefacts are known to survive in Blacktown and Richmond soil landscapes, but organic remains generally do not survive.
- Alluvial floodplain deposits, in which the entire study area is located, has a high density of recorded sites in the nearby area (n=14, 26.4%).
- Most sites are located in the vicinity of 1st order and 4th order streams, such as Georges River (4th order).
- All recorded sites are within 650 metres of watercourses.
- The majority of sites in the vicinity of perennial watercourses are between 400 and 600 metres of these watercourses, but sites between 0 and 400 metres of perennial watercourses are still represented in the area.

- Whilst sites may be located in a variety of landform contexts, most sites, specifically modified trees (n=16, 88.9%), artefacts (n=11, 61.1%) combined artefact and PAD sites (n=4. 40.0%) and PADs (n=2, 40.0%) are located within 'flat' landform units,
- Maximum artefacts densities of up to 124 artefacts per square metre have been encountered within approximately 5 kilometres of the study area. In general, average densities have been between 0 and 20 artefacts per square metre. The average artefact density across these sites is 17.7 artefacts per artefacts per square metre.
- Surface artefacts are not necessarily a reliable indicator of subsurface artefacts due to historical alluvial and mechanical soil deposition events, while a lack of subsurface artefacts is not necessarily a reliable indicator of the lack of subsurface artefactual deposits.
- Historical infilling in the area may have preserved *in situ* Aboriginal cultural layers and natural soils.
- The most common artefact type of excavated sites within 5 kilometres of the study area is a complete flake (n=200, 56%). Partial flakes (n=84, 23%), retouched flakes (n=20, 6%) and cores (n=22, 6%) were also well-represented in these assemblages.
- The most common artefactual material is silcrete (n=189, 53%), followed by quartz (n=52, 15%) and quartzite (n=41, 11%).

6 FIELD METHODS

A site specific investigation methodology has been developed for the project that complies with the Requirements of the Code of Practice (DECCW 2011a).

6.1 SURVEY METHODOLOGY

The survey was conducted on 2 November 2023 and 4 December 2023 by Peta Rice (Archaeologist, Austral) with assistance from Bronwyn Partell (Senior Archaeologist, GLALC), Jye Brown (Field Officer, GLALC) and Jamaine Thorne (Field Officer, GLALC).

6.1.1 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 Liverpool Weir ocs1 (AHIMS # 42-5--2540) and identify Aboriginal places within the study area.

6.1.2 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:

- Disturbed Flat
- Flood Plain

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 2011a) 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 that would be predominantly affected by the proposed works, as well as Haigh Park to the east of the study area.

6.1.3 SURVEY METHODS

The archaeological survey consisted of pedestrian traverses completed by 4 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 was 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.

7 ARCHAEOLOGICAL RESULTS

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

7.1 ARCHAEOLOGICAL SURVEY RESULTS

7.1.1 VISIBILITY

In most archaeological reports and guidelines visibility refers to GSV, and is usually a percentage estimate of the ground surface that is visible and allowing for the detection of (usually stone) artefacts that may be present on the ground surface (DECCW 2011a). GSV within the study area was low due to the severe disturbance in relation to the past and present industrial use of the study area.

7.1.2 EXPOSURE

Ground Surface Exposure (GSE) refers to those parts of the surveyed landforms whose topsoil has visibly been removed due to naturally occurring erosion or man-made disturbances. Usually expressed as a percentage of the total land surface, it is a theory predicting the nature of geomorphological change (DECCW 2011a). The study area harboured zero GSE as there was no evidence of the natural soil profile.

7.1.3 DISCUSSION OF RESULTS

Two landforms are present within the study area, consisting of a disturbed flat (Survey Unit 1) and a flood plain (Survey Unit 2).

Survey Unit 1 comprises a disturbed flat (Figure 7.10). The most significant disturbance in the study area has been caused by the current Prysmian Cable Factory and the Joyce Foam Factory that encompass about 80 percent of the entire study area (Survey Unit 1) [Figure 7.1]. This part of the study area has been cut and filled, with underground utilities installed to cater for the industrial practices undertaken on site (Figure 7.2). Additionally, the study area exhibits no evidence of the natural landform that would have existed prior to its use for industrial purposes, although this area of the study area may have been built up to minimise flooding. One large fig tree was identified towards the southern border of the survey unit; however, it could not be determined whether the tree was of cultural value (Figure 7.7).

The ancillary south-eastern portion of the study area between Bridges Road and Newbridge Road was also identified as part of the disturbed flat (Figure 7.10) due to evidence of extensive soil movement, farming, commercial building construction and underground infrastructure (Eco Logical Australia Pty Ltd 2020, pp.22–23). No photographs of this section of the Survey Unit were taken during the survey.

The Survey Unit 2 floodplain was identified as the riparian zone along the bank of Georges River and the green space to the north of the factory. These areas were expected to have the most archaeological potential, however, upon inspection, the majority of the area was disturbed, and all visible ground surface presented evidence of imported fill (Figure 7.4). In addition to this, the ground within the northern greenspace was uneven with fill mounds encompassing the majority of the area and exhibited dense vegetation overgrowth (Figure 7.5 and Figure 7.6).

Due to the level of vegetation overgrowth and steep edges along the western border of the study area, this portion was not able to be accessed for inspection; however, it was inspected from above whilst inside the Prysmian Cable Factory (Figure 7.9). The area along the eastern bank of the Georges River in the vicinity of Liverpool Weir ocs1 (AHIMS #45-5-2540) exhibited infilling and earthworks started in the 1970s to rehabilitate the area following excavation of the rich soil in this area. The survey attempted to relocate Liverpool Weir ocs1 (AHIMS #45-5-2540) to the west of Survey Unit 2, however, it was unable to be identified (Figure 7.8).

As a result of the broad disturbance throughout the much of the survey unit and the location of the proposed works outside of any potential sensitive areas, it was decided at the time of the inspection that no archaeological test excavation was necessary. However, as the proposed works include subsurface works to the sensitive areas along the riparian zone, including re-profiling, remediation

and stabilisation of the bank in future and subsequent Development Applications, there will be future subsurface impacts to potential Aboriginal objects and cultural layers.

It should also be noted, however, that previous studies have indicated that *in situ* natural soils and Aboriginal cultural layers may have been preserved beneath fill layers along the elevated flats of the Georges River, likely appearing in isolated 'pockets'; this is particularly pertinent to the north-western area of the riparian zone along the Georges River, which had previously been identified as an area of potential by Eco Logical Australia (Eco Logical Australia Pty Ltd 2020). The alluvial deposition caused by the river, as well as extensive earthworks undertaken within the study area, may also have resulted in the disturbance and displacement of Aboriginal objects; as such, they may appear in historical layers.

Despite reference to use of the study area for ceremonies and burials during the Stage 2 consultation process, there is no substantial physical evidence of burials or ceremonial activities in the study area.

of the location of the recent scar trees and the Coffee Club/ elders' garden noted by the Aboriginal stakeholders during the consultation process were outside of the study area within Haigh Park and were not visited during the site survey.

A description of these results, as they relate to the survey units and observed landforms within the study area can be seen in Table 7.1, Table 7.2 and Figure 7.10.

Table 7.1 Survey coverage

Survey unit	Landform	Survey unit area (m²)	Visibility (%)	Exposure (%)	Effective coverage area (m²)	Effective coverage (%)
1	Disturbed Flat	241,251	10	0	0	0
2	Flood Plain	76,801	10	0	0	0

Table 7.2 Landform summary

Landform	Landform area (m²)	Area effectively surveyed (m²)	% of landform effectively surveyed	No. sites	No. artefacts / features
Disturbed Flat	241,251	0	0	0	0
Flood Plain	76,801	0	0	0	0

Based on these results, the archaeological survey identified no Aboriginal sites or features within the study area.

Figure 7.1 Landscape context of the cable factory within the study area. View facing northeast.

Figure 7.2 Landscape context of the study area showing underground drainage. View facing west.

Figure 7.3 South facing view of flood plain landform within the study area.

Figure 7.4 Northeast view of the landscape in the northern section of the study area.

Figure 7.5 Evidence of uneven ground and overgrown vegetation within northern section of the study area. View facing west.

Figure 7.6 Example of GSE in the northern section of the study area. View facing southeast.

Figure 7.7 North facing view of fig tree located at the southern border of the study area.

Figure 7.8 Landscape context of Liverpool Weir ocs1 (AHIMS #45-5-2540). View facing east.

Figure 7.9 View of western cliff face from within the cable factory premises.

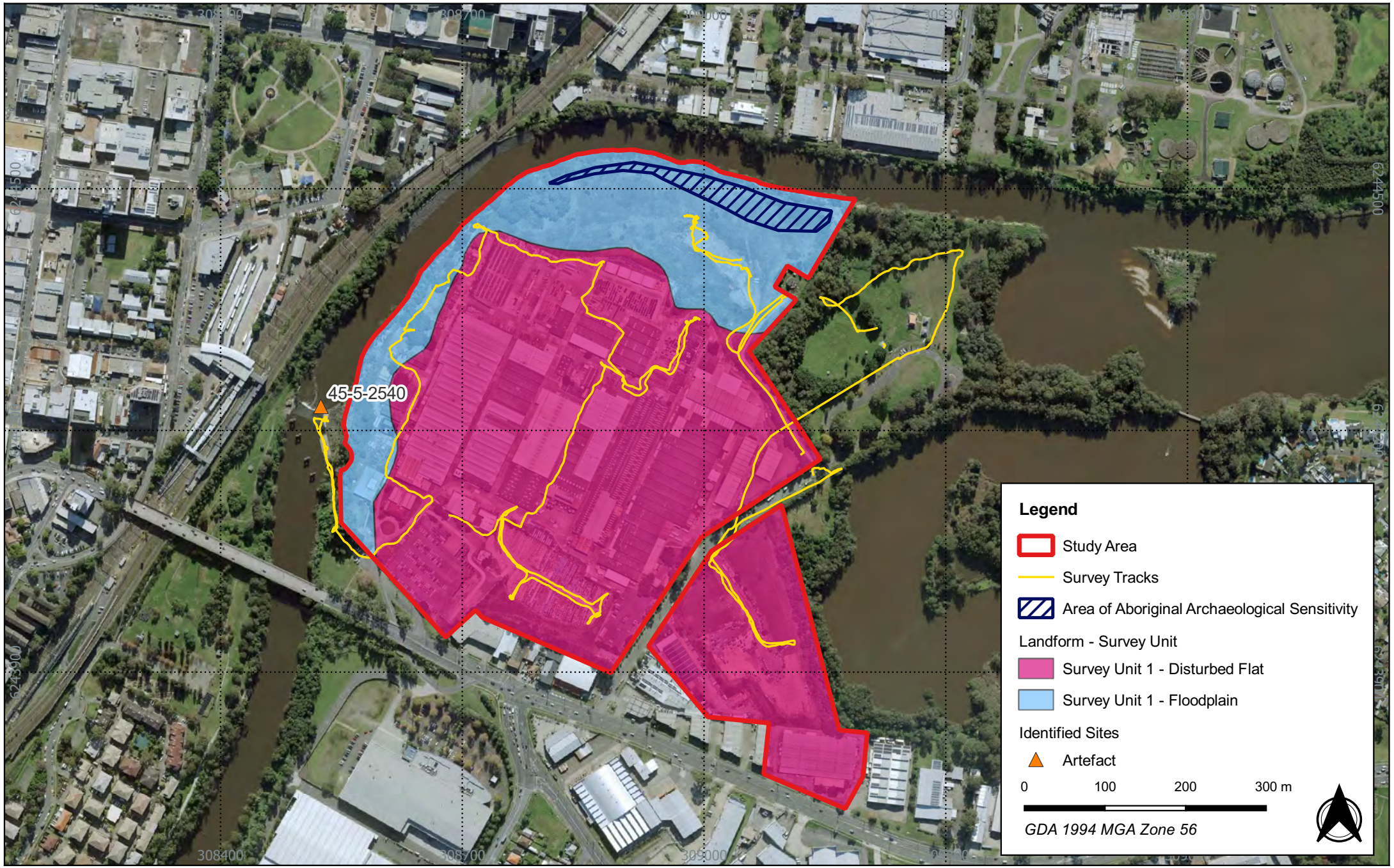

Figure 7.10 - Results from the archaeological survey

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Source: NSW LPI Aerial, Nearmap *Drawn by: FOT Date: 2024-04-23*

AUSTRAL ARCHAEOLOGY

8 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 surrounds. The assessment of cultural significance is ideally a holistic approach that draws upon the response these factors evoke from the community.

8.1 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 outlined in Table 8.1; these are frequently adopted by cultural heritage managers and government agencies as a framework for a more holistic assessment of significance.

Table 8.1 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, an 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 which 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 2011a, 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 8.2.

Table 8.2 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.

8.2 ASSESSMENT OF SIGNIFICANCE

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

8.2.1 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 is within a zone of constant anthropologically driven change. It has been heavily modified and developed over the period of its use as industrial land. Neighbouring properties have been subject to similar impacts and groundworks, particularly in those contexts to the south. The surrounding developments and continuous development and urbanisation of the Moorebank /Liverpool surrounds offer low aesthetic values.

If intact natural soil profiles and Aboriginal cultural objects are preserved in 'pockets' under the historical fills, particularly in the north-western area riparian zone along the Georges River, Aboriginal objects found in these contexts may have aesthetic significance values, but this depends on the extent of preservation and the types of artefacts found.

Based on this assessment, the study area is considered to have **little** aesthetic significance value.

8.2.2 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.

There is no evidence of tangible historic values being present within the study area. As most of the study area has been subject to extensive historical modification, it is generally unlikely to contain any *in situ* artefact deposits. Intact natural soil profiles and Aboriginal cultural objects may be preserved in 'pockets' under historical fills, particularly in the north-western area riparian zone along the Georges River, depending on the extent of excavation. Artefacts found in these contexts would have historical significance values for their demonstration of the use of the study area. *Ex situ* Aboriginal objects found in historical fills would have little historical significance. However, as the study area is located on the banks of the Georges River, it is likely that there are intangible historical values associated with the study area.

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

8.2.3 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 lifeways of Aboriginal people. Australia ICOMOS (2013b, p.5) suggests that to appreciate scientific value, that 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 Aboriginal sites or landforms of potential significance have been identified within the study area.

However, the study area has some research potential regarding the possibility of intact natural soil profiles and Aboriginal cultural objects preserved in 'pockets' under historical fills. Depending on the extent and nature of the artefactual assemblage(s), the study area may have some scientific value for its demonstration of the use of the area. *Ex situ* Aboriginal objects found in historical fills would have little scientific value.

The study area is considered to exhibit **little** scientific value.

8.2.4 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.

The results of Stages 2 and 4 of the consultation process indicated that local Aboriginal groups still utilise the land in Haigh Park to the east of the study area for casual gatherings, such as the Coffee Club. Physical evidence of ongoing use of Haigh Park to the east study area by local Aboriginal people includes the recently scarred trees, the Healing Country Elders' Garden, the Sorry Garden and Satyam Ghaat (a place of worship for biodegradable offerings). The pathway to Satyam Ghaat along Lake Moore in Haigh Park was also identified as significant to the local Aboriginal communities. Although such significant sites are outside of the study area, the consultation process of Stage 2 indicates that the study area itself has social and spiritual significance to local Aboriginal people due to its proximity to the Georges River and potential use by Aboriginal people for 'hunting, fishing, camping, ceremonies and potentially burial sites'. Although disturbance of the study area was identified during the site survey, there may be pockets of undisturbed layers relating to Aboriginal occupation. The study area therefore may have ceremonial value. However, there is no substantial physical evidence of burials in the study area.

Based on this assessment, the study area is considered to have **moderate** social and spiritual significance values at this stage.

8.3 STATEMENT OF SIGNIFICANCE

The statement of significance below has been formulated using the Burra Charter significance values and relevant NSW guidelines (DECCW 2011a, OEH 2011, Australia ICOMOS 2013a).

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 2010c).

No Aboriginal objects or sites were identified during the desktop assessment or archaeological survey for the study area. The survey determined that there is little to no potential for subsurface Aboriginal materials to present in areas proposed for development; if present, it is unlikely for them to be in their original depositional context where they occur in previously and heavily disturbed areas. However, there may be pockets of undisturbed layers relating to Aboriginal occupation within the study area, particularly in the areas within the riparian zone that have been identified as having sensitivity for Aboriginal cultural objects. The heavy modification of the study area has greatly decreased the overall tangible cultural heritage values that may have previously been associated with the site. However, as the study area is situated along the Georges River, an important water source for Aboriginal people, it is likely that the study area has intangible cultural heritage significance associated with camping, resource gathering and ceremonies.

9 IMPACT ASSESSMENT

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 (DECCW 2011a, OEH 2011).

9.1 LAND USE HISTORY

The study area is found within an area under constant artificial change. In the early years post European colonisation the study area would have been cleared and farmed by the original land grantees. At the turn of the 20th century, the increase of industrial activities prompted the landscape within the study area to be subject to extreme modifications. dated to the earliest available historical aerial in 1930, where at this point, the study area had already been partially urbanised. From this point forward, the study area continued to be urbanised for industrial purposes and has remained in this use until the present day.

Table 9.1 Summary of past land use within the study area, and the potential impacts on archaeological resources

Past land uses	Potential impacts on archaeological resources
Land Clearance	Land clearance would have resulted in soil disturbance and topsoil movement. This, coupled with the alluvial potential of the floodplain within and the Georges River may have caused widespread artefact displacement.
Land Modification	Land modification observed within the study area has resulted in the complete loss of the topsoils post land clearance. This is likely to have caused the destruction or displacement of cultural materials that may have been present within the study area.
Industrial Development	The construction of warehouses, offices, and roadways alongside the installation of subsurface infrastructure, is likely to have completely disturbed the majority of the subsurface deposits that may have existed within the study area prior to urbanisation. As a result, the archaeological potential of the study area is significantly low.

9.2 PROPOSED ACTIVITY

The project involves the creation of a mixed-use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and train station; and
- Transport, intersection, and collector road improvements.

The proposed foreshore embellishments and new open spaces will include re-profiling, remediation and stabilisation of the banks along the Georges River as part of future and subsequent Development Applications in order to create usable public space areas. The areas subjected to subsurface works will include the identified sensitive areas in the riparian zone in the north-western section of the study area.

9.3 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).

9.3.1 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.

9.3.2 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 9.2. 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 9.2 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.

9.4 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.

The proposed works have no foreseeable impact on known archaeological values within the majority of the study area. Much of the study area has been heavily disturbed by industrial use and development, which has likely had a significant negative impact on any potential archaeological sites. While there is potential for use of the study area by Aboriginal groups linked to the proximity of the site to the adjacent 4th order Georges River, no Aboriginal cultural materials or sites have been recorded as of yet. The extensive and ongoing industrial development of the study area has led to heavy disturbance and modification of the majority of the study area, limiting the potential for *in situ* cultural materials to be present. Due to the lack of identified tangible heritage within the majority of the study area, the impacts of the proposed works on Aboriginal heritage values within these areas are considered negligible.

However, an area identified as potentially preserving 'pockets' of natural soil profiles and Aboriginal cultural objects underneath historical fills lies within the riparian zone in the north-western section of the study area along the Georges River. As the proposed works include subsurface works to the sensitive areas along the riparian zone in the north-western section of the study area, including re-profiling, remediation and stabilisation of the bank in future and subsequent Development Applications, there will be future subsurface impacts to potential Aboriginal objects and cultural layers. As the depth and extent of preservation of the natural soil profiles and Aboriginal cultural heritage layers in these areas are currently unknown, the level of impact is uncertain. An Aboriginal archaeological testing programme is required in order to identify the depth, extent, nature and significance of the Aboriginal cultural heritage layers in these areas, and to assess the impacts resulting from the proposed development.

Details of the proposed activity and their relationship to previously identified Aboriginal sites and the identified sensitive areas along the riparian zone in the north-western portion of the study area are shown in Figure 9.1. An Aboriginal archaeological testing programme will be required within the areas of identified sensitivity.

Figure 9.1 - Details of identified Aboriginal sites and areas of sensitivity in relation to the proposed activity

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Source: NSW LPI Aerial, Nearmap *Drawn by: FOT Date: 2024-04-23*

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10 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.

10.1 DEVELOPMENT OF PRACTICAL MEASURES TO AVOID HARM

The archaeological survey revealed a largely disturbed study area with no discernible tangible heritage values in proposed development areas; however, potential intangible heritage values are possible due to the close proximity of the Georges River. The impacts to these potential heritage values will be significant, as the proposed development footprint shows that the majority of the study area will be subjected to complete redevelopment. The incorporation of an acknowledgement of the local Aboriginal groups in the form of signage or art would be a practical measure to minimise harm to potential Aboriginal cultural heritage values within the study area.

10.2 APPLICATION OF PRINCIPLES OF ESD AND CUMULATIVE IMPACTS

The Guide to Reporting requires the ACHA to consider the effects of cumulative impacts under the principles of ESD. In essence, this requires the acknowledgement that while a single development may have a minimal impact, it forms part of the creeping urbanisation process. In turn, this leads to the widespread loss of environmental and cultural resources.

Southwestern Sydney is a region that is subject to progressive and continuous urbanisation and expansion. This places pressure on the archaeological resources within the region. To quantify whether the proposed impacts of this project will have a broader impact on the cultural resources of the region, Austral has undertaken an analysis of AHIMS sites in relation to their current of future zoned use. The purpose of this analysis is to determine the volume of AHIMS sites that are zoned within areas that are likely to be, or are likely to have been, subject to the impacts associated with the progressive development of the region. This assumes that sites located within land zoned as residential (R1 – R5), business (B1 – B5), or industrial (IN1 – IN4) are more likely to have been harmed or be under threat of harm. Conversely, sites zoned for environmental (E1 – E5), recreational (RE1 – RE2), or rural (RU1 – RU6) use are more likely to be subject to conservation.

This analysis indicates that the majority of AHIMS sites (n=20, 37.74%) are located within zonings likely to facilitate conservation outcomes and exhibit minimal threat to the conservation of sites, while 62.26% (n=33) are within zonings likely to be subject to harm through progressive urbanisation and developments.

The greatest threat to Aboriginal sites is residential development, with 32.08% of sites (n=17) located within a residential zoning area. A summary of AHIMS sites by land zoning is provided in Table 10.1.

Table 10.1 Analysis of AHIMS sites in relation to land zoning

Land Zones	Number of Sites	Percentage of Sites
Natural Waterways	1	1.89%
Medium Density Residential	1	1.89%
Private Recreation	3	5.66%
Environmental Management	3	5.66%
Infrastructure	4	13.21%
General Industrial	9	16.98%
Public Recreation	13	24.53%
Low Density Residential	16	30.19%
Total	**50**	**100.00%**

A review of the frequency of one or more AHIP's listed against AHIMS sites indicates some slightly differing trends. This indicates that 88.68% (n=47) of sites have not had one or more AHIPs listed against them (Table 10.2).

Table 10.2 Analysis of AHIMS sites with AHIPs issued

Site types	No. Sites	No. sites with AHIPs	% Sites with AHIPS
Aboriginal Resource and Gathering, Potential Archaeological Deposit (PAD)	1	0	0.00%
Shell	1	0	0.00%
Potential Archaeological Deposit (PAD)	5	0	0.00%
Artefact, Potential Archaeological Deposit (PAD)	10	3	30.00%
Artefact	18	3	16.67%
Modified Tree (Carved or Scarred)	18	0	0.00%
Total	**53**	**6**	**11.32%**

This analysis does indicate that 30.00% of Artefact and PAD sites and 16.67% of Artefact sites have had AHIPs issued against them, indicating that these sites have been subject to cumulative impacts from successive approvals. However, this analysis does appear to indicate that locally, a higher proportion of AHIMS sites, specifically culturally modified trees, are being conserved rather than destroyed.

10.3 STRATEGIES TO MINIMISE HARM

The progressive urbanisation of the Moorebank/Liverpool area has contributed to the cumulative destruction of Aboriginal heritage sites in the area. However, following the archaeological survey of the study area, it was determined that there is little potential for remaining Aboriginal cultural heritage within the majority of the study area proposed for redevelopment. The areas of potential in the riparian zone in the north-western area of the study area will be disturbed by the proposed development due to the need to re-profile and remediate the area to become usable public space. As such, although no further Aboriginal archaeological assessment is required within the majority of the study area, the areas of potential identified in Figure 9.1 in the north-western section of the study area will need to undergo an Aboriginal archaeological testing programme in order to ascertain the nature and extent of potential Aboriginal objects and cultural layers.

11 RECOMMENDATIONS

The following recommendations are derived from the findings described in this ACHA. The recommendations have been developed after considering the archaeological context, environmental information, consultation with the local Aboriginal community 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 aside from the north-western riparian zone along the southern bank of the Georges River within the areas designated as 'public space'. If during the project, unexpected Aboriginal cultural heritage finds or human remains are identified, please follow Recommendation 2.
2. As subsurface works are proposed in the north-western riparian zone along the southern bank of the Georges River in order to re-profile and remediate the areas as a usable 'public space', test excavation will be required to ascertain the depth and extent of preservation of natural soil profiles and Aboriginal cultural heritage (see Figure 9.1 for the identified extent of sensitivity).
3. As a result of consultation with the Registered Aboriginal Parties (RAPs) for this project, the RAPs have recommended that the proposed development uses sustainable materials and that native plants from the local area are planted as part of the landscape design. The RAPs also requested for correct terminology and the present tense to be used in interpretation to acknowledge the ongoing deep connection of Aboriginal communities to the Moorebank area.
4. 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:
    a. 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 and an AHIP may be required prior to certain activities recommencing.
    b. 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, if the remains are believed to be of Aboriginal origin, then the Aboriginal stakeholders and Heritage NSW must be notified.
5. It is recommended that Joint Landowner Group (JLG), comprised of Coronation Property Co and Leamac Property Group [the proponent], 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. If a gap of more than six months occurs, then the consultation will not be suitable to support an AHIP for the project.
6. 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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