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# Updated Historical Archaeological Assessment

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Parramatta Light Rail Stage 2

# PARRAMATTA LIGHT RAIL STAGE 2

## Updated Historical Archaeological Assessment



PR141576  
Final  
May 2023

## UPDATED HISTORICAL ARCHAEOLOGICAL ASSESSMENT

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### Document status

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### Approval for issue

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## Appendices

Appendix A

Appendix B

## Glossary and abbreviations

Term/Acronym	Definition
<b>AA</b>	Archaeological Assessment
<b>AKO</b>	Australian Kerosene Oil and Mineral Company
<b>Amended project</b>	The project incorporating the amendments described in the Amendment Report
<b>AMP</b>	Archaeological Management Plan
<b>AMU</b>	Archaeological Management Unit
<b>Archaeological monitoring</b>	Process of an archaeologist observing excavation works with the intention of identifying relics and other features. Also known as a watching brief.
<b>Ard marks</b>	Agricultural features made by an ard, a simple hand operated light plough
<b>AREF</b>	Archaeological Research and Excavation Framework
<b>AUCHD</b>	Australasian Underwater Cultural Heritage Database
<b>BC</b>	Biodiversity and Conservation
<b>Burra Charter</b>	The Australia ICOMOS Charter for Places of Cultural Significance, The Burra Charter, 2013
<b>CHL</b>	Commonwealth Heritage List
<b>CMP</b>	Conservation Management Plan
<b>Contamination</b>	Archaeologically this refers to the mixing of stratigraphic units resulting in artefacts and other relics from different periods being mixed together.
<b>DCP</b>	Development Control Plan
<b>ecofact</b>	Organic material such as seeds or bones that have been used by humans in the past.
<b>ED</b>	Excavation Director
<b>EIS</b>	Environmental Impact Statement
<b>EP&amp;A Act</b>	NSW <i>Environmental Planning and Assessment Act 1979</i>
<b>EP&amp;A Regulation</b>	NSW Environmental Planning and Assessment Regulation 2021
<b>EPBC Act</b>	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
<b>Exhibited project</b>	The project described in the EIS
<b>HAMU</b>	Historical Archaeological Management Unit
<b>Heritage Act</b>	<i>NSW Heritage Act 1977</i>
<b>Hoe marks</b>	Agricultural features made by a hoe, a medium sized agricultural hand tool that breaks the soil
<b>ICOMOS</b>	International Council on Monuments and Sites
<b>LEP</b>	Local Environmental Plan
<b>LGA</b>	Local Government Area
<b>LSJP</b>	Lucas Stapleton Johnson and Partners Pty Ltd
<b>MAMU</b>	Maritime Archaeological Management Unit
<b>MR</b>	Management Rating
<b>NHL</b>	National Heritage List
<b>NSW</b>	New South Wales
<b>PHALMS</b>	Parramatta Historical Archaeological Landscape Management Study
<b>PCRC</b>	Precincts - Central River City
<b>Project</b>	Construction and operation of Parramatta Light Rail Stage 2
<b>Project site</b>	Refers to the area that would be directly disturbed by construction of the project (for example, as a result of ground disturbance and the construction of foundations for

## UPDATED HISTORICAL ARCHAEOLOGICAL ASSESSMENT

Term/Acronym	Definition
	structures). It includes the location of construction activities, compounds and work sites, and the location of permanent infrastructure. In this report study area and project site are used interchangeably.
<b>RDEM</b>	Archaeological Research Design and Excavation Methodology
<b>REP</b>	Regional Environmental Plan
<b>RNE</b>	Register of the National Estate (non-statutory register)
<b>SEARs</b>	Secretary's environmental assessment requirements
<b>SEPP</b>	State Environmental Planning Policy
<b>SHC</b>	Sydney Harbour Catchment
<b>SHI</b>	State Heritage Inventory which includes all heritage items from LEPs, the SHR and the NHL
<b>SHR</b>	State Heritage Register
<b>SOPA</b>	Sydney Olympic Park Authority
<b>SREP</b>	Sydney Regional Environmental Plan
<b>Stratigraphic Unit</b>	A singular layer of sediment, soil, rock, or other material
<b>SSI</b>	State significant infrastructure
<b>SSP</b>	State significant precinct
<b>S170</b>	Section 170 Heritage and Conservation Register
<b>Transport for NSW</b>	Transport for NSW is the lead agency of the NSW Transport cluster.
<b>Test Pit (TP)</b>	A small trench excavated by an archaeologist usually to answer a specific question or to characterise the nature of the archaeological resource
<b>Truncated</b>	Damage to an archaeological deposit, feature, or stratigraphic unit
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>WHL</b>	World Heritage List
<b>World Heritage Convention</b>	Convention Concerning the Protection of World Cultural and National Heritage



## EXECUTIVE SUMMARY

### Project overview

Parramatta Light Rail will deliver an integrated light rail service that supports the population and employment growth expected throughout the Greater Parramatta and the Olympic Peninsula area (GPOP). It will integrate with existing and future modes of transport, including buses, trains, ferries and active transport (pedestrian and cycle networks), as well as Sydney Metro West services and the existing road network. Parramatta Light Rail will be delivered in stages to keep pace with development:

- Stage 1 will connect Westmead to Carlingford via the Parramatta central business district (CBD) and Camellia. The construction and operation of Parramatta Light Rail Stage 1 was approved by the NSW Minister for Planning in May 2018. Major construction is underway, with the track installation complete and light rail stop construction in progress. Stage 1 is expected to start operating in 2024. Further information on Stage 1 is available at [Parramatta Light Rail](#)
- Transport for NSW is now proposing to construct and operate Stage 2 of Parramatta Light Rail ('the project'). Stage 2 would connect the Parramatta CBD and Stage 1 to Camellia, Rydalmere, Ermington, Melrose Park, Wentworth Point and Sydney Olympic Park.

### Report purpose

An environmental impact statement (EIS) was prepared to assess the potential impacts of the project, and to identify the management measures to address those impacts. The EIS was exhibited by the NSW Department of Planning and Environment from 9 November 2022 to 16 December 2022.

The EIS was supported by a range of technical papers, which provided detailed assessments of the potential impacts of the project as they relate to the key environmental issues defined by the Secretary's environmental assessment requirements (SEARs). This included Technical Paper 6 (Historical Archaeological Assessment).

Additional assessment of the potential historical archaeological impacts of construction and operating the project has been undertaken since exhibition of the EIS. This additional assessment has been undertaken to assist with considering and responding to issues raised in submissions and during consultation with stakeholders, assessing the impacts of the proposed amendments and to further progress commitments made in the EIS.

This Historical Archaeological Assessment, originally prepared to support the EIS, has been updated based on the additional assessment undertaken.

### Key findings

This report has found that construction of the project is likely to impact archaeological resources of State and local heritage significance within the project site. It has also found that the project will have no direct impacts and only potential minor indirect impacts on adjacent listed archaeological sites. Historical Archaeological Management Units (HAMUs) have been established within the project site (that is, terrestrial areas where ground disturbing works may be required) to define areas where there is potential for significant archaeological evidence. Areas of riverbed, external to these HAMUs, where works may be required, have also been assessed with Maritime Archaeological Management Units (MAMUs) established to manage these areas. Terrestrial areas with at least medium potential to contain a State significant archaeological resource are listed below.

- Part of the Vineyard Estate, founded by Phillip Schaffer and later owned by Hannibal Hawkins Macarthur. This estate, established in 1791 was a key early farm that established the first viticulture in Australia and was owned by two different but important early colonial figures.
- Parts of other early farms that were established along the Parramatta River which were all key parts of the development of farming that enable the embryonic colony to survive.

- The area surrounding Ermington Boat Ramp in Melrose Park, where evidence of a potential 1820s wharf, a key component of the early riverine economy, may be located in addition to an 1840s farm.

Additionally there is one area of the project site that has low potential for a State significant archaeological resource.

- Part of the Elizabeth Farm Estate of John and Elizabeth Macarthur. The farm was established in 1793 and was pioneering in the development of early farming. Its owners were significant people in the life and development of the early colony.

There is also potential for archaeological evidence of local significance to be present within most HAMUs in the project site, except for areas of known previous extensive ground disturbance or in areas where evidence of previous occupation has not met the threshold of significance. The project has the potential to impact on archaeological resources throughout the project site.

This report has found the project is unlikely to impact any maritime archaeological resources within the riverbed of the Parramatta River.

### Mitigation measures

As the construction of the project would impact archaeological resources of State and local heritage significance, recommended mitigation measures have been provided in this report. The first approach to management of the archaeological resource should be avoidance with consideration given to redesigning or moving the proposed works to remove any impact to archaeological resources that have significance. Each HAMU has been assigned a management rating (MR) between one and three based on a combination of its archaeological potential, assessed significance, and project impact. These MRs provide an outline of the kinds of measures that should be taken to manage the archaeological resource only after avoidance has been genuinely considered.

To refine these generalised ratings, the following measures have been undertaken:

- An AREF was originally prepared as part of Technical Paper 6 (Historical Archaeological Assessment) for the EIS, which included a methodology for a targeted program of archaeological test excavations to interrogate the assessment of potential made in this report. This test excavation program focused on three areas that had at least a medium potential for State significant archaeological resources but were not able to be completed safely, or in accordance with the Aboriginal test excavation methodology (which was required to be completed prior to historical excavations) due to the presence of asbestos or deep levels of fill. The limited results of the test excavation program are included in Section 8.3.
- The methodology, research, rationale, and results of the limited test excavation undertaken for the AREF has been integrated into a wider archaeological Research Design and Excavation Methodology (RDEM) for the project as a whole (refer Appendix B). The RDEM has been prepared following the limited testing and includes a set of appropriate research questions and a clear methodology for how to address them. This is situated into a wider research framework that appropriately responds to the significance of the archaeological resource. Additional measures that relate to the construction and operation of the project are also included.

# 1 INTRODUCTION

## 1.1 Parramatta Light Rail

The NSW Government's Greater Sydney Region Plan *A Metropolis of Three Cities* (Greater Sydney Commission, 2018) outlines a vision for a three-city metropolis. The Central River City covers the four local government areas of the City of Parramatta, Blacktown City, Cumberland City and The Hills Shire. *A Metropolis of Three Cities* highlights Greater Parramatta as the focal point for the Central River City, with employment growth and public transport being of key importance.

The Greater Parramatta and the Olympic Peninsula area (GPOP), which extends from Westmead and Parramatta in the west to Sydney Olympic Park to the east, is fast emerging as the heart of Sydney's Central River City and is set to grow and change significantly over the next 20 years. Forecasts predict that GPOP will accommodate almost 170,000 new residents by 2041. Employment opportunities will also grow, with an additional 100,000 jobs predicted by 2041 (SGS, 2017).

Parramatta Light Rail will deliver an integrated light rail service that supports the population and employment growth expected throughout GPOP. It will integrate with existing and future modes of transport, including buses, trains, ferries and active transport (pedestrian and cycle networks), as well as Sydney Metro West services and the existing road network.

Parramatta Light Rail will be delivered in stages to keep pace with development:

- Stage 1 will connect Westmead to Carlingford via the Parramatta central business district (CBD) and Camellia. The construction and operation of Parramatta Light Rail Stage 1 was approved by the NSW Minister for Planning in May 2018. Major construction is underway, with the track installation complete and light rail stop construction in progress. Stage 1 is expected to start operating in 2024. Further information on Stage 1 is available at [Parramatta Light Rail](#)
- Transport for NSW is now proposing to construct and operate Stage 2 of Parramatta Light Rail ('the project'). Stage 2 would connect the Parramatta CBD and Stage 1 to Camellia, Rydalmere, Ermington, Melrose Park, Wentworth Point and Sydney Olympic Park.

Figure 1.1 provides an overview of Parramatta Light Rail showing both stages.

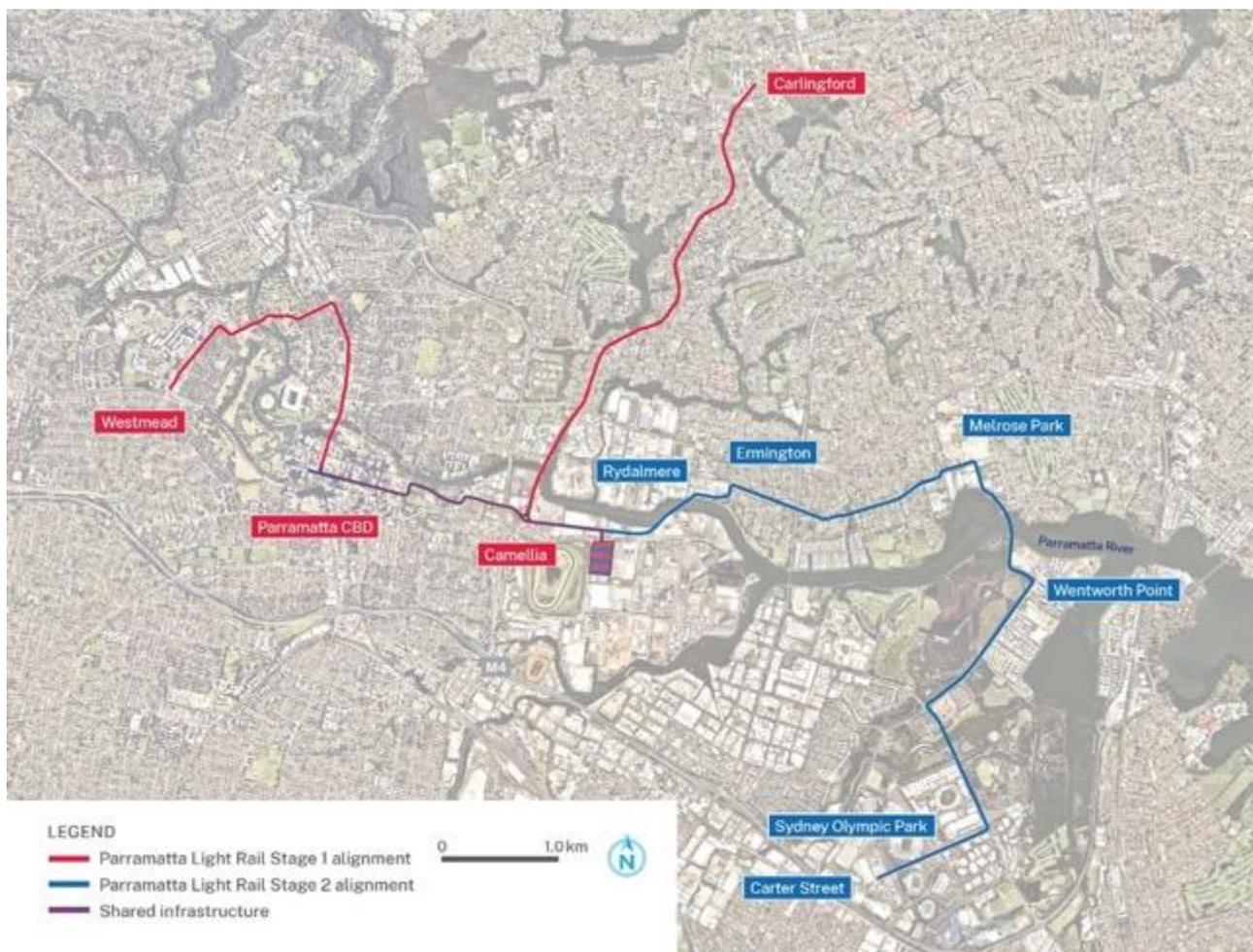


Figure 1-1: Parramatta Light Rail network

## 1.2 Approval and assessment requirements

### 1.2.1 Approval requirements

The project is critical State significant infrastructure and is subject to approval by the NSW Minister for Planning under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act).

The project is also determined to be a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and requires approval from the Australian Minister for the Environment and Water.

An environmental impact statement (EIS) was prepared to assess the potential impacts of the project, and to identify the management measures to address those impacts. The EIS was exhibited by the NSW Department of Planning and Environment from 9 November 2022 to 16 December 2022. The EIS was also prepared to support Transport for NSW's application for approval of the project under the EPBC Act.

The EIS was supported by a range of technical papers, which provided detailed assessments of the potential impacts of the project as they relate to the key environmental issues defined by the Secretary's environmental assessment requirements (SEARs). This included Technical Paper 6 (Historical Archaeological Assessment).

## 1.2.2 Responding to submissions and proposed amendments

During the exhibition period, stakeholders and members of the community were able to review the EIS, participate in consultation and engagement activities, and make a written submission to the Department of Planning and Environment for consideration in its assessment of the project.

Transport for NSW has prepared a submissions report to address the Planning Secretary’s request to submit a response to the issues raised in submissions to the EIS during public exhibition and DPE’s State Significant Infrastructure and State Significant Project Guidelines.

During and following public exhibition of the EIS, Transport for NSW has undertaken further investigations and is proposing a number of design amendments to the project. The aim of these amendments is to address issues raised during consultation and in submissions, and to minimise the potential impacts of the project. A summary of the proposed amendments is provided in Table 1-1. Further information is provided in the Amendment Report.

**Table 1-1: Summary of amendments**

Proposed amendment	Overview
Camellia foreshore to Rydalmere alignment and bridge	<p>As described in section 5.4.2 and Appendix D of the EIS, investigation of an alternative alignment between Camellia and Rydalmere (the ‘Camellia foreshore to Rydalmere option’) was ongoing in parallel with development of the EIS. It is now proposed to amend the project to incorporate this alternative alignment of the light rail track, active transport link and bridge over the Parramatta River.</p> <p>The new alignment extends along the Sandown Line corridor in Camellia; however, instead of crossing south over to Grand Avenue, it continues along the Parramatta River foreshore in Camellia before extending across a new bridge structure and along the boundary of Eric Primrose Reserve in Rydalmere.</p> <p>The bridge design has been amended, and includes different pier arrangements in the river. It is also proposed to locate the light rail stop at John Street closer to Rydalmere Wharf.</p>
Bridge between Melrose Park and Wentworth Point	<p>The project as described in the EIS included a bridge located between the southern end of Wharf Road in Melrose Park and the northern end of Wentworth Point. It is proposed to amend the alignment and locate the bridge further to the west to avoid direct impacts to residential properties. The works would also include removing the existing high voltage transmission tower at Melrose Park and relocating the wires to three new poles located to the west of the original tower.</p>
Bridge at Hill Road	<p>The project as described in the EIS included retaining the Hill Road bridge in Sydney Olympic Park and providing a new bridge for light rail vehicles on the western side of the existing bridge.</p> <p>It is now proposed to remove the existing bridge at Hill Road and construct a new bridge, which would accommodate road traffic and light rail vehicles in an on-road (segregated) running corridor to reduce impacts to Narawang Wetland.</p>

In addition, refinements are proposed to the location of the traction power substation at Atkins Road, and the cut and fill volumes generated during earthworks.

## 1.3 Project overview

The project comprises two main elements:

- construction of about 10 kilometres of light rail infrastructure between Camellia and the Carter Street precinct adjacent to Sydney Olympic Park
- operation of about 13 kilometres of light rail alignment between the Parramatta CBD and the Carter Street precinct, including a section of infrastructure constructed by Parramatta Light Rail Stage 1 between Camellia and the Parramatta CBD.

Further information on the location of the project, and a description of the project site for the purposes of this document, is provided in the Amendment Report.

### 1.3.1 Key features

The key features of the project (as amended), which are shown on Figure 1-2, include:

#### Light rail track and bridges

- a new 10 kilometre long dual light rail track, with 14 stops, between the Parramatta Light Rail Stage 1 line in Camellia and the Carter Street precinct adjacent to Sydney Olympic Park
- two bridges over the Parramatta River between Camellia and Rydalmere, and between Melrose Park and Wentworth Point
- a bridge over Silverwater Road between Rydalmere and Ermington
- other bridge works in Ken Newman Park, Ermington and Sydney Olympic Park.

#### Active and public transport integration

- about 9.5 kilometres of new active transport links between Camellia and the Carter Street precinct, which would connect with the existing cycling and pedestrian network
- interchanges with other forms of public transport, including trains, ferries, buses and Sydney Metro West, with the main interchanges located in the Parramatta CBD, Rydalmere and Sydney Olympic Park
- a light rail and pedestrian zone (no through vehicle access) within Sydney Olympic Park along Dawn Fraser Avenue between Australia Avenue and Olympic Boulevard
- bus access over the proposed bridge between Melrose Park and Wentworth Point.

#### Other works

Works proposed to support the project's operation:

- turnback facilities, including along part of Macquarie Street in the Parramatta CBD
- adjustments to the Parramatta Light Rail stabling and maintenance facility at Camellia
- five new traction power substations to convert electricity to a form suitable for use by light rail vehicles
- new and improved open spaces and recreation facilities at Eric Primrose Reserve, Ken Newman Park and the Atkins Road stop.

Further information on the project's features is provided in the updated project description chapters in Appendix A of the Amendment Report.

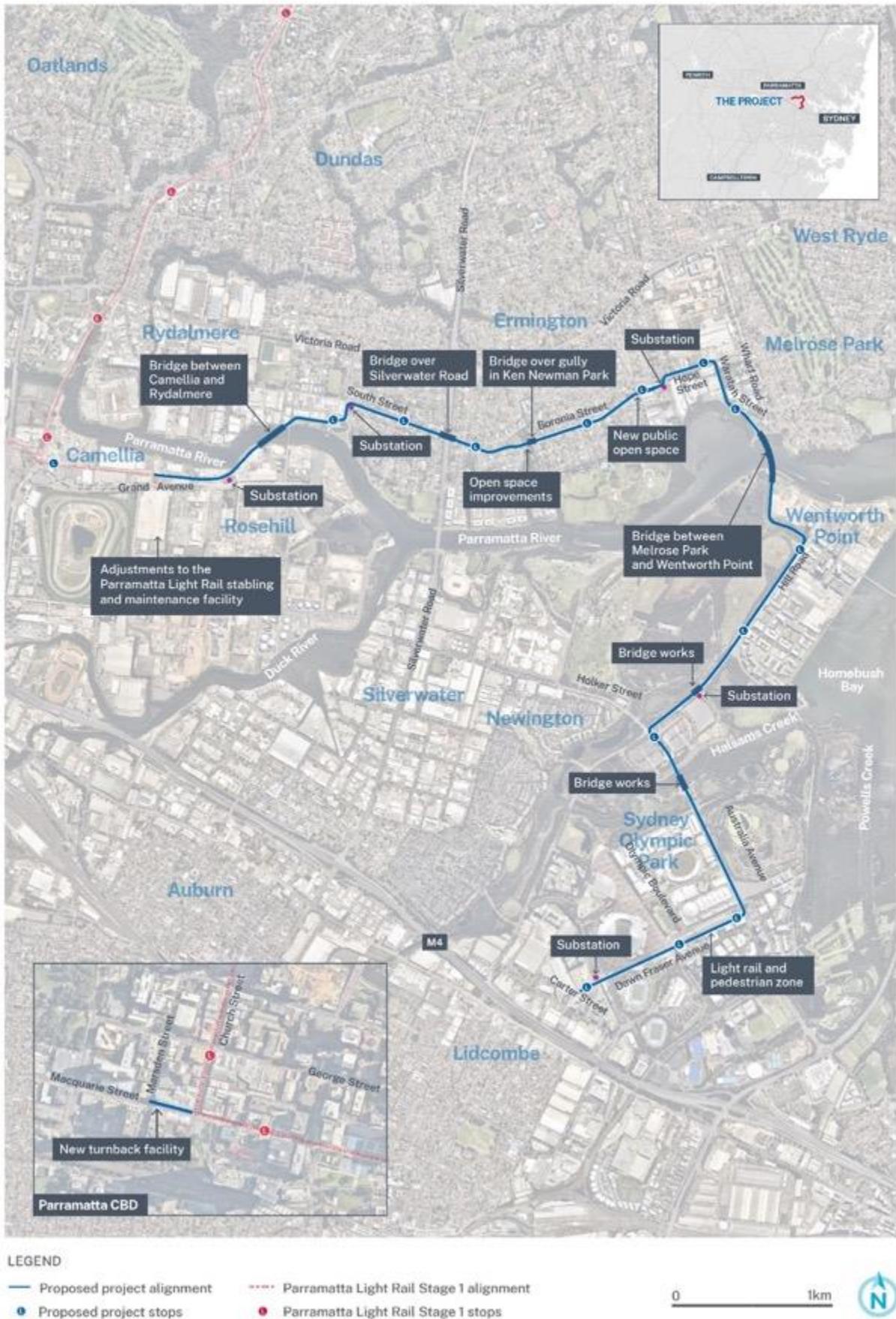


Figure 1-2: Key features of the project

### 1.3.2 Operation

The project would operate between the Parramatta CBD and the Carter Street precinct, using a section of the Parramatta Light Rail Stage 1 alignment and the alignment constructed as part of the project.

Between the Parramatta CBD and Camellia, the project would operate along about three kilometres of the Parramatta Light Rail Stage 1 alignment. Parramatta Light Rail Stage 2 services would terminate at the Stage 1 Parramatta Square stop to allow customers direct and convenient access to Parramatta's CBD, and interchange with Stage 1 light rail services, trains, buses and Sydney Metro West.

From Camellia, the project would operate along the light rail infrastructure proposed as part of Stage 2, terminating at the proposed Carter Street stop.

The project would operate as a turn-up-and-go light rail service from 5am to 1am, seven days a week, in line with Parramatta Light Rail Stage 1. The project would have travel times of around 29 minutes from the Carter Street stop in Lidcombe to the proposed Sandown Boulevard stop in Camellia, and a further seven minutes to the Parramatta Square stop in the Parramatta CBD.

Further information on the project's operation is provided in the Amendment Report.

### 1.3.3 Timing

It is anticipated that construction would start in 2025, subject to obtaining all necessary approvals, and the first passenger services are proposed to start from 2030/2031.

An indicative construction methodology is provided in the Amendment Report.

## 1.4 Purpose and scope of this report

Additional assessment of the potential historic archaeological impacts of constructing and operating the project has been undertaken since exhibition of the EIS. The assessment has been undertaken to assist with considering and responding to issues raised in submissions and during consultation with stakeholders, to assess the impacts of the proposed amendments and to further progress commitments made in the EIS.

The Historical Archaeological Assessment, originally prepared to support the EIS, has been updated based on the additional assessment undertaken.

The purpose of this report is to assess the potential historic archaeological impacts of constructing and operating the project. This report:

- provides an updated assessment of the project (as amended)
- addresses the relevant SEARs listed in Table 1-2
- describes the existing environment with respect to potential historical archaeological resources
- considers impacts to listed archaeological sites adjacent to the project site in the Parramatta CBD
- assesses the impacts of constructing and operating the project on the historical archaeological resources
- provides additional information as required to respond to issues raised in submissions and during consultation
- recommends measures to manage and, where that is not possible, to mitigate the impacts identified.

The methodology for the assessment is described in Section 3.



**Table 1-2: Secretary’s environmental assessment requirements – Heritage Non Aboriginal**

Requirement	Where it is assessed in this report
<p>Direct and/or indirect impacts (including cumulative impacts) to the heritage significance of:                      environmental heritage, as defined under the <i>Heritage Act 1977</i>                      items listed on the State, National and World Heritage lists</p>	<p>Section 2.4 provides an overview of listed heritage items located within and adjacent to the project site.</p> <p>Potential direct/indirect impacts to these are primarily addressed in the Updated Statement of Heritage Impact (Built Heritage) but also see Section 6.1.3, 6.4.3, 6.6.3, and 6.7.3 for individual Historical Archaeological Management Units (HAMUs) that contain listed items.</p> <p>Sections 7.1 to 7.10 provide an assessment of the direct, indirect and cumulative impacts.</p> <p>Section 7.7 considers impacts to listed archaeological sites adjacent to the project site in the Parramatta CBD.</p>
<p>heritage items and conservation areas identified in environmental planning instruments applicable to the project area.</p>	<p>Section 2.2.5 summarises conservation management plans and Section 2.3 summarises items listed under environmental planning instruments.</p> <p>Sections 6.1.3, 6.4.3 and 6.6.3 for individual areas where related to archaeology.</p>
<p>Where impacts (including cumulative impacts) to State, locally or potentially significant heritage items are identified the assessment must:</p> <ul style="list-style-type: none"> <li>a. identify the heritage significance of and provide statements of heritage impact for all heritage and potential heritage items</li> <li>b. include historical and maritime archaeological assessments (where relevant)</li> <li>c. consider the conservation policies of any relevant conservation management plan</li> </ul> <p>consider impacts to the item of significance caused by, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, visual amenity, landscape and vistas, curtilage, subsidence and architectural noise treatment, drainage infrastructure, contamination remediation and site compounds (as relevant)</p> <p>outline measures to avoid and minimise those impacts during construction and operation</p> <p>be undertaken by a suitably qualified heritage consultant(s) and/or historical archaeologist</p> <p><i>Note: Where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council’s Excavation Director criteria.</i></p>	<p>Significance is addressed in Sections 6.1.2, 6.2.2, 6.3.2, 6.4.2, 6.5.2, 6.6.2, 6.7.2.</p> <p>Impact statements are provided in Sections 7.1 to 7.8.</p> <p>Cumulative impacts are addressed in Section 7.9.</p> <p>See also the Updated Statement of Heritage Impact (Built Heritage) for impacts to built heritage items.</p> <p>Sections 6.1.3, 6.2.3, 6.3.3, 6.4.3, 6.5.3, 6.6.3, 6.7.3, 6.8.2.</p> <p>Section 2.2.5.</p> <p>Sections 7.1 to 7.8.</p> <p>Section 8 and Appendix B.</p> <p>Section 1.6.</p>

Requirement	Where it is assessed in this report
An historical archaeological assessment must:	Sections 6.1 to 6.8.
d. Identify relics likely to be present;	
e. assess their significance;	Sections 6.1 to 6.8.
f. consider the impacts from the proposal on this resource; and	Section 7
g. include an appropriate mitigation strategy and Research Design and Excavation Methodology where harm cannot be avoided	Initial mitigation strategies are included in Section 8. The archaeological Research Design and Excavation Methodology (RDEM) is provided in Appendix B.
<hr/>	
2. A <b>maritime archaeological assessment</b> must be prepared to identify and assess significant archaeological relics, shipwrecks and maritime heritage sites. The assessment must:	
a. include a search of the maritime heritage online;	Section 2.2.4.1 and Appendix A.
b. identify the extent, nature and significance of any features or relics;	Section 6.8 and Appendix A (Sections 9.1, 9.3, and 9.4).
c. consider the potential impacts of the proposal both above and below the water;	Section 7, and Appendix A (Section 10.1).
d. consider the effects of the proposal on the riverbed and riverbank and geomorphological effects to heritage items; and	Appendix A, Section 7.1, Section 7.2, Section 7.4, Section 7.5.
e. include an appropriate mitigation strategy and Research Design and Excavation Methodology where harm cannot be avoided.	Section 8.5, Appendix A.
<i>Note: A maritime archaeological assessment must be prepared by a suitably qualified and experienced maritime archaeologist.</i>	Section 1.6.

## 1.5 Limitations

- This Historical Archaeological Assessment is prepared with reference to historical heritage (i.e., archaeological evidence of occupation and use of the landscape post-1788). A Maritime Archaeological Assessment is provided at Appendix A which further considers the main riverbed (Parramatta River) between Melrose Park and Wentworth Point. Separate reports have been prepared for Aboriginal archaeology and for built heritage.
- Assessment of areas within the Parramatta CBD are based on previous work undertaken as part of Parramatta Light Rail Stage 1. This work was reviewed, and its conclusions supported. No further research or assessment was undertaken for this area.
- This report has been informed by limited archaeological test excavation at one location only (Broadoaks Park). Further testing was planned to test the conclusions made in this report but were not able to be completed safely due to the presence of asbestos in the soil profile (see Section 8.3 for more detail).

## 1.6 Authorship

Dr Gary Marriner (Senior Heritage Consultant) prepared this report with assistance from Wendy Thorp (Principal, CRM) who has provided additional technical input. Dr Marriner and Ms Thorp are both suitably qualified heritage consultants and archaeologists and meet the NSW Heritage Council's Excavation Director criteria. Gary holds a PhD in archaeology, has 12 years' experience and has been a nominated secondary excavation director on local and State significant archaeological excavations. Wendy has over 30 years' experience and has been nominated as primary excavation director on numerous State and locally significant archaeological excavations. The summary of historical context in Section 3.6 in relation to Aboriginal history was written by Dr Bengi Selvi-Lamb (Heritage Consultant).

Susan Kennedy (Heritage Manager) (BA, M.Marit. Arch, LLB, M.ICOMOS) provided input into the maritime archaeological assessment contained in this Historical Archaeological Assessment. Susan is a qualified maritime archaeologist with over 15 years' experience. Additional Maritime Archaeological Assessment (Appendix A) has also been prepared by David Nutley (Comber Consultants) (Grad.Dip.Marit.Arch.,

M.B.Env., M.Marit.Arch., M.ICOMOS). David is a qualified Maritime Archaeologist with over 30 years' experience.

This report was greatly enhanced by a series of reviews and the authorship team wish to especially thank Felicity Barry for her helpful, insightful and useful comments and suggestions.

## 2 LEGISLATIVE CONTEXT

### 2.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the principal environmental legislation at a Commonwealth level. It provides for the protection and management of matters of national environmental significance as defined in the Act. Matters of national environmental significance include but are not limited to flora, fauna, ecological communities, and heritage places of national and international importance.

In addition, the EPBC Act applies to actions with a significant impact on the environment where the actions affect, or are taken on, Commonwealth land, or are carried out by a Commonwealth agency (even if that significant impact is not on one of the nine matters of 'national environmental significance').

The EPBC Act requires approval from the Australian Minister for the Environment for actions with a significant impact on places included on the National Heritage List or Commonwealth Heritage List.

#### 2.1.1 National Heritage List

The National Heritage List was established under the EPBC Act to protect places of outstanding significance to Australia.

There are **no places** on the National Heritage List located within or near the project site (refer Section 3.1.1 for project site definition).

#### 2.1.2 Commonwealth Heritage List

The Commonwealth Heritage List was established under the EPBC Act to protect places owned and managed by Commonwealth agencies.

There are **no places** on the Commonwealth Heritage List located within or near the project site.

### 2.2 Heritage Act 1977

The NSW *Heritage Act 1977* (the Heritage Act) is the principal legislation for the management of NSW's environmental heritage. It establishes the State Heritage Register (SHR) and includes protection provisions for Interim Heritage Orders, Orders to Stop Work and managing disturbance to archaeological relics (both on land and underwater within the limits of the State). It also requires government agencies to maintain a Heritage and Conservation Register.

To assist management of NSW's environmental heritage, the Heritage Act distinguishes between assets of state and local heritage significance:

- State significance refers to significance to the state in relation to the historical, archaeological, architectural, cultural, social, natural or aesthetic value of an item
- local significance refers to significance to an area in relation to the historical, archaeological, architectural, cultural, social, natural, or aesthetic value of an item.

Items may be of State and local significance. Items of local significance may or may not be of significance to the State.

#### 2.2.1 State Heritage Register

The State Heritage Register (SHR) is a statutory register of environmental heritage, with heritage values that have been confirmed as demonstrating importance to the whole of NSW under specific criteria. Listing a place on the register means that prior approval from the NSW Heritage Council is required for major changes to ensure its heritage significance is retained. Section 57 of the Heritage Act outlines what works require approval, and approvals are granted under Section 63 of the Act.

The following items included on the SHR are located within or near the project site (See Figure 2-2 to Figure 2-8).

- *Archaeological Site and Associated Artefacts* (SHR No. 02027)
- *Newington Armament Depot and Nature Reserve* (SHR No. 01850)
- *Sewage Pumping Station 67* (SHR No. 01643)
- *St John's Anglican Cathedral* (SHR No. 01805).

None are expected to have relevance to the significance or potential of the project site in relation to non-Aboriginal archaeology.

### 2.2.2 Section 170 Heritage and Conservation Register

Section 170 of the *Heritage Act* requires government instrumentalities to establish a Heritage and Conservation Register that identifies all assets of environmental heritage that it owns or occupies. Government agencies are required to provide the NSW Heritage Council prior notice of any intention to make the following changes to items listed on the Section 170 Heritage and Conservation Register:

- remove an asset
- transfer ownership of an asset
- cease to occupy an asset
- demolish an item.

Assets must be maintained with due diligence in accordance with the *State Agency Heritage Guide* (NSW Heritage Office, 2005). Proposals to alter, dispose or demolish assets of State heritage significance (that are listed on the SHR) must be referred to the NSW Heritage Council for comment.

The following items are included on the Sydney Water Section 170 Heritage and Conservation Register (see Figure 2-2):

- *Sewage Pumping Station 67* (SP0067) (State Heritage Inventory (SHI) No. 4571724).

### 2.2.3 Relics provisions

Historical archaeological or 'relics' are defined by Section 4 of the *Heritage Act*. as:

*Any deposit, object or material evidence:*

- which relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and*
- which is of State or Local significance." It should be noted that not all remains that would be considered archaeological are relics under the NSW Heritage Act.*

Section 138 specifically states that relics include historic shipwrecks.

Section 139 of the *Heritage Act* protects certain (historical archaeological) 'relics' from activities that would disturb or excavate land including causing them to be 'discovered, exposed, moved, damaged or destroyed'. This protection extends to the situation where a person has 'reasonable cause to suspect' that archaeological evidence may be affected by the disturbance or excavation of the land. It applies to all land in New South Wales that is not included on the SHR. Relics are also protected when listed on the SHR but are subject to different regulatory requirements. A relic is an archaeological deposit, resource or feature that has heritage significance at a local or State level as per regulatory guidelines (e.g. NSW Heritage Branch, 2009).

Under Section 146 of the *Heritage Act*, a person who has discovered or believes they may have discovered a relic (including a shipwreck) must cease work, notify Heritage NSW, and provide details.

In addition, Section 51(1) states that a person must not move, damage or destroy any historic shipwreck otherwise than in accordance with a historic shipwrecks permit.

## 2.2.4 State waters and shipwreck provisions

Part 3C of the *Heritage Act 1977* contains provisions for the protection of shipwrecks over 75 years old within State Waters. This section is included in the Act to provide a link to and consistency with the former Commonwealth *Historic Shipwrecks Act 1976*.<sup>1</sup>

For the purposes of the *Heritage Act 1977*, State Waters are defined in Section 47 as the coastal waters of the State (Section 58 of the *Interpretation Act 1987*) and any other waters within the limits of the State. This definition means that State Waters comprise the riverbed and the water column up to three nautical miles (nm) from the coast of NSW (see *Constitutional Powers (Coastal Waters) Act 1979*).

Historic Shipwrecks and other maritime heritage protected by the *Heritage Act* are identified in the NSW Maritime Heritage Database (formerly the Historic Shipwrecks Register) maintained by the NSW Heritage Council.

### 2.2.4.1 Database searches

#### NSW Maritime Heritage Database

A search of the NSW Maritime Heritage Database was undertaken 23 February 2023. The search revealed no additional maritime heritage sites within the project site. The closest site registered is *Lockyers Wharf*, recorded approximately 250 metres east of the project site (see Figure 2-1).

#### Australasian Underwater Cultural Heritage Database

The Australasian Underwater Cultural Heritage Database (AUCHD) contains historical and environmental information about shipwrecks, sunken aircraft and other types of underwater heritage sites located in the Oceania and Southeast Asian regions. This database also includes the records of artefacts that originate from these sites. The AUCHD also serves as the register of underwater cultural heritage protected under the *Underwater Cultural Heritage Act 2018* (Commonwealth).

A search of the AUCHD was undertaken on 23 February 2023. No sites were located in the proximity of the project site.

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<sup>1</sup> It is noted this is superseded by Section 16 of the *Underwater Cultural Heritage Act 2018*, however the *Heritage Act* has not been updated to reflect these changes



Figure 2-1: NSW Maritime Heritage Database Search result, with *Lockyers Wharf* highlighted in red (Source: Heritage NSW).

### 2.2.5 Conservation Management Plans

Conservation management plans (CMPs) relevant to the project site comprise:

Newington Armament Depot and Nature Reserve, Sydney Olympic Park Conservation Management Plan (Tanner Architects, 2013):

- This CMP provides policies regarding historical archaeology (Policy 48 to 53). As the area covered by the CMP is outside of the project site, these are not applicable here.

Abattoir Heritage Precinct, Sydney Olympic Park Conservation Management Plan (Government Architect’s Office, 2013):

- Policy 29 of this CMP states there are no archaeological requirements if excavation occurs within the Abattoir Heritage Precinct.

- *Millennium Parklands Heritage Precinct Conservation Master Plan* (Graham Brooks and Associates, 2003).

- This CMP does not make mention of historical archaeology

CMPs assess the significance and set out management policies for each item.

## 2.3 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation) provide the statutory basis for planning and environmental assessment in NSW. The EP&A Act provides the framework for environmental planning and development approvals. The EP&A Act includes provisions to ensure that the potential environmental impacts of a development are assessed and considered in the decision-making process.

The EP&A Act contains two parts that impose requirements for planning approval. These are generally as follows:

- Part 4 provides for the control and assessment of 'development' that requires development consent. This includes local, regional and State significant development (SSD).
- Part 5 provides for control and assessment of 'activities' that do not require development consent (Division 5.1) and declared State significant infrastructure (Division 5.2).

The need or otherwise for development control and the relevant approval authority is set out in environmental planning instruments – consisting of local environmental plans (LEPs) and State environmental planning policies (SEPPs).

The project is State significant infrastructure and is therefore subject to assessment and approval by the Minister for Planning under Part 5, Division 5.2 of the NSW EP&A Act.

### 2.3.1 State Environmental Planning Policy (Precincts – Central River City) 2021

The State Environmental Planning Policy (Precincts - Central River City) 2021 (SEPP (PCRC)) aims to facilitate the development, redevelopment or protection of important places of economic, environmental or social significance to the State. This SEPP incorporates and supersedes:

- Sydney Regional Environmental Plan No 24 Homebush Bay Area
- State Environment Planning Policy (State Significant Precincts) 2005.

The following Heritage conservation areas listed under Schedule 4 on the SEPP (PCRC) 2021 are located within or near the project site (Figure 2-2 to Figure 2-8):

- *State Abattoirs heritage conservation area (Area No 1)*

The following heritage items listed under Schedule 5 on the SEPP (PCRC) 2021 are located within or near the project site:

- *State Abattoir locality*
  - Item 1 - The Vernon Buildings, the Maiden Gardens and the Railway Garden within the Historic Abattoir Administration Precinct, bounded by Herb Elliott Avenue, Showground Road, Dawn Fraser Avenue and the Railway Garden.
  - Item 2 - The Avenue of Palms.
- *Millennium Parklands Heritage Precinct*
  - Item A - The collection of buildings, structures, relics and landforms constructed by the Royal Australian Navy as an armament's depot during the 19th and 20th centuries, together with the rare river edge wetlands and the Cumberland Plain woodland area, to the extent to which they are—
    - (a) situated on land identified on the map marked "Sydney Regional Environmental Plan No 24—Homebush Bay Area—Amendment No 2—Map 3", and
    - (b) described in the document entitled Millennium Parklands Heritage Precinct Conservation Master Plan 2001, prepared by Graham Brooks and Associates, copies of which are available for inspection at the head office, and the Sydney Region West office, of the Department.
- Other
  - *Explosives Store (Item 87)*

The following conservation areas as identified on the State Environmental Planning Policy (Precincts – Central River City) 2021 Sydney Olympic Park Heritage Map under Appendix 4 Sydney Olympic Park site, are located within or near the project site:



- State Abattoirs (Conservation Area A)<sup>2</sup>
  - Newington Armament Depot and Nature Reserve (Conservation Area B)<sup>3</sup>

### 2.3.2 State Environmental Planning Policy (Biodiversity and Conservation) 2021

The project site is within an area administered by the State Environmental Planning Policy (Biodiversity and Conservation) 2021 (SEPP (BC)) which incorporates and supersedes the previous Sydney Regional Environmental Plan (REP) (Sydney Harbour Catchment) 2005. The SEPP covers all the waterways of the Harbour, the foreshore and the catchment. It addresses a range of matters for consideration by consent authorities assessing development within the area of the Plan to ensure consistent development decisions. It includes provisions relating to heritage and wetlands and provides planning controls for strategic foreshore areas. The objectives of the SEPP (BC) are stated in Part 10.51:

(1) *The objectives of this Chapter in relation to heritage are—*

(a) *to conserve the environmental heritage of the land to which this Part applies, and*

(b) *to conserve the heritage significance of existing significant fabric, relics, settings and views associated with the heritage significance of heritage items, and*

(c) *to ensure that archaeological sites and places of Aboriginal heritage significance are conserved, and*

(d) *to allow for the protection of places which have the potential to have heritage significance but are not identified as heritage items.*

The following items identified on Schedule 11 of the SEPP (BC) are located within or near the project site (Figure 2-2 to Figure 2-8):

- *Former Pennant Hills Wharf, Wharf Road, Ermington* (Item No. 40).

### 2.3.3 Parramatta Local Environmental Plan 2011

The project site is within an area administered by the Parramatta Local Environmental Plan (LEP) 2011. The Parramatta LEP 2011 sets out various planning, development, and environmental controls for the local government area (LGA) of the City of Parramatta Council. Schedule 5 of the LEP identifies heritage items important to the LGA.

The following items included on Schedule 5 of the Parramatta LEP 2011 are located within or near the project site (Figure 2-2 to Figure 2-8):

- *Wetlands* (Parramatta LEP Item No. I1)
- *Tram alignment* (Parramatta LEP Item No. I6)
- *Rose Farm House* (Parramatta LEP Item No. I63)
- *Bulla Cream Dairy* (Willowmere) (Parramatta LEP Item No. I64)
- *Well* (Parramatta LEP Item No. I74)

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<sup>2</sup> As this conservation area is listed twice under the SEPP, this area will be referred to as State Abattoirs heritage conservation area (Area No. 1) throughout this document to avoid confusion.

<sup>3</sup> As this area is listed twice on the SEPP (PCRC) and one of these names coincides with the SHR item with a different heritage curtilage, throughout this document this area will be referred to as the Millennium Parklands Heritage Precinct to avoid confusion between the SHR item and the SEPP conservation area.

- *Ermington Wharf* (Parramatta LEP Item No. I82)
- *Truganini House and grounds* (Parramatta LEP Item No. I591)
- *Bicentennial Square and adjoining buildings* (Parramatta LEP Item No. I651)
- *Murrays' Building (and potential archaeological site)* (Parramatta LEP Item No. I652)
- *Warden's cottage (verger's cottage)* (Parramatta LEP Item No. I653)
- *Centennial Memorial Clock* (Parramatta LEP Item No. I654)
- *Shop (and potential archaeological site)* (Parramatta LEP Item No. I655)
- *Horse parapet façade and potential archaeological site* (Parramatta LEP Item No. I656)
- *Telstra House (former post office) (and potential archaeological site)* (Parramatta LEP Item No. I657)
- *St John's Parish Hall* (Parramatta LEP Item No. I713)
- *Sewage Pumping Station 67* (Parramatta LEP Item No. I01643)

*St John's Anglican Cathedral* (Parramatta LEP Item No. I01805)

*Archaeological site 134-140 Marsden Street* (Parramatta LEP Item No. A11).

### 2.3.4 Parramatta Development Control Plan 2011

The project site is within an area covered by the Parramatta Development Control Plan (DCP) 2011. The Parramatta DCP supplements the LEP and provides more detailed provisions to guide development including control and guidelines for maintenance, alterations and additions, new development, and archaeological issues. Regarding archaeological resources, the DCP provides guidance on the use of the *Parramatta Historical Archaeological Landscape Management Study* (PHALMS) in the application process (see also Section 2.3.6). It also defines Heritage Conservation Areas and provides guidance on development within them.

There are **no** Heritage Conservation Areas listed under this DCP within the project site.

### 2.3.5 Ryde Local Environmental Plan 2014

A small part of the project site is within an area administered by the Ryde LEP 2014. The Ryde LEP 2014 sets out various planning, development, and environmental controls for the LGA of the City of Ryde Council. Schedule 5 of the LEP identifies heritage items important to the LGA.

The following item included on Schedule 5 of the Ryde LEP 2014 is located within the project site (Figure 2-2 to Figure 2-8):

- *Wharf* (Ryde LEP Item No. 165).

### 2.3.6 Parramatta Historical Archaeological Landscape Management Study 2001

In 2001, Godden Mackay Logan prepared the PHALMS. The PHALMS replaced the Archaeological Zoning Plan for Parramatta. Although not statutory, the PHALMS has been adopted by City of Parramatta Council and Heritage NSW for the management of Parramatta's archaeological resources. The PHALMS divides Parramatta into Archaeological Management Units (AMUs) based on their historical context and level of disturbance. It operates as an Archaeological Management Plan (AMP) for the entire Parramatta LGA. As such it identifies, assesses, and provides management advice for historical archaeological relics across the entire LGA.

The project site only partially overlaps with the area assessed by PHALMS with three AMUs in the Parramatta CBD (3215, 3158 and 3211), three AMUs in Camellia (2996, 2948 and 2972) and one in Rydalmere (3009). The rest of the project site is east of the scope of PHALMS, and no equivalent Archaeological Management Plans exist for these areas.

The PHALMS AMUs that the project interacts with are assessed as follows:

- 3215 – Macquarie, Hunter, Marsden, O’Connell and Pitt Streets – local significance and moderate archaeological research potential
- 3158 – Marsden Street Roadway – State significance and exceptional archaeological research potential
- 3211 – unnamed (Marsden Street) – State significance and exceptional archaeological research potential
- 2996 – Parramatta and Duck Rivers - local significance and moderate archaeological research potential
- 2948 – unnamed (Grand Avenue) – local significance and little archaeological research potential
- 2972 – Tramway Avenue, route of 1884 tramline - local significance and moderate archaeological research potential
- 3009 – Part of the Vineyard Estate subdivision, Park Road, Antoine and Jean Streets – local significance and little archaeological research potential.

Consideration of the relevant AMUs has been incorporated into the Historical Archaeological Management Units used in this report as summarised in Section 3.1.2.

PHALMS also included a set of research questions for the LGA. Whilst research and knowledge have advanced considerably in the 20 years since its publication the questions raised are still relevant and discussion of them has been included in the RDEM (Appendix B).

## 2.4 Summary

The heritage listings in relation to the amended project site are summarised in and shown in Figure 2-2 to Figure 2-8. Abbreviations used in registers are included in the table at the start of this report (page ii). This is limited to listed heritage items/sites within of 66 metres of the amended project site boundary for inclusion of vibratory impacts as discussed in the Updated Noise and Vibration Report.

**Table 2-1: Heritage listings in close proximity (defined as 66 metres) to the project site**

Name	Register	ID	Significance	Suburb	Location
Newington Armament Depot and Nature Reserve	SHR	01850	State	Sydney Olympic Park	Immediately adjacent to project site
Sewage Pumping Station 67	SHR s170 Parramatta LEP	01643 4571724 I01643	State	Camellia	Around 30 metres west of project site
St John’s Anglican Cathedral	SHR Parramatta LEP	01805 I01805	State	Parramatta	Around 50 metres south of project site
Archaeological site and associated artefacts (45 Macquarie Street)	SHR	02027	State	Parramatta	Immediately adjacent to project site
Archaeological site (134-140 Marsden Street)	Parramatta LEP	A11	Local		
State Abattoirs heritage conservation area	SEPP (PCRC)	Area No. 1 & Area A	State	Sydney Olympic Park	Within project site
State Abattoirs locality	SEPP (PCRC)	Item No. 1 & 2			
Millennium Parklands Heritage Precinct	SEPP (PCRC)	Item A	State	Sydney Olympic Park	Within project site
Newington Armament Depot and Nature	SEPP (PCRC)	Area B			

UPDATED HISTORICAL ARCHAEOLOGICAL ASSESSMENT

Name	Register	ID	Significance	Suburb	Location
Reserve conservation area					
Former Pennant Hills Wharf*	SEPP (BC)	40	Local	Melrose Park	Within project site
Wetlands	Parramatta LEP	11	Local	Camellia Rydalmere Melrose Park	Within project site
Tram Alignment	Parramatta LEP	16	Local	Camellia	Within project site
Rose Farm House	Parramatta LEP	163	Local	Ermington	Around 50 metres south of project site at Honor Street
Bulla Cream Dairy (Willowmere)	Parramatta LEP	164	Local	Ermington	Within project site
Ermington Wharf*	Parramatta LEP	182	Local	Melrose Park	Within project site
Truganini House and grounds	Parramatta LEP	1591	Local	Rydalmere	Around 35 metres west of the project site
Parramatta Town Hall (and potential archaeological site)	Parramatta LEP	1650	Local	Parramatta	Around 50 metres southeast of project site
Bicentennial Square and adjoining buildings	Parramatta LEP	1651	Local	Parramatta	Immediately adjacent to project site
Murrays' Building (and potential archaeological site)	Parramatta LEP	1652	Local	Parramatta	Immediately adjacent to project site
Warden's cottage (verger's cottage)	Parramatta LEP	1653	Local	Parramatta	Around 50 metres south of project site
Centennial Memorial Clock	Parramatta LEP	1654	Local	Parramatta	Immediately adjacent to project site
Shop (and potential archaeological site)	Parramatta LEP	1655	Local	Parramatta	Immediately adjacent to project site
Horse parapet façade and potential archaeological site	Parramatta LEP	1656	Local	Parramatta	Immediately adjacent to project site
Telstra House (former post office) (and potential archaeological site)	Parramatta LEP	1657	Local	Parramatta	Around 50 metres north of project site
HMV (former Commonwealth Bank) (and potential archaeological site)	Parramatta LEP	1657	Local	Parramatta	around 60 metres north of project site
St John's Parish Hall	Parramatta LEP	1713	Local	Parramatta	Around 50 metres south of project site
Archaeological site (134-140 Marsden Street)	Parramatta LEP	A11	Local	Parramatta	Immediately adjacent to project site
Wharf*	Ryde LEP 2014	165	Local	Melrose Park	Within project site

\*Denotes same site, listed under multiple planning instruments

UPDATED HISTORICAL ARCHAEOLOGICAL ASSESSMENT

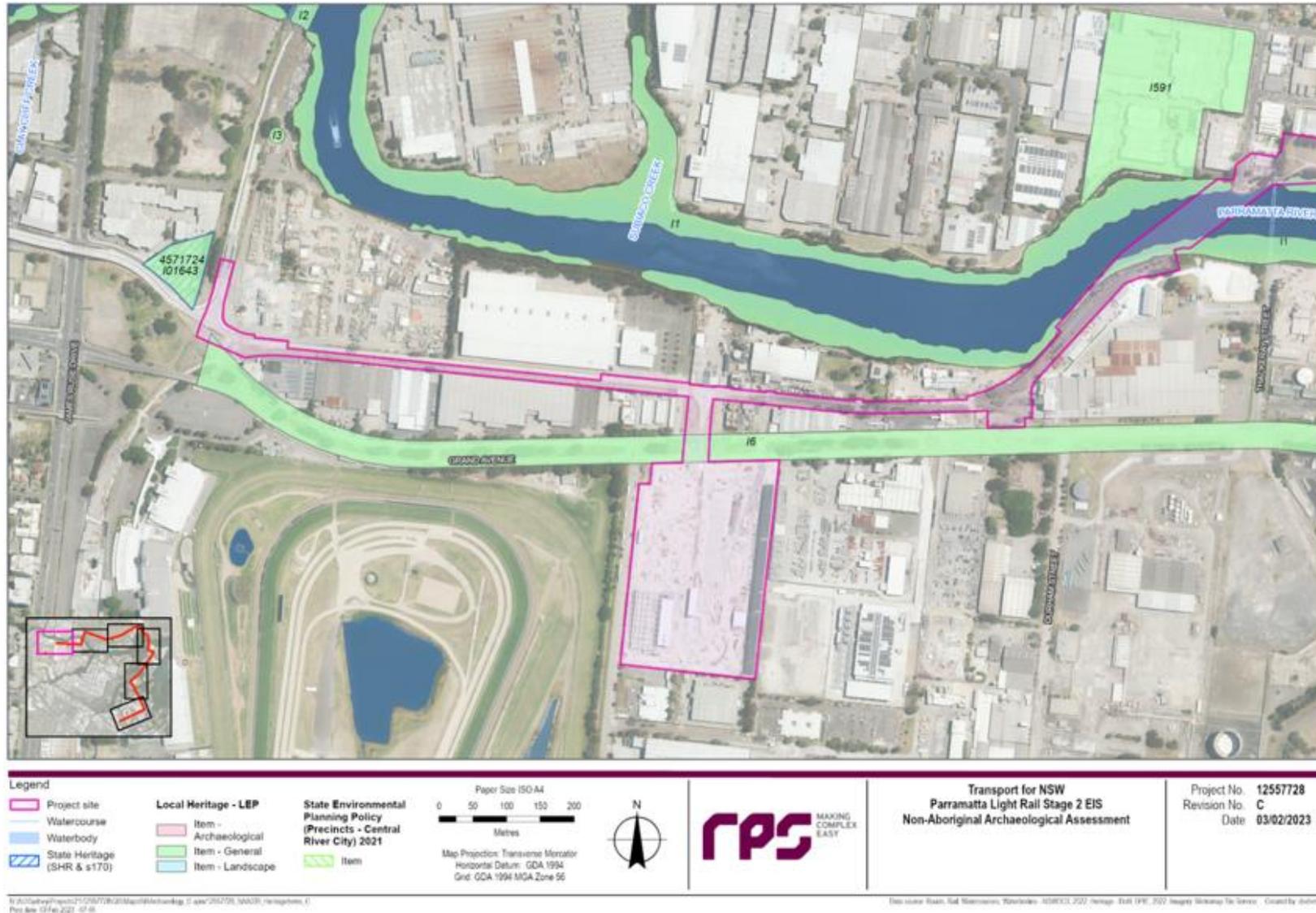


Figure 2-2: Heritage items in relation to the project site. Those within close proximity of the project site (defined as 66 metres) are listed in Table 2-1

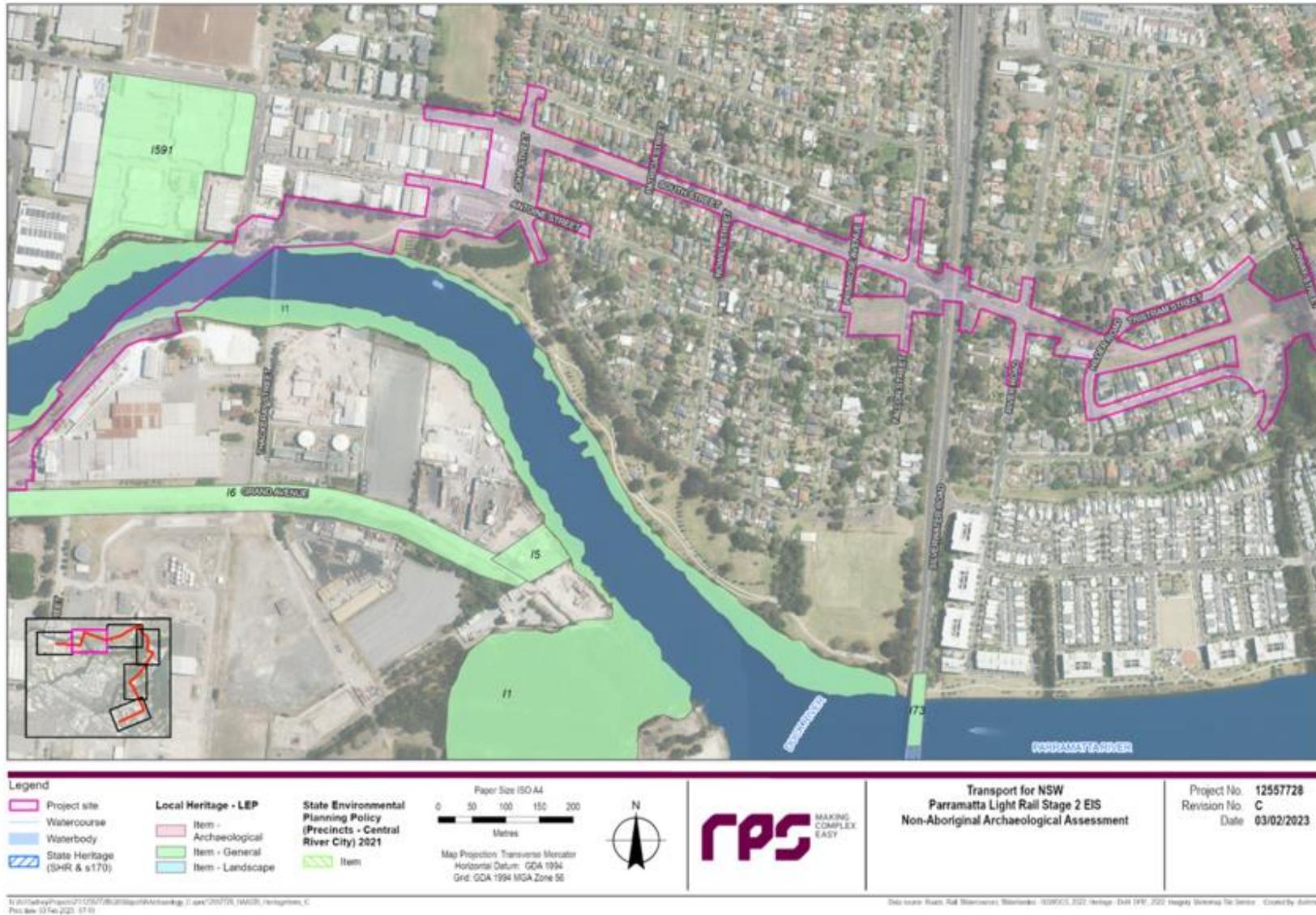


Figure 2-3: Heritage items in relation to the project site. Those within close proximity of the project site (defined as 66 metres) are listed in Table 2-1

UPDATED HISTORICAL ARCHAEOLOGICAL ASSESSMENT

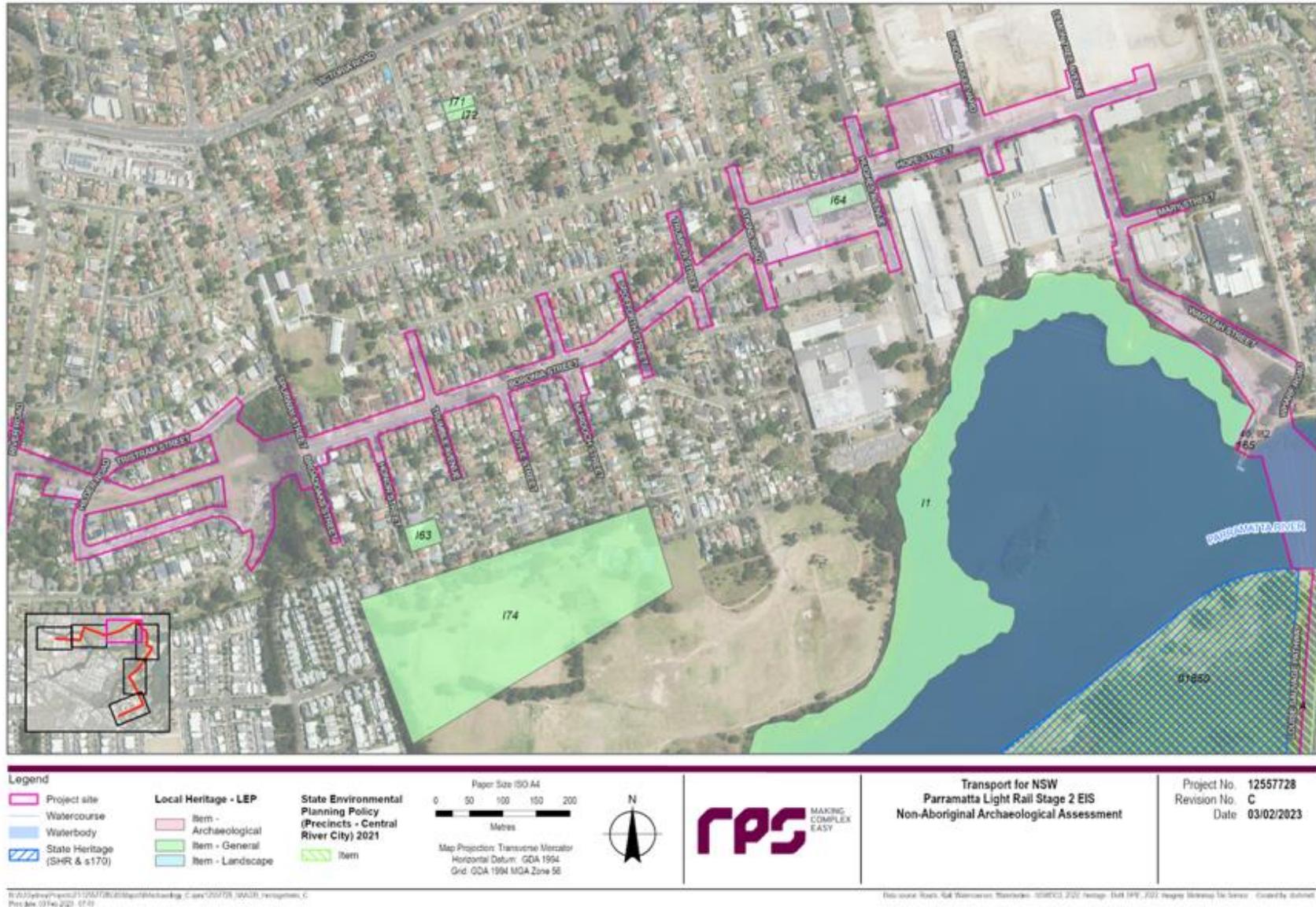


Figure 2-4: Heritage items in relation to the project site. Those within close proximity of the project site (defined as 66 metres) are listed in Table 2-1

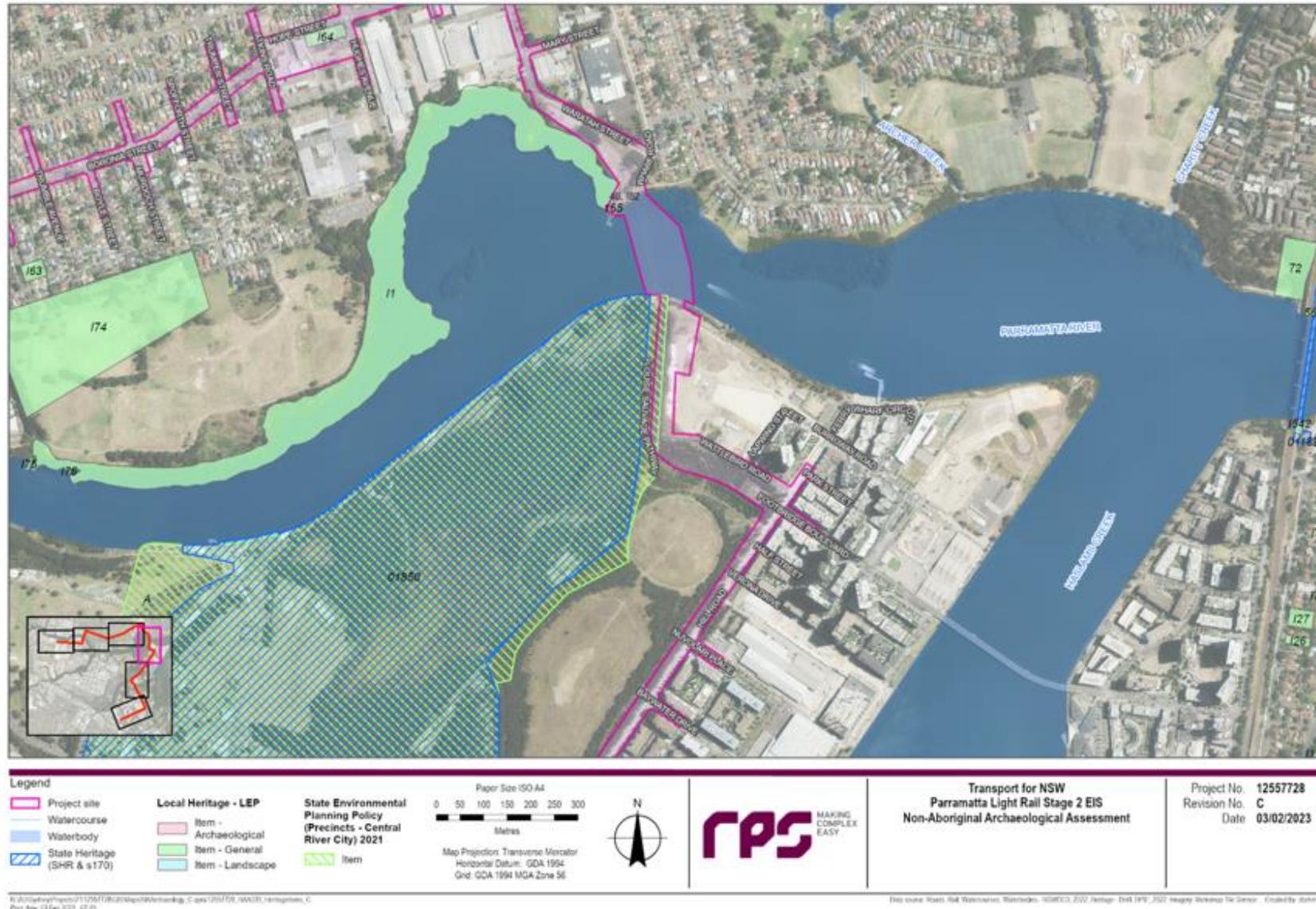


Figure 2-5: Heritage items in relation to the project site. Those within close proximity of the project site (defined as 66 metres) are listed in Table 2-1



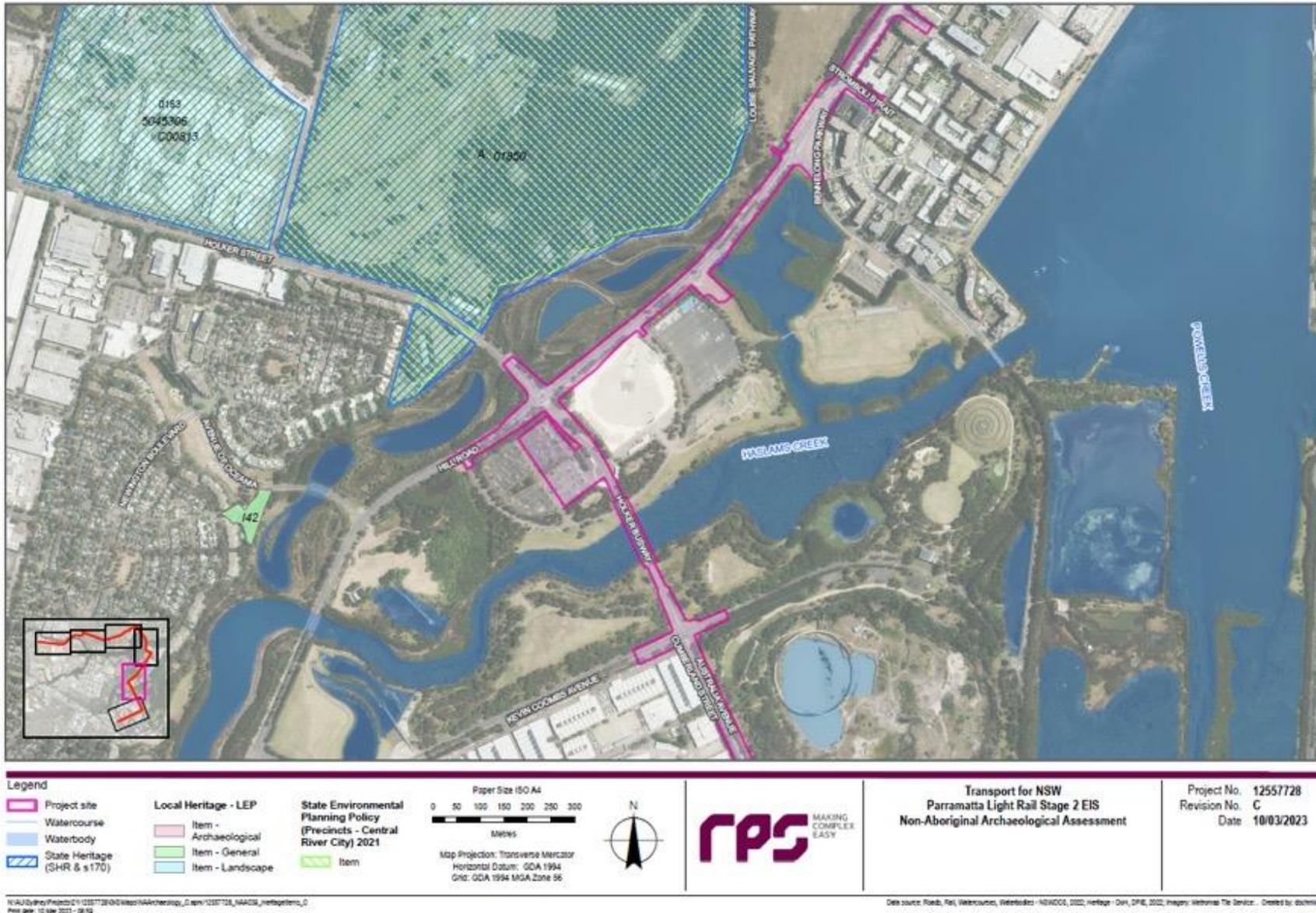


Figure 2-6: Heritage items in relation to the project site. Those within close proximity of the project site (defined as 66 metres) are listed in Table 2-1



UPDATED HISTORICAL ARCHAEOLOGICAL ASSESSMENT

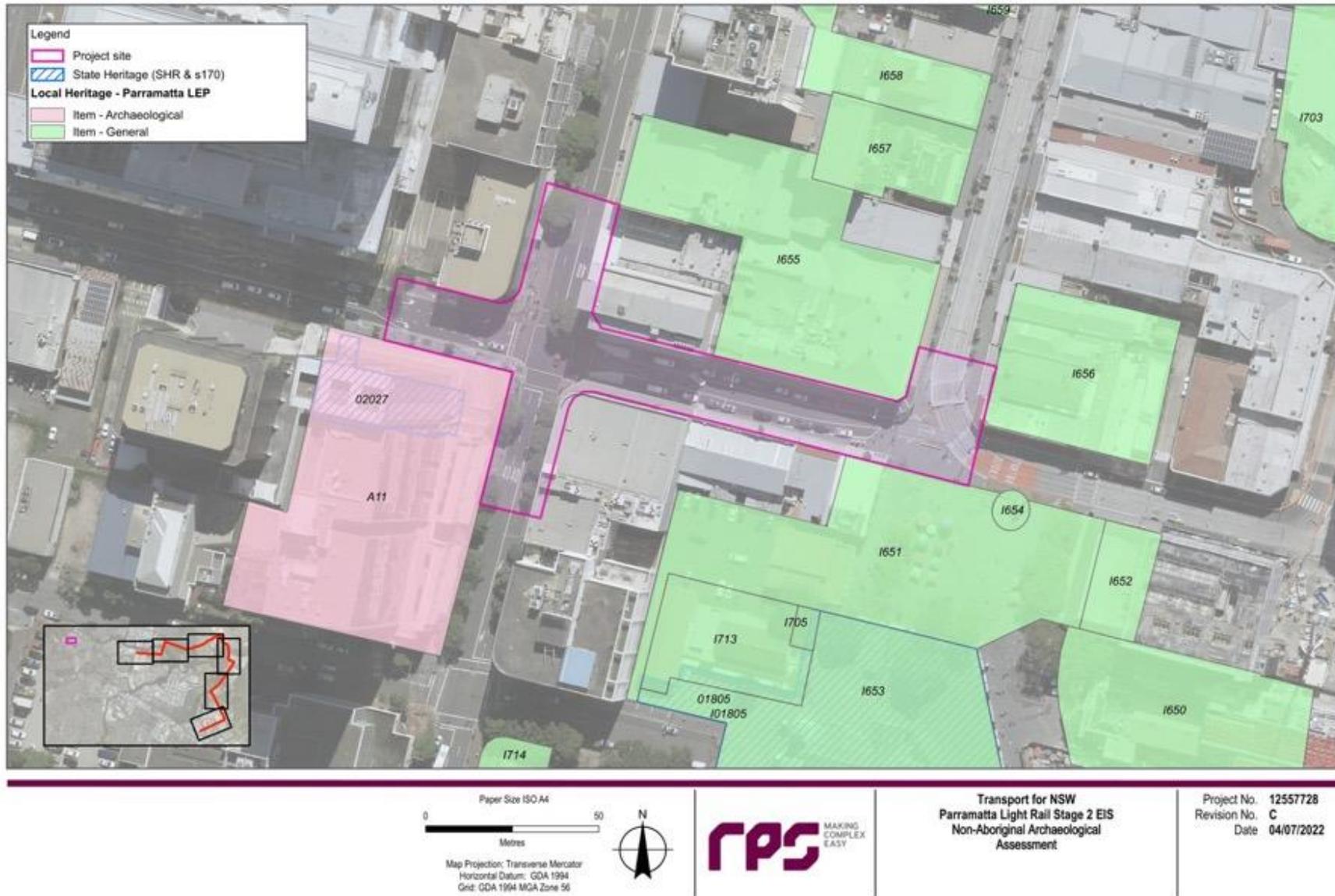


Figure 2-8: Heritage items in relation to the project site. Those within close proximity of the project site (defined as 66 metres) are listed in Table 2-1

## 3 ASSESSMENT METHODOLOGY

### 3.1 Assessment approach

#### 3.1.1 Project site

The project site of this assessment includes all areas that could be directly disturbed by construction of the project (for example, due to ground disturbance and the construction of foundations for structures). It includes the location of construction activities, compounds and work sites, and the location of permanent infrastructure.

Due to the size and scope of the project site, this assessment has divided the project site according to the following suburb and geographical boundaries, shown in Figure 3-1:

1. Camellia
2. Rydalmere
3. Ermington
4. Melrose Park
5. Wentworth Point
6. Sydney Olympic Park, which includes the Carter Street precinct in Lidcombe
7. Parramatta CBD
8. Parramatta River (riverbed only and excluding foreshore).

The Parramatta riverbed between Melrose Park and Wentworth Point was identified from desktop research to have maritime archaeological potential and further sonar survey and assessment was undertaken which is provided in Appendix A, with key findings summarised in this report.

In this report Sydney Olympic Park and the Carter Street precinct were treated as a single area as they share a common history although technically the Carter Street precinct forms part of the suburb of Lidcombe.

In general terms contemporary suburb boundaries provide a meaningful division as many have evolved from earlier estates. However, suburb boundaries are modern and do not always reflect historical divisions. A good example of this is Sydney Olympic Park. This contains parts of two historic estates (Newington and Homebush) but is a recent creation, having been declared a locality in 1996 and suburb in 2009.

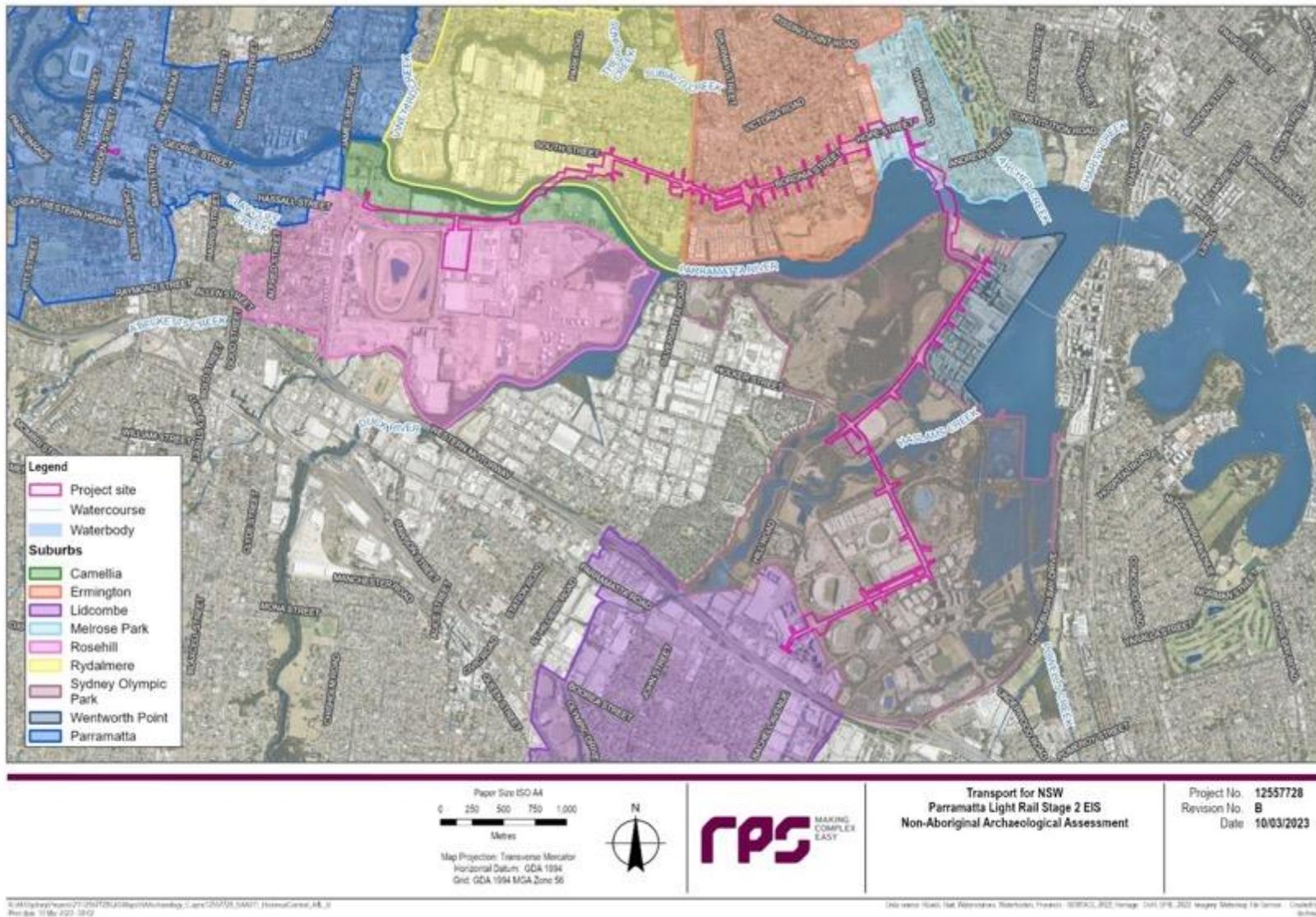


Figure 3-1: Overall project site assessed for historical archaeological potential and significance in this report

### 3.1.2 Historical archaeological management units (HAMUs)

The project site was divided into individual Historical Archaeological Management Units (HAMUs). This approach follows that undertaken for the Parramatta Light Rail Stage 1 EIS (Artefact, 2019) and other projects. The HAMUs in this project are specific to the project and do not reuse the HAMU numbers from Parramatta Light Rail Stage 1. The size and scope of each HAMU was defined based on an analysis of the historical development of the area. This analysis included primary historical research in addition to assessment of historic plans, aerial photographs, and the existing archaeological literature. Current and planned land use was also considered.

A total of 24 HAMUs were identified across the project site suburbs (see Table 3-1, Figure 3-2 to Figure 3-9). Each HAMU is discussed in detail in Section 6, and includes an assessment of the archaeological potential and the significance of any archaeological resource.

HAMU 26, in the section of the project site in the Parramatta CBD, incorporates the previous assessment of potential and significance prepared for the Parramatta Light Rail Stage 1 EIS, which has been reviewed and corroborated here.

Note that due to refinement of the project site (area of disturbance during construction) since this assessment commenced the HAMUs are not all consecutively numbered. As such, there is no HAMU 02, 03, 04, 16 or 21.

**Table 3-1: Number of HAMUs in each suburb**

Suburbs	Number of HAMUs in project site	Figure reference
Camellia	2	Figure 3-2
Rydalmere	5	Figure 3-3
Ermington	6	Figure 3-4
Melrose Park	2	Figure 3-5
Wentworth Point	1	Figure 3-6
Sydney Olympic Park & Carter Street precinct	7	Figure 3-7, Figure 3-8
Parramatta CBD	1	Figure 3-9
<b>Total</b>	<b>24</b>	

### 3.1.3 Maritime archaeology management units (MAMUs)

Two areas of the project site within the Parramatta River were divided into individual Maritime Archaeological Management Units (MAMUs) (see Table 3-2). Due to the limited impact of the project on the Parramatta River the size and scope of each MAMU was defined based on project site only.

**Table 3-2: MAMUs in Parramatta River**

Suburbs	Number of MAMUs in project site	Figure reference
Camellia to Rydalmere	1	Figure 3-2, Figure 3-3
Melrose Park to Wentworth Point	1	Figure 3-5, Figure 3-6
<b>Total</b>	<b>2</b>	



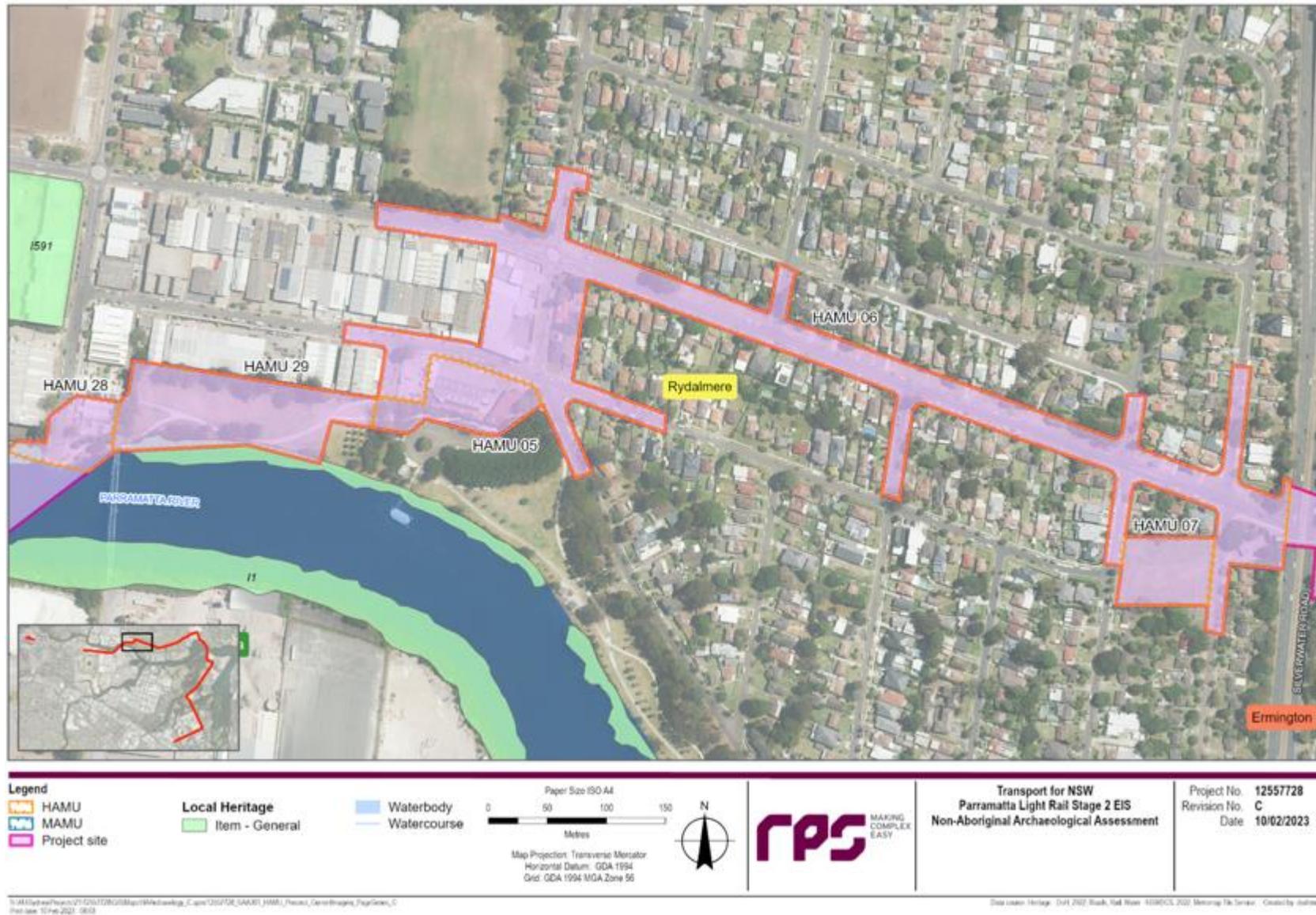


Figure 3-3: HAMUs within Rydalmere, associated MAMUs, and nearby heritage listed items



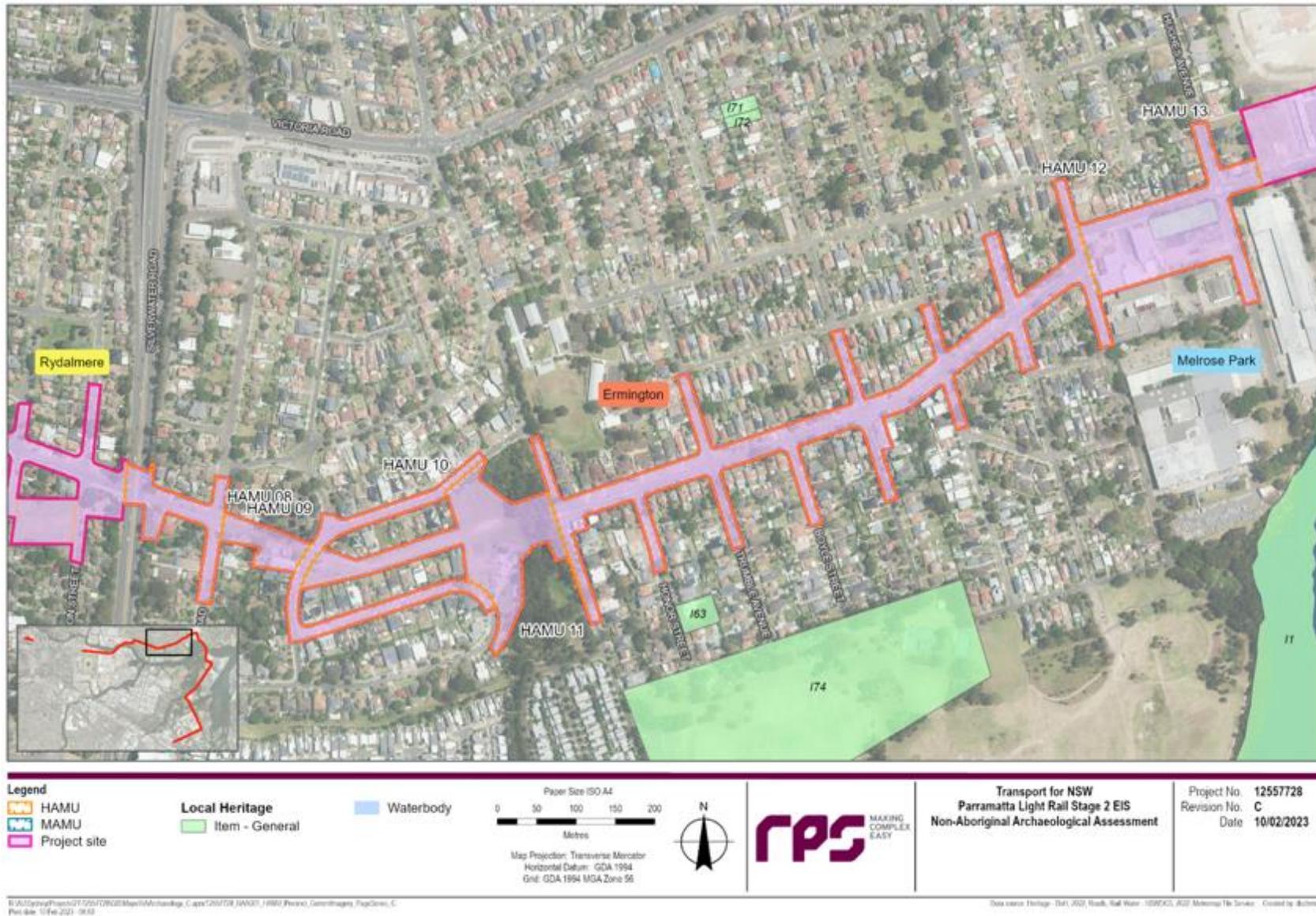


Figure 3-4: HAMUs within Ermington and nearby heritage listed items

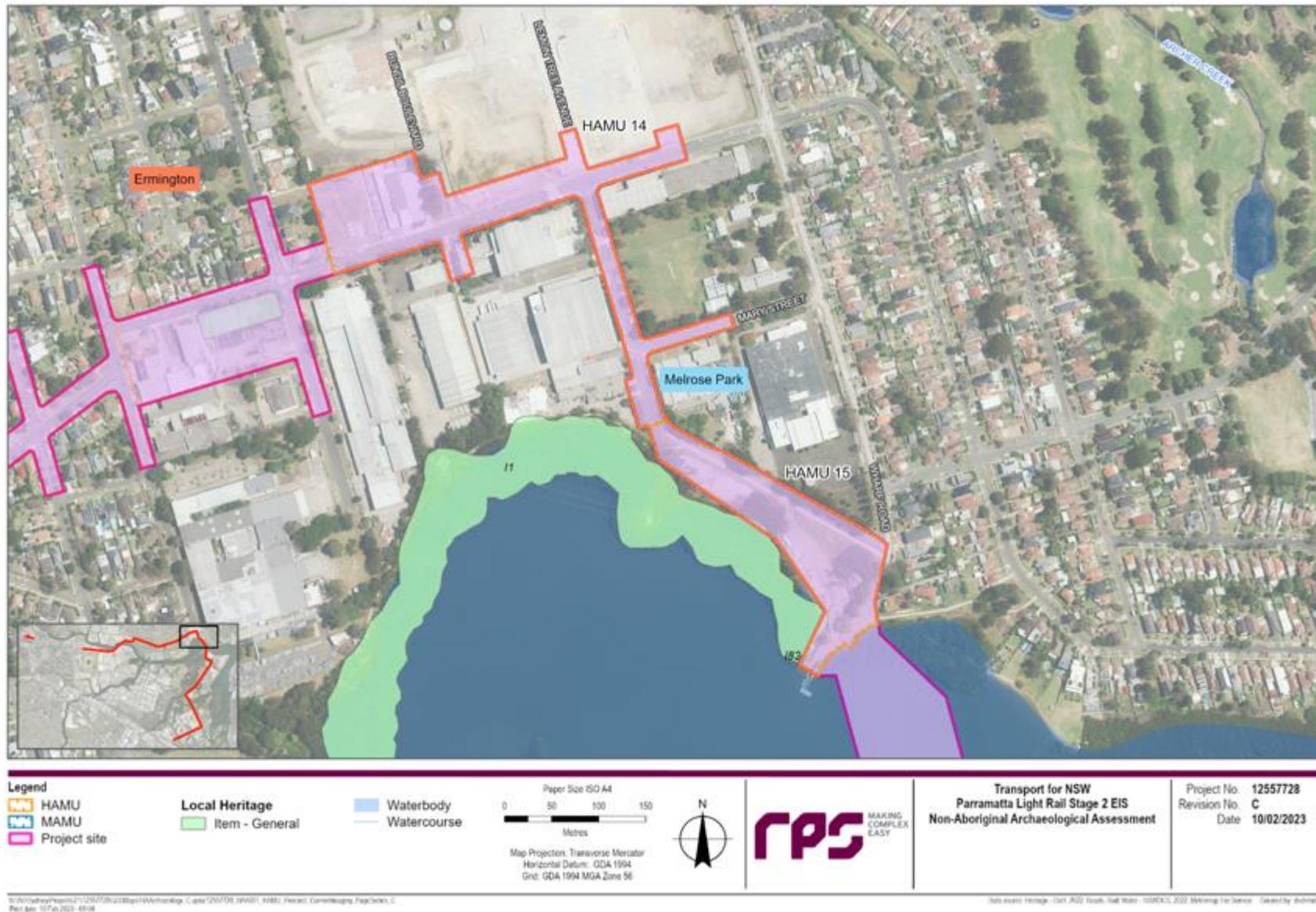


Figure 3-5: HAMUs within Melrose Park associated MAMUs, and nearby heritage listed items

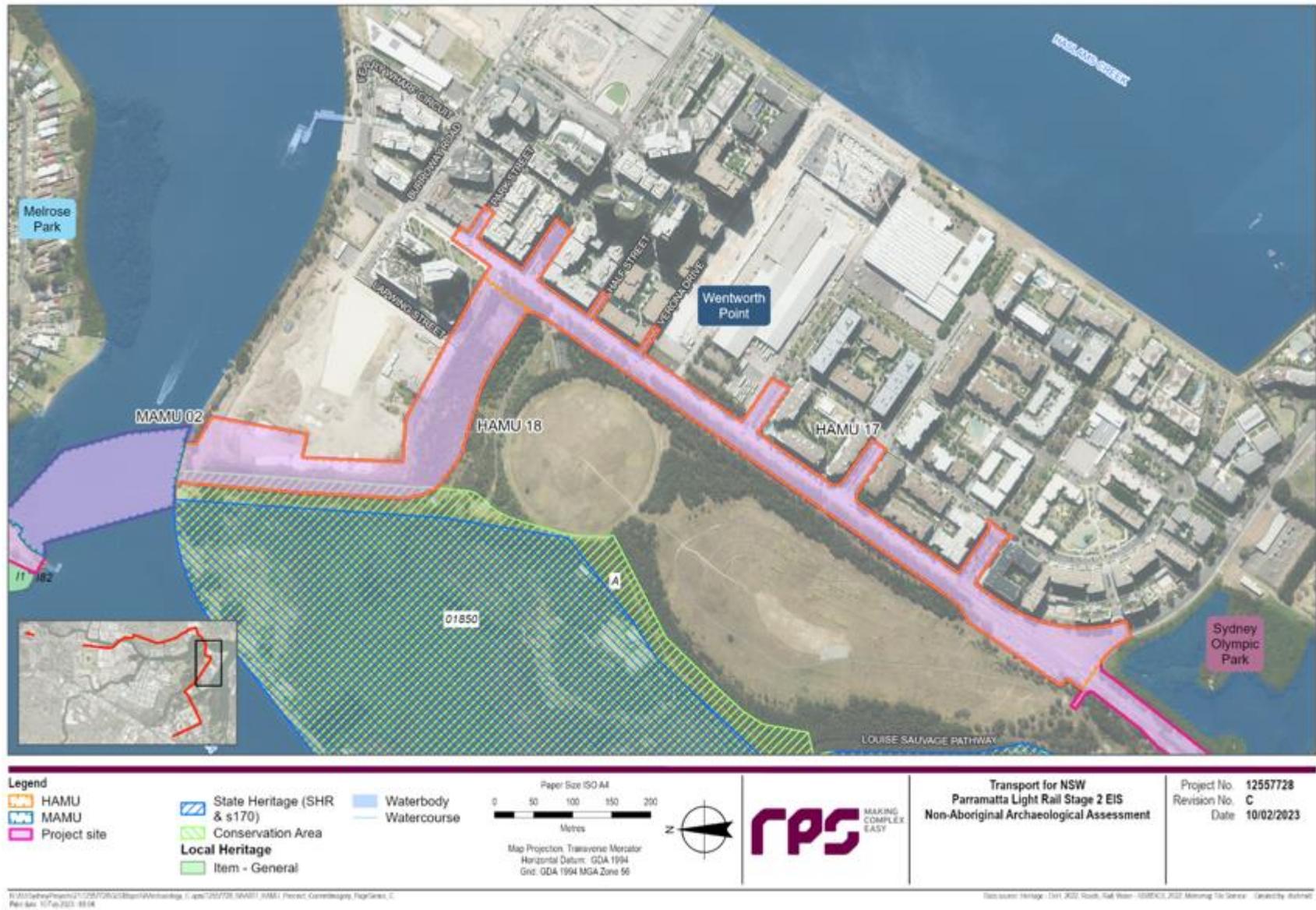


Figure 3-6: HAMUs within Wentworth Point, associated MAMUs, and nearby heritage listed items

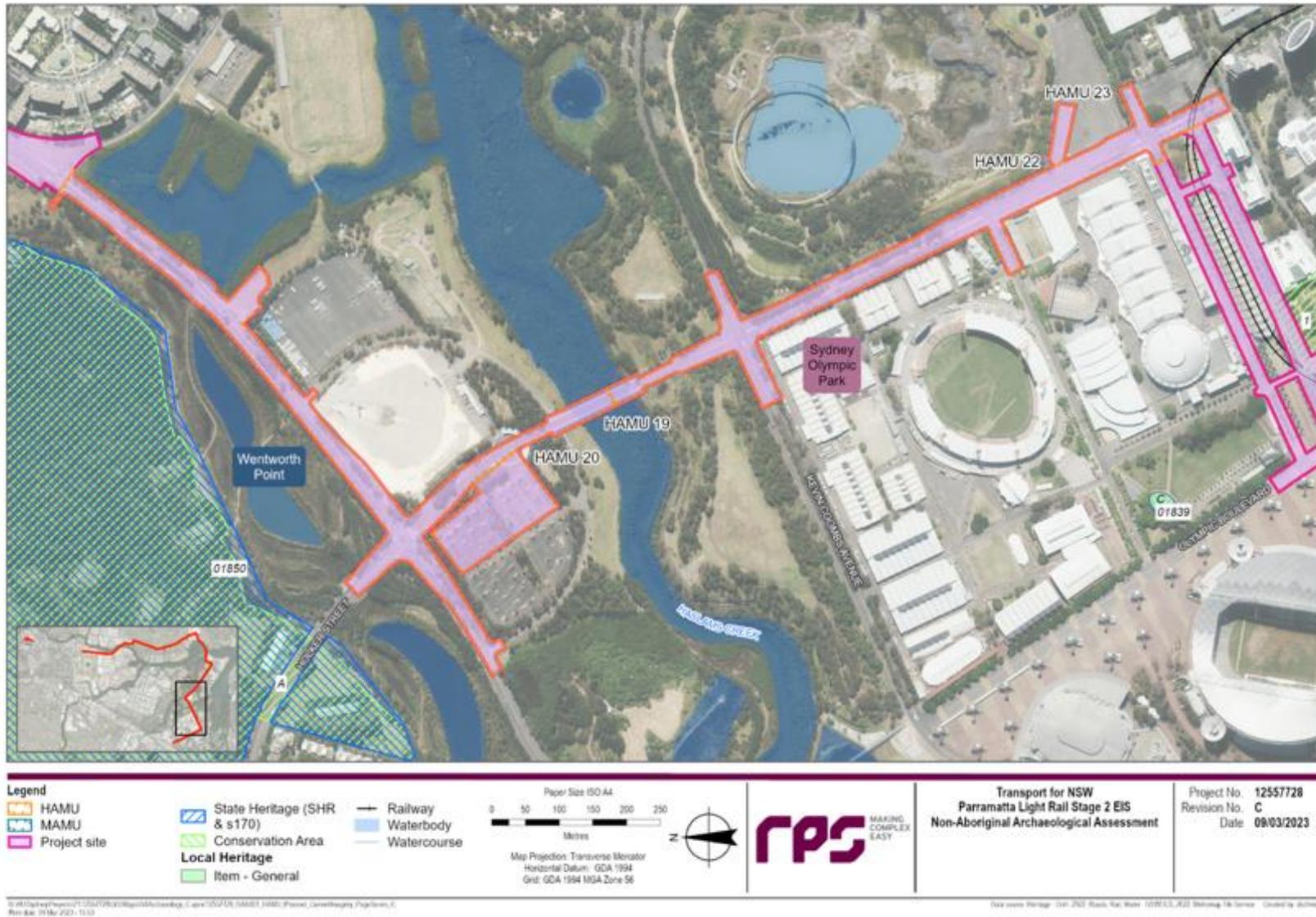


Figure 3-7: HAMUs within northern Sydney Olympic Park and nearby heritage listed items

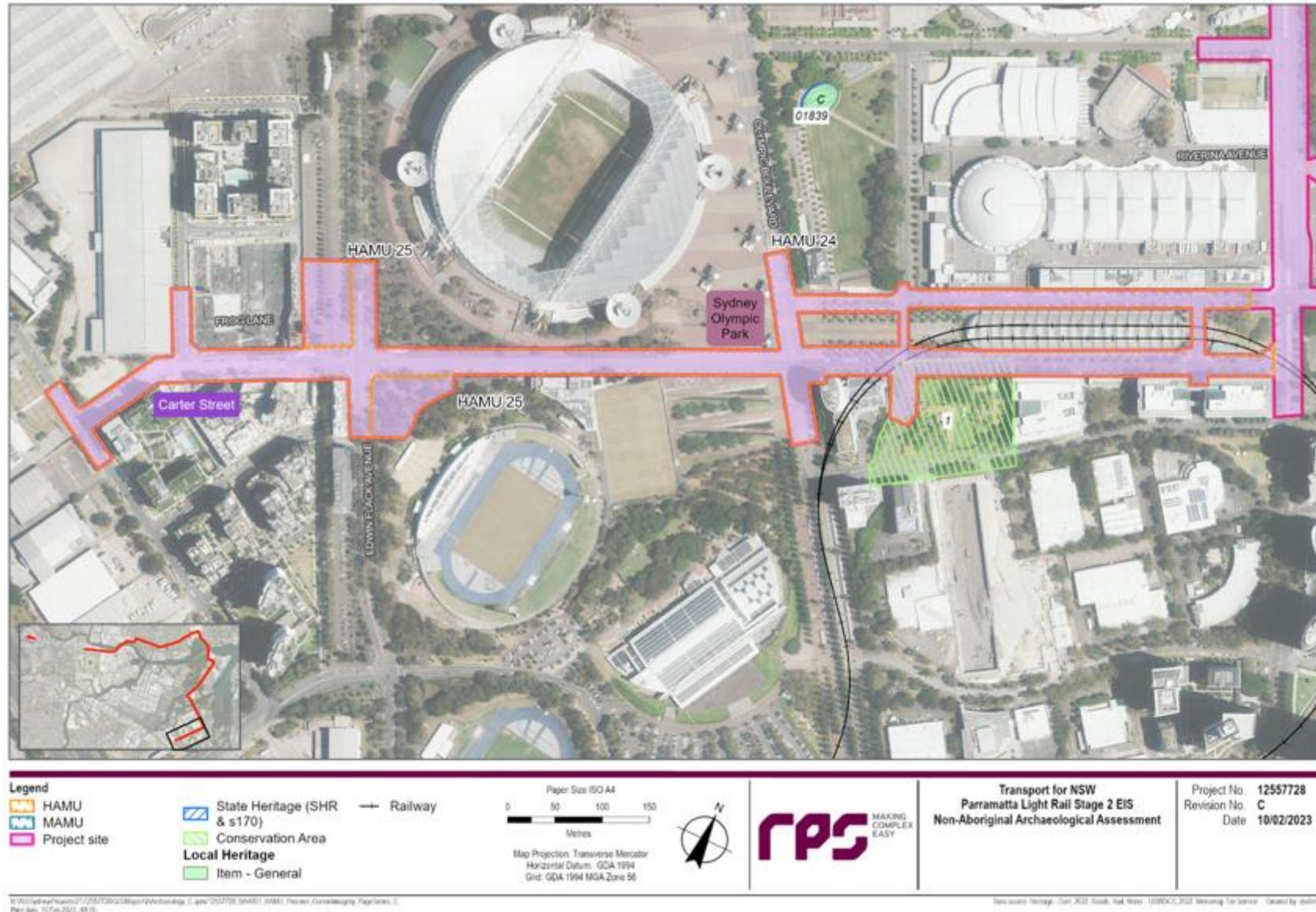


Figure 3-8: HAMUs within southern Sydney Olympic Park and Carter Street precinct and nearby heritage listed items

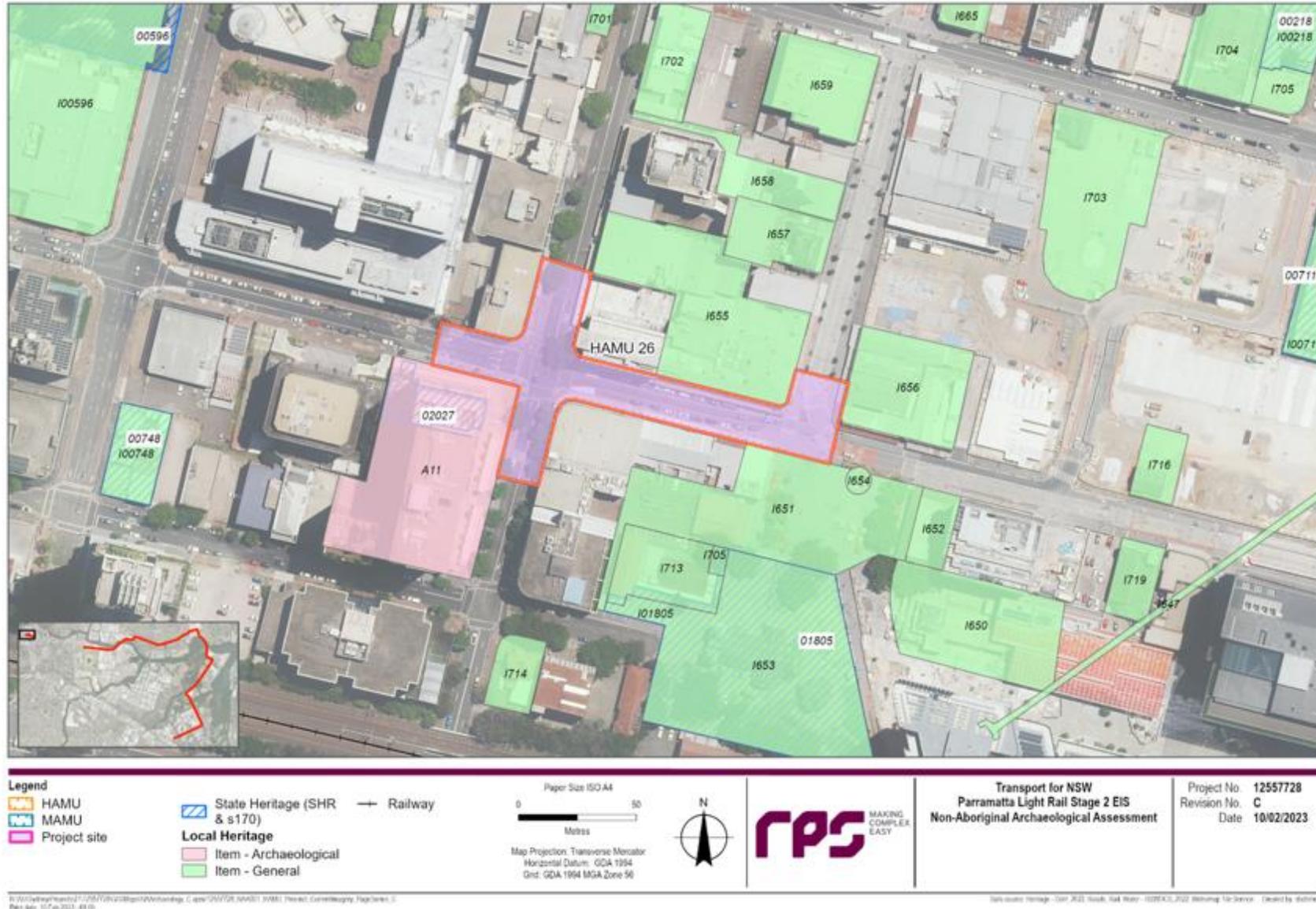


Figure 3-9: HAMU within the Parramatta CBD and nearby heritage listed items

## 3.2 Assessment of archaeological potential

### 3.2.1 Background

Archaeological potential is an assessment of how likely it is for evidence of past activity to have survived into the present day, considering the whole life history of a site including recent impacts. It is not an appraisal of the significance of any potential evidence, although it does have implications for significance. The assessment of potential for the project was informed by reviewing historical land use (Section 3.6) and an investigation of sites in the vicinity of the project site (Section 5). Several assumptions and principles were used to assess historical archaeological potential.

Two key questions inform all assessments of archaeological potential:

- has the area been used in the past in such a way that will have left a recognisable archaeological resource?
- have subsequent activities on the site removed any or all traces of these past activities?

This assessment assumes that structural evidence such as postholes, wall footings, pads, wells, cisterns, and cesspits etc. that can be identified on historic plans and in historic images, are likely to survive in the ground if no later activity has impacted upon them. In the case of maritime archaeology, the assessment considers likely archaeological evidence above and below the water, and how this may have been impacted by additional disturbance such as tidal movement, dredging, and boating activities.

The interrogation of this assumption primarily relies on examining the history of the site as a guide to how it has been used over time. It also assumes that later phases of landscape use are likely to have impacted on previous evidence including the possibility of total removal. This includes, but is not limited to, the erection of buildings that have foundations, the excavation of basements, and trenching for utilities. When available, the blueprints of existing or previously constructed buildings can be consulted. Where possible, the present-day site can also be visited to provide further information not recorded in more formal documents.

Sarah van der Linde (Senior Heritage Consultant) and Bengi Selvi-Lamb (Heritage Consultant), inspected the project site on 29 September 2021. Sarah van der Linde and Susan Kennedy (Heritage Manager) conducted further site visits on 24 January 2022. Further site visits were undertaken by Dr Gary Marriner (Senior Heritage Consultant) and Susan Kennedy on 11 October 2022 and 24 January 2023. These were supplemented with the use of georeferenced digital images such as Google Street View and SIX Maps which provide an indication of changes to the recent landform through historical aerial photographs and topographic maps.

In addition, a multibeam echosounder (MBES) survey of the area south of the Ermington Boat Ramp on the Parramatta River was conducted by hydrographers from Port Authority of New South Wales on 16 March 2022 (see Appendix A). The purpose of the survey was to assess any evidence of former structures or potential archaeological features on the riverbed.

The assessment also recognised that many landscape features may not be recorded in any formal or informal way. This means they may not appear in the historic record in general. Additionally, when features are marked on plans or maps it may only be indicative and not a precise representation of the form of the feature. This may include:

- plough marks and other associated early farming features
- cesspits, wells, cisterns, rubbish pits and other dug features
- fence-lines, channels, gullies, and other landscape markers
- paths, gardens, orchards, vines, yards, and other external features.

These features are archaeological evidence in themselves and can help to preserve other kinds of archaeological data. This includes pollen and microfossils within plough marks and cesspits, as well as artefacts within wells and rubbish pits.

Following consideration of the available evidence, outlined above, the archaeological potential of each HAMU and MAMU in the project site was graded on a scale from nil to high (Table 3-3).

**Table 3-3: Archaeological potential gradings**

<b>Grade of Potential</b>	<b>Events that determine grading</b>
<b>Nil</b>	Past activity left no discernible impact on the landscape and caused practically no material culture to be deposited. Later activity has removed wholesale any indication of previous use of the site. There is no indication in historical accounts of activity at the site.
<b>Low</b>	Past activity left only minor impacts to the landscape and only minimal amounts of material culture to be deposited. Later activity has caused widespread damage to the archaeological resource. Historical accounts indicate activity in the general area but are unclear or imprecise.
<b>Medium</b>	Past activity left a moderate impact on the landscape and caused some material culture to be deposited. Later activity has impacted the landscape but in isolated areas or to depths that have only removed some of the resource. Historical accounts provide some precision and clarity on the activity undertaken at the site.
<b>High</b>	Past activity left a large impact on the landscape and caused plentiful amounts of material culture to be deposited. Later activity has had virtually no impact on the resource. There are clear and precise historical accounts of where activity occurred within the site.

### 3.2.2 Approach to potential

The archaeological potential of each HAMU and MAMU in the project site was then determined by considering the likely nature of the resource and then examining the historical record for any indications of past activity that may have contributed to the creation or destruction of the resource. This potential is assessed in Section 6. In all instances, the level of potential presented should be understood to be the minimum level that is likely to present and in each instance the possibility exists for a more intact archaeological resource.

### 3.2.3 Test excavations

Test excavations were planned at four of the HAMUs in order to interrogate the assessment of potential made in this report. The aims, purpose, and methodology for the archaeological testing is included in the RDEM in Appendix B. The HAMUs identified for testing were:

- HAMU 07 – Broadoaks Park, Rydalmere
- HAMU 11 – Ken Newman Park, Ermington
- HAMU 15 & 16 – Ermington Wharf, Melrose Park.

One trench was opened in HAMU 16 on 31 October 22 but abandoned following the removal of the modern topsoil and the identification of a suspect asbestos find. The two test trenches in HAMU 07 were started on 1 November 2022 and completed on 2 November 2022. The trenches in HAMU 11 and HAMU 15 were not attempted due to the presence of suspected asbestos material in nearby Aboriginal archaeology test pits. Samples of the suspected asbestos material were analysed by a National Association of Testing Authorities (NATA) accredited laboratory who reported that Chrysotile and Amosite asbestos was present in all samples.

All of the test excavation work was overseen by the Primary Excavation Director Wendy Thorp and Secondary Excavation Director Dr Gary Marriner. The limited results of the test excavation are presented in Section 8.3 of this report, discussed in the RDEM (Appendix B), and considered in the assessment of potential and significance for HAMU 07.



### 3.3 Significance assessment

#### 3.3.1 Background

Once the potential for archaeological evidence to be present has been established, it is necessary to assess whether that evidence has any cultural significance as only evidence with significance is protected. This assessment of significance has been guided by the principles of The Burra Charter and legislation in the Heritage Act. It is supported by relevant guidelines produced by the Heritage Council of NSW/Heritage NSW including, but not limited to, *Archaeological Assessment Guidelines* (Heritage Office, 1996) and *Assessing Significance for Historical Archaeological Sites and 'Relics'* (Heritage Branch, 2009).

The ICOMOS Charter for the Conservation of Places of Significance, also known as The Burra Charter, defines cultural significance as meaning

*Aesthetic, historic, scientific, and social value for past, present and future generations.*

Section 4 of the Heritage Act defines two levels of significance: local and State, noting that an item of State significance can also be of local significance however an item that is primarily of local significance may not necessarily be of State significance. In the Act heritage significance means significance to either the State or area in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of a place, building, work, relic, moveable object or precinct.

Heritage NSW has defined a series of specific criteria for the assessment of heritage which have been used here. They are as follows:

- Criterion (a) an item is important in the course, or pattern, of NSW's cultural or natural history (or the local area)
- Criterion (b) an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the local area)
- Criterion (c) an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area)
- Criterion (d) an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons (or the local area)
- Criterion (e) an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the local area)
- Criterion (f) an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the local area)
- Criterion (g) an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or cultural or natural environments (or the local area).

#### 3.3.2 Approach to significance

The significance of an archaeological resource is tied directly to events that have occurred on a site in the past. This means that various human activities can occur in the same vicinity at the different periods in time and leave behind archaeology of varying levels of significance. A key consideration of significance is research potential (Criterion (e)) which is the most relevant criterion for assessing archaeological sites. Included within assessment of this criterion is the question of whether the study of the material recovered would contribute to answering research questions (Heritage Office, 1996). This report assessed the significance of individual phases of activity within each suburb individually to allow for both State and locally significant archaeological resources to be present in the same location.

In addition to the clearly established criteria outlined above, other factors including intactness, site history and potential have been considered when assessing significance to ensure a broader approach to archaeological significance (Heritage Branch, 2009). This includes an acknowledgement that the significance of an archaeological resource can change prior to, during, and following excavation based on these attributes.

### 3.4 Research themes

It is critical that any archaeological excavation takes place within a comprehensive and well considered research framework to maximise the potential for new information any relics encountered can provide. One of the criteria used to assess a site's significance, criteria (e), refers to an item's potential to yield information that will contribute to cultural or natural history of a place which is further refined as an items archaeological research potential. This is defined in *Assessing heritage significance* (NSW Heritage Office, 2001) as:

*The ability of archaeological evidence, through analysis and interpretation, to provide information about a site that could not be derived from any other source and which contributes to the archaeological significance of that site and its 'relics'.*

One of the most successful ways to examine research potential is through a framework of themes that can be widely applied. This facilitates intra and inter-site comparisons and ensures that the most important aspects of heritage significance are not overlooked. The in-depth application of research themes to the potential archaeological resource is outside the scope of this report. The RDEM (Appendix B) presents the broad research themes identified for the project site and places it within its wider research landscape. This is in part based around critical themes identified by Heritage NSW which are:

- tracing the natural evolution of Australia
- peopling Australia
- developing local, regional, and national economies
- building settlements, towns, and cities
- working
- educating
- governing
- developing Australia's cultural life
- marking the phases of life.

### 3.5 Management Ratings

Each HAMU was then assigned one of three Management Ratings (MR) (see Table 3-4). These ratings were based on the assessed significance of the archaeological resource, the potential for that resource to be present, and the proposed impacts the project would have. In areas where a HAMU was assessed as having no significance, it was rated as N/A, as only archaeological resources that have, or may have, significance are protected under legislation. Likewise, if a HAMU was assessed as having nil archaeological potential it was rated as N/A.

As with the HAMU process, this rating system (Table 3-4) has been based on earlier work undertaken as part of the Parramatta Light Rail Stage 1 EIS. It has been designed to facilitate the application of widely applicable methodological approaches to managing the archaeology across the entire project site.

The rating system is scaled in such a way that ensures the work undertaken is appropriate to the level of significance and archaeological potential. The key components of each MR are listed below.

- MR3: high potential for a State significant archaeological resource. They are coloured green on figures that relate to MRs below.
- MR2: either medium or low potential for State significant archaeological resources or high potential for locally significant archaeological resources. They are coloured yellow on figures that relate to MRs below.
- MR1: have low or medium potential for locally significant archaeological resources. They are coloured red on figures that relate to MRs below.

Any area that is assessed as having nil potential and not meeting the threshold of significance is rated N/A. The application of MRs is discussed in Section 8. They provide a preliminary indication of possible appropriate mitigation methods. The RDEM in Appendix B expands upon the methodology for each MR.

**Table 3-4: Key to Management Ratings**

	<b>Significance</b>	<b>Potential</b>	<b>Impact</b>
MR3	State	High	Any
MR2	Local	High	Any
	State	Medium	Any
MR1	Local	Medium or Low	Major
	State	Low	Major
N/A	N/A	Nil	No

### 3.6 Impact assessment

A preliminary impact assessment has been undertaken which seeks to understand the probable effect construction of the project would have on any archaeological resource that may be present within each of the HAMUs in the project site and is based on a reference design for the project. This impact assessment is based around established criteria (Heritage NSW, 2020) with three levels of impact: major, moderate, and minor. All areas that are assessed as having an archaeological resource of significance, irrespective of the level of potential, are assessed against these three criteria. This is to ensure that any potential impact is fully considered, recognising that once undertaken, impacts on the archaeological resource are permanent and irreversible, hence the reason for a cautious approach that innately assumes that gradings of potential refer to the minimum level of archaeological evidence present.

## 4 HISTORICAL CONTEXT

The following historical context provides an overview of the history of each suburb the project may impact on and has been used to assess the significance of the potential archaeological resources they may contain (also refer to Appendix B RDEM which contains further site-specific historical research). This further research is partially to confirm the level of significance assigned but more importantly to provide site-specific detail on the potential for an archaeological resource to be present.

### 4.1 Aboriginal history in the area

The original inhabitants of the Parramatta region are the Burramattagal peoples, a clan of the Darug Nation, who first settled on the upper reaches of Parramatta River (City of Parramatta, 2017a). The term 'Darug' was only applied to a language group after 1870 (Attenbrow, 2010).

The Darug comprised a number of sub-groups often referred to as 'clans'. The Burramattagal peoples are the western-most Eora clan, who are part of the harbour-side katungal 'sea people'. Parramatta marks the border between the cultures of the sea people, and the inland paiendra or 'tomahawk people' (Flynn, 1995). The Wangal peoples are also a clan of the Eora and inhabited the southern shore of the Parramatta River. The Darug, or Dharruk, language was spoken across the Cumberland Plain region, which stretched from Appin in the south to the Hawkesbury River in the north, and west of the Georges River, Parramatta and Berowra Creek (Attenbrow, 2010, p.34). The Burramattagal peoples are likely to have spoken a common dialect with other groups who lived on the lands between Sydney Cove and Parramatta, with local variances between people on the coast and those inland. The Burramattagal peoples appear to have belonged to smaller groups, consisting of multiple extended families. These groups ranged in size from 30 to 70 plus (Dominic Steele, 2013, p.41). The Burramattagal and Wangal peoples rotated seasonally through campsites, depending on their needs (McClymont, 2008).

Parramatta was a resource rich zone which supported Aboriginal occupation and was at the centre of human activities. The Parramatta River banks and the mostly freshwater stream now known as Clay Cliff Creek (located to the west of James Ruse Drive) were vital sources of food and living resources. The boundary between Burramattagal country and their neighbours, the Wategora clan, seems to have been the Duck River (Kohen, 1993 in McClymont, 2008).

The bark canoes of Burramattagal peoples have been recorded as holding a 'central small fire, built on a mound of soil, to cook up their fresh catch' and 'fire-stick farming', employed to burn vegetation to facilitate hunting and to change the composition of plant and animal species in the area, was also practiced by the Burramattagal people.

Aboriginal site types recorded in the Parramatta region frequently include rock shelters with deposits, open campsites (artefact scatters) and open middens. Surface scatters are generally sparse and partially disturbed (Dallas, 2003, p.29). Grinding grooves and shell middens have also been recorded and are generally located adjacent to watercourses. Burials can be associated with shell middens, and also can be found in coastal sand dunes (Attenbrow, 2012). Culturally modified trees (or scarred trees) have been recorded on suitable remnant old growth trees. Cultural modification may comprise evidence of bark removal for the purposes such as construction of bark containers canoes or shields and as such vary greatly in size (Dallas, 2003, p.29).

It is important to note that sites of significance to Aboriginal peoples are not limited to physical objects, markers or landscapes. Intangible cultural heritage is a living tradition and continued expression of culture. The Parramatta region is located within a culturally significant landscape to Aboriginal peoples of the past, present and future.

#### 4.1.1 Aboriginal history after 1788

The history of Aboriginal people following the arrival of the First Fleet and subsequent occupation of the land by British colonists is presently poorly understood. In part this is due to systematic reasons and propensity to study sites away from urban centres (Irish & Goward, 2012). Historical records from the first years of the colony document the disastrous effect smallpox had on the Aboriginal people of the area (Collins, 1798 p.496) which decimated the population and have an irrevocably damaging impact on social organisation

(McDonald, 2008). Inevitably with increasing British settlements and land use from the late 18th century onwards, Aboriginal people became alienated from their land and marginalised within their own country.

A recent shift in research focus has however begun to provide some indicators of the nature of continuing Aboriginal settlement in areas of the Sydney Basin after 1788 (Karskens, 2019). This research suggests an enduring culture that adapted to change and integrated new material culture into existing practices. Art sites continued to be created in the area with new imagery such as axes and rifles being incorporated indicating a continuation of cultural practice (Irish, 2017). At least 70 historical Aboriginal settlements are known (Irish & Goward, 2012) across the Sydney basin dating to the late 18th and 19th centuries. These include sites where Aboriginal adaptation and tenacity are present, evidenced by the creation of new object types such as flaked glass and, in a few instances, knapped ceramic. Midden sites from the post-1788 period also have been found to contain introduced items such as metal and buttons however others from this period are known to be devoid of any introduced material. The adaptation of burial practices has also been documented with examples including the burial of a 30-year-old woman in Rose Bay whose body was arranged in a traditional manner but with the inclusion of introduced items such as scissors and other metal objects (Donlon 2003, 2008 in Irish & Goward, 2012).

## 4.2 Early farming in New South Wales from 1788 to 1810

Prior to the departure of the First Fleet, it was envisioned that the new colony of New South Wales would require full provisions for two years, with the first year being entirely from the stores and by the second year half of the food would come from the stores and half would be procured locally (Bladen, 1892 p.19). The cultivation of the land by convicts was amongst the initial orders given to Phillip (Bladen, 1892 p.87) and so the establishment of farms was amongst the highest priorities of the new settlement. A small farm was established almost immediately at Farm Cove/Wahganmuggalee within the grounds of the present Royal Botanical Gardens. Land was also soon cleared for the Governor's Garden in which fig, grapes, oranges, pears, and apples were quickly planted. A plan of the settlement attributed to Francis Fowkes from April 1788 shows multiple fields at Farm Cove/Wahganmuggalee as well as multiple areas of garden within the settlement itself (Fowkes, Cribb et al., 1788). As early as July 1788, however, it was clear that the idea of self-sufficiency within two years was far too ambitious. The thin sandy soils around Sydney Cove were unsuited to British farming methods and considered to be "very bad" (King, 2003 (1790) p.383). It soon became apparent that for agriculture to be successful then better quality soils would need to be sought out. The farm at Farm Cove/Wahganmuggalee ceased to be used by the government by November 1790 (Tench, 1998 (1793)).

In April 1788, Governor Philip led an exploratory party up the Parramatta River to the head of the harbour which recorded the state of the land along the river. This included at Rose Hill which was described by both Phillip and Watkin Tench in positive terms. The flatness of the land, distance between trees, and quality of the grass were noted with Tench indicating that it "*promise(d) success whenever it shall be cultivated*" (Tench, 1998 (1793) p.58). In October 1788, Philip sent out a detachment of marines and convicts to Rose Hill with the clear intention of establishing a farm. The first successful attempt at farming was undertaken and the first free settler James Ruse began farming at Parramatta at the end of November 1789 (Bladen, 1892 p.349). Following the completion of his sentence he was provided initially with an acre of ground which he successfully farmed. Whilst he was unable to produce enough crops for food, he did produce sufficient wheat seeds for the following years crop. He was off stores by February 1791 and his achievement was rewarded with a grant of 30 acres in March 1791. Ruse described the method through which he cleared his land to Tench in 1790 as:

*"Having burnt the fallen timber off the ground, I dug in ashes, and then hoed it up, never doing more than eight, perhaps nine rods in a day, by which means, it was not like the government-farm, just scratched over, but properly done; then I clod-moulded it, and dug in the grass and weeds: - this I think almost equal to ploughing. I then let it lie as long as I could, exposed to air and sun; and just before I sowed my seed, turned it all up afresh."*

The settlement at Rose Hill grew quickly so that by November 1790 it was estimated that 200 acres had been cleared and was under cultivation that included 55 acres planted with wheat, barley, oats, and maize being grown. Only "*Broad-cast husbandry*" was being used at this time. It being a method by which seeds are scattered over the surface of the ground by hand with only minimal breaking of the ground (Willich, 1802). No ploughs were used but the ground had been hoed albeit incompletely turned (Tench, 1998 (1793) p.55). The Governor adopted the name Parramatta for Rose Hill in June 1791 (Tench, 1998 (1793) p.91).

Before leaving the colony in December 1791, Watkin Tench toured the new farms along the Parramatta River and discussed plans with the farmers. On a trip to Philip Schaffer, he noted that 14 acres were in cultivation with maize, wheat, tobacco, and grape vines being grown. A further 23 acres had been cleared but not burned. Schaffer went on to harvest 200 bushels of corn in 1792 (Collins, 2003 (1802) p.195). Tench also visited Christopher Magee's farm and found he had eight acres in cultivation growing maize, wheat, and tobacco. At James Ruse's farm Tench found he had 11.5 acres in cultivation, almost all of which is maize with a little wheat (Tench, 1998 (1793) p.105).

Farming expanded throughout the 1790s. Eight marines who were granted land in the Field of Mars took possession of their land in February 1792. Each was given grain to sow and tools to work the land in addition to convict labour. They were permitted food and clothing from stores for the first 18 months and a hut was erected by the colonial authorities on each farm. By October 1792, 1208 ½ acres of wheat, 24 ¼ acres of barley and 1,186 ½ acres of maize were in cultivation across all occupied areas of the colony with most cultivation was being undertaken on public ground (i.e., colonially controlled) as opposed to on private ground. The struggles of the first four years began to settle by 1792 and the threat of famine had largely passed (Lawrence & Davies, 2011). By the time Governor Phillip left the colony in December 1792 many of these initial farmers were comfortably situated and off stores, however, were not producing substantial quantities to the public stores (Collins, 2003 (1802)).

By February 1793, free settlers who had arrived on the Bellona were occupying land on the northern bank of the Parramatta River, which owing to their free status they aptly named Liberty Plains. These settlers were

- Thomas Rose, 120 acres
- Frederic Meredith, 60 acres
- Thomas Webb, 80 acres
- Edward Powell, 80 acres.

Walter Rouse, a convict bricklayer who arrived earlier on the First Fleet, was also granted 30 acres at the same time. All were given similar conditions to the marines a year earlier with tools and implements provided, two years provisions from the public stores and convict labour. The colony largely achieved self-sufficiency of basic European foodstuffs by 1805 with over 12,000 acres in cultivation and thousands of livestock (Jones and Raby, 1988).

## 4.3 Camellia

### 4.3.1 Initial land grants and agriculture, 1792

British settlement at Camellia commenced in 1792 with land grants made to both convict and free settlers. The focus of settlement was to the east of Clay Cliff Creek (Burr and Ballisat, 1814) (refer to Figure 4-1). All of these early grants were given with the explicit intention of them becoming farms to help the colony move towards self-sufficiency. Before leaving the colony in December 1791, Watkin Tench toured farms along the Parramatta River west of Camellia. Although the journey describes land largely outside of the project site, his observations concerning the state of agriculture here are a good indication of the nature of farming within the project site.

On a trip to the farm of Philip Schaffer, Tench noted that 14 acres of this property were in cultivation with maize, wheat, tobacco, and grape vines. A further 23 acres had been cleared but not burned. Schaffer went on to harvest 200 bushels of corn in 1792 (Collins, 2003 (1802) p.195). Tench also visited Christopher Magee's farm and found he had eight acres in cultivation growing maize, wheat, and tobacco. At James Ruse's farm, Tench found he had 11.5 acres in cultivation, almost all of which is maize with a little wheat (Tench, 1998 (1793) p.105).



The first grants within the project site in Camellia were largely rectangular and ran perpendicular to Parramatta River, highlighting its importance as the main transport link at the time (refer to Figure 4-1). They were granted as follows:

### **Charles Wright**

Granted to Charles Wright in 1792: 30 acres (Lot 3 in Figure 4-1). Wright arrived on the *Gorgon* in September 1791 having been sentenced to seven years at the York (West Riding) Quarter Sessions in July 1789 (NSWSA: INX-77-10107, 77). In his Memorial to the Governor made in 1810 he stated that he was a married man with three children and sought a grant of land in the southern land recently explored by Charles Throsby and appears to have been a resident there by 1822 (Sydney Gazette, 11 Jan 1822, p.03) and probably by 1819 (Col Sec Papers, 1794-1825, p.4439). His improvements to the land at Camellia are unknown but his later history strongly suggests that he farmed this land. He died at his residence at Sutton Forest in 1842 at the age of 93 leaving behind his wife and three children (Sydney Herald, 4 Feb 1842, p.02). Eventually this lot was subsumed into Elizabeth Farm.

### **James Stewart**

Granted to James Stewart (also Stuart and Steward) on 22 February 1792: 20 acres (Lot 4 in Figure 4-1). He arrived on the *Scarborough* having been convicted to for grand larceny. He died in 1806. He named his property "Stewart's Farm" (NSW Register of Land Grants and Leases, 1792-1804). On his death his property was sold providing evidence of the extent of his improvements.

*"A farm consisting of 30 acres more or less delightfully situated at Kissing Point commanding a full view of the River from Sydney to Parramatta; with a good dwelling house, Out-houses, Pig-styes, an orchard containing upwards of 100 peach trees. Two acres of wheat fit to reap, Five acres of corn in a flourishing state and forty rods of potatoes. The whole will be sold without reserve for the benefit of the Creditors and to liquidate a Government Debt"* (Sydney Gazette 23 Nov 1806, p.01).

Eventually this lot was subsumed into Elizabeth Farm.

### **William Cummings**

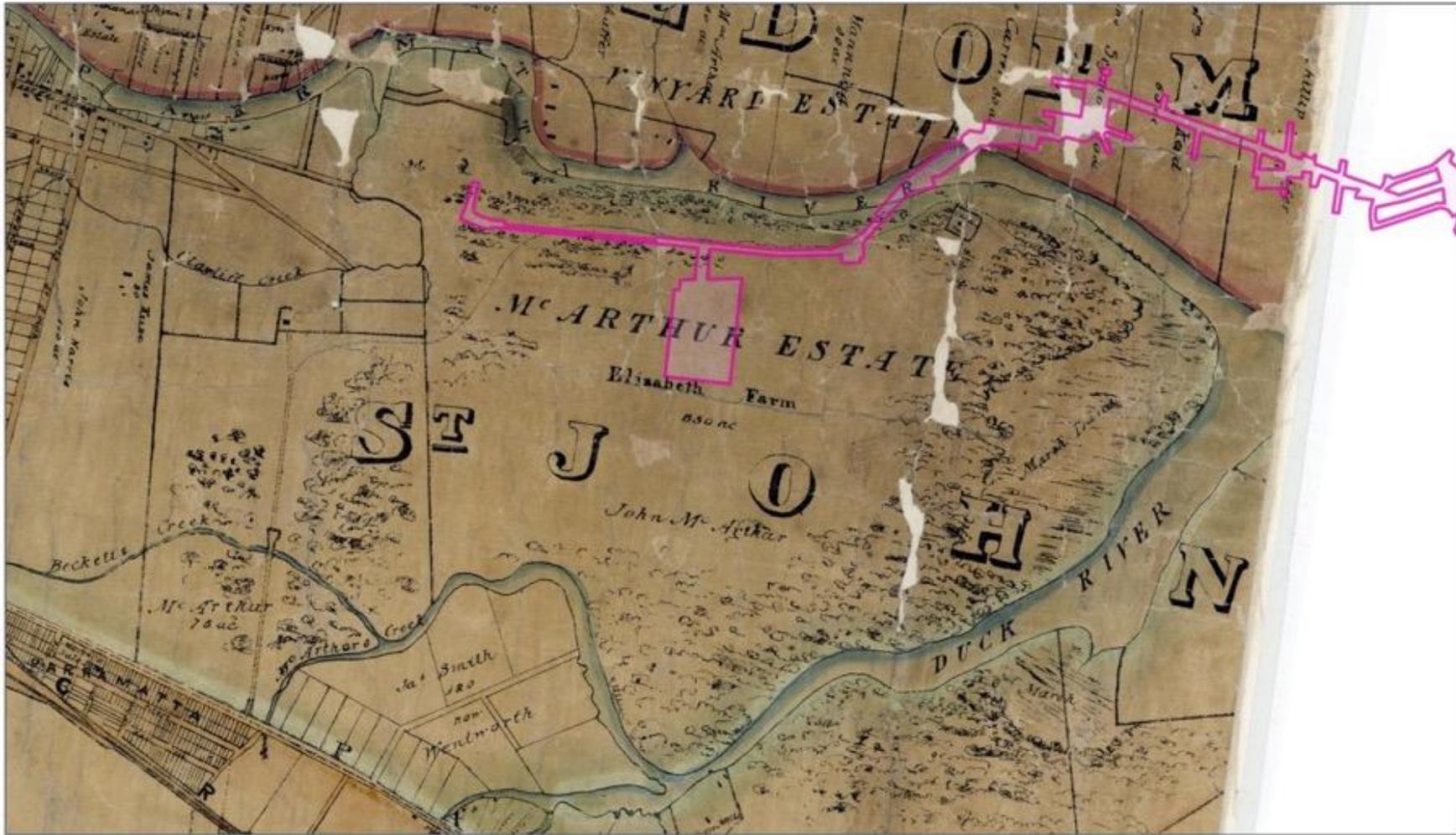
Granted to William Cummings in December 1792: 25 acres, and April 1794: 100 acres (Lots 5 and 6 in Figure 4-1) (McClymont, 2009). Eventually he acquired 200 acres. Cummings was a lieutenant in the NSW Corps and arrived in the colony on the *Pitt* as part of the Second Fleet. He actively sought a land grant at a time when there was no approval for grants to be made to military officers; his grants were made in expectation of this rule changing. He acquired land granted to Christopher McGee (also known as Charles Williams) including a house, crop, and stock. McGee had the first land grant made in Camellia being 30 acres on the southern bank of the river acquired in 1791, outside of the project site. This brought Cummings' total holdings to around 200 acres. The combined land grants were sold to John Macarthur in 1816 and was subsumed into Elizabeth Farm.

### **Richard and Roberts**

Granted to Richard and Roberts: 50 acres (Lot 7 in Figure 4-1). Aside from being listed in Burr and Ballisat (1814), no further information has been located regarding the identities of either man. Eventually this lot was subsumed into Elizabeth Farm.

The limited information available for the scope of works and improvements on these early grants provides a consistent picture. Most had, or are likely to have had, a dwelling house and out-buildings, farm buildings, cultivated paddocks, gardens and orchards. No specific sites or locations are known for any of these original structures or built works; therefore it is impossible to determine whether any archaeology associated with them is likely to have been removed or might survive.





Legend

 Project site

Paper Size ISO A4  
0 250 500  
Metres



Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



Transport for NSW  
Parramatta Light Rail Stage 2 EIS  
Non-Aboriginal Archaeological Assessment

Project No. 12557728  
Revision No. C  
Date 03/02/2023

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Print date: 03 Feb 2023 - 09:25

Figure 4-2: Project site within Camellia as part of the Elizabeth Farm Estate (Reuss & Browne, 1859)

### 4.3.2 Elizabeth Farm Estate 1793-1881

In 1793, following the initial land grants in the area, John Macarthur was granted 100 acres of land west of the Wright and Cummings parcels. This initial grant stretched from Parramatta River in the north to Duck River in the south. This was the basis of his estate that he named Elizabeth Farm. Macarthur then proceeded to purchase all of the land to the east of his grant (Lots 3-7); and by 1806 he owned all of the land between Duck River and Parramatta River, east of Clay Cliff Creek (refer to Figure 4-3 and Figure 4-48). Elizabeth Farm Estate was largely managed by Elizabeth Macarthur. The estate remained in the hands of the family for nearly a century.

The estate house and principal farm complex were built on the outskirts of Parramatta, south-west of the project site (refer to Figure 4-6). The estate was a working farm as well as home to the family. In 1794, Macarthur reported that 100 of the 250 acres that made up the Elizabeth Farm Estate were under cultivation.

By 1833 an area of riverbank in the northwest of the Elizabeth Farm Estate had become known as Red Bank (Mitchell, 1833). At this time plans were made to clear the river of rocks and cut new channels with the view of enhancing navigability (Mitchell 1855, p.305). The name Red Bank persisted until at least 1844 by which time a landing point with a set of steps has been constructed at the location (Brownrigg, 1844). These steps are likely within HAMU 27. By 1847, the area around Red Bank was still largely undeveloped and well vegetated (Figure 4-7).

Following John's death in 1834, his eldest son Edward Macarthur inherited the estate although it was largely managed by his brothers as Edward pursued a military career. By 1844 the estate covered an area of 850 acres. The eastern fringes of the estate were still largely marsh lands, but most were used for both agriculture and pasturage.

Prior to 1859 a structure had been erected close to Parramatta River in the north-east of the Elizabeth Farm Estate, close to the project site. Plans produced at the time show this to be a square building contained within a larger paddock, fenced; a track way that runs west, then south, connects the structure to rest of the Estate (Figure 4-4).

On this plan the building is labelled as 'Garden Hut'; which is interpreted as a garden surrounding a hut. No information has been located in respect of this structure or its purpose. Overlays of historic plans on the present-day landscape indicate that the structure may be external to the project site in the vicinity of HAMUs 27 and 02. However, the precision of the mid-19th century plan that recorded this structure and its environs is not sufficient to determine with certainty the relationship of this feature to the project site. For this reason, it must be considered a potential site that may be impacted by the project.

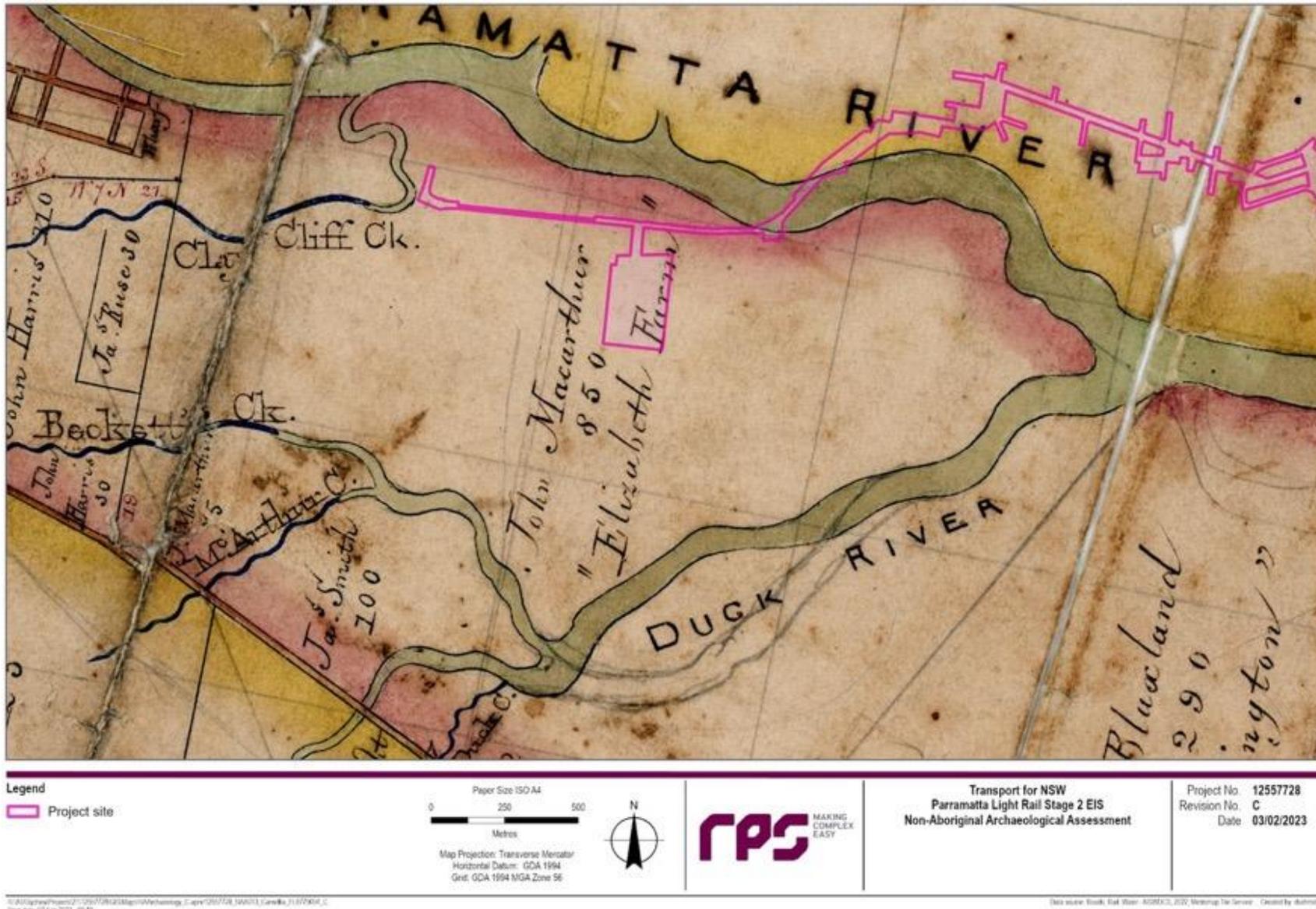


Figure 4-3: Extract from Allotments of land at Parramatta, New South Wales by P.L. Bemis c.1806-1853. This demonstrates that during the first half of the 19th century the entire area was consolidated into the Elizabeth Farm Estate. The project site is shown in pink. SLNSW, Maps/0436 FL8775004.

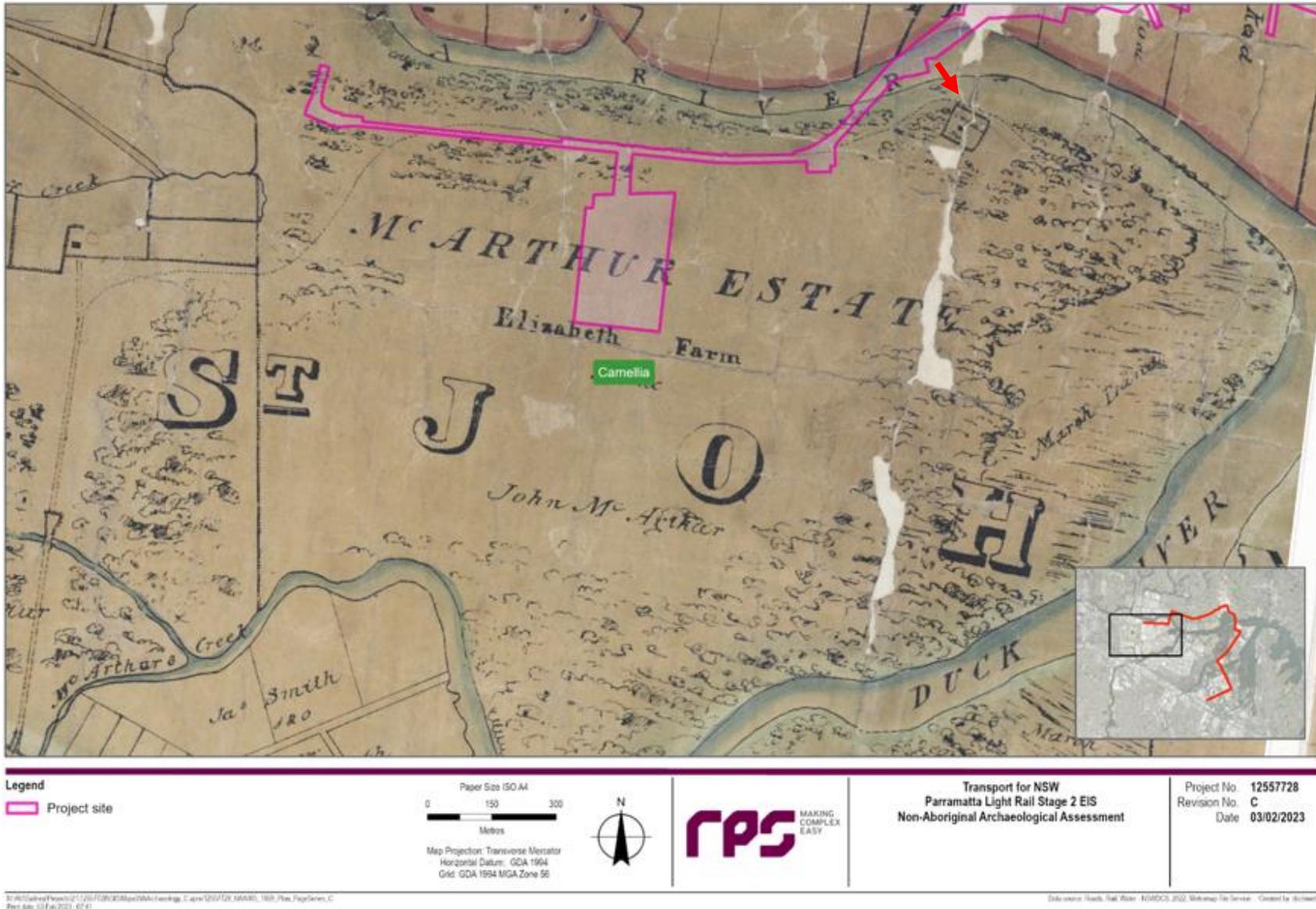


Figure 4-4: Extract from Reuss and Browne's (1859) which shows the trackway and the garden and hut in the north of the project site (indicated by the red arrow). The project site is shown in pink. SLNSW, Maps/0313 FL\_3671881.

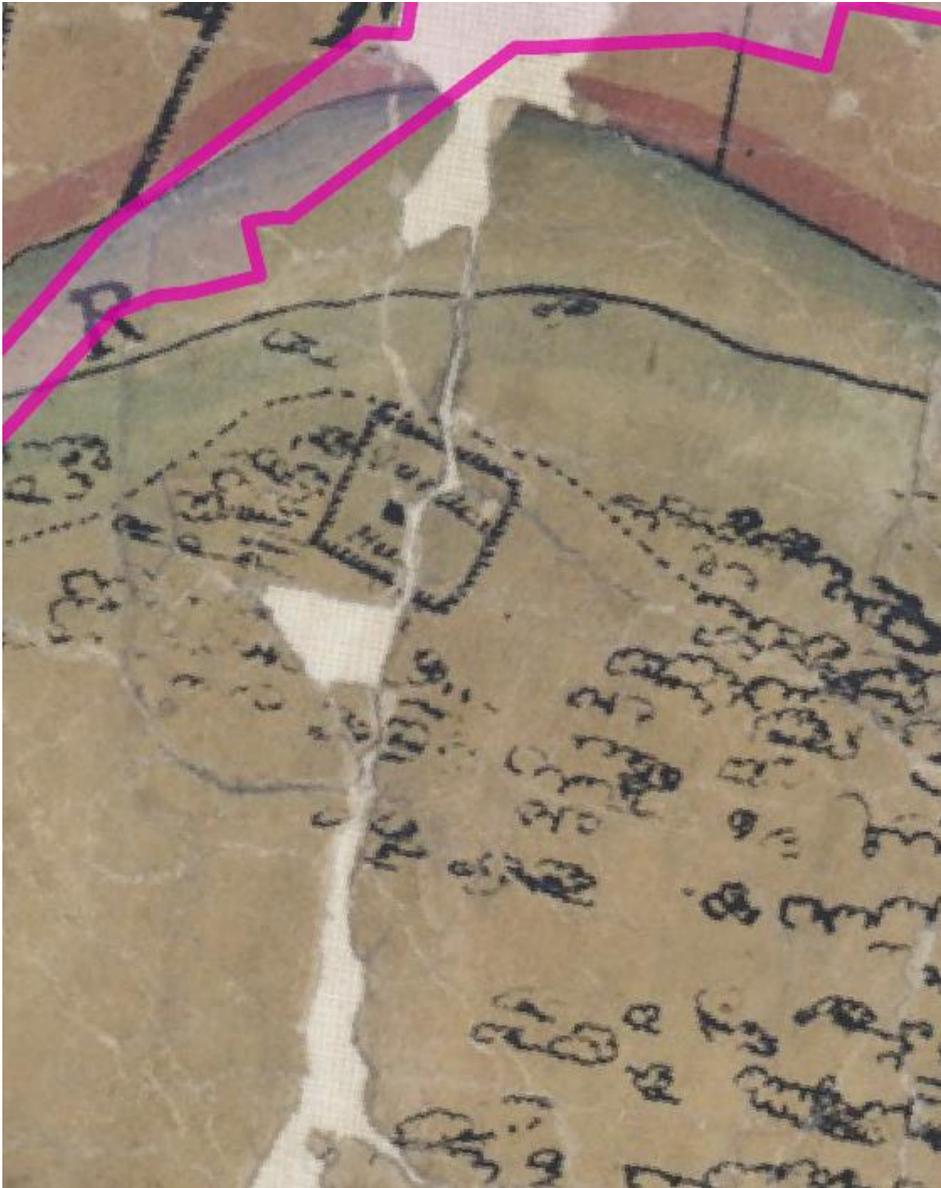


Figure 4-5: Close up of Figure 4-4 showing the layout of the Garden Hut. The project site is shown in pink. SLNSW Maps/0313 FL\_3671881.



**Figure 4-6: The residence of John Macarthur Esquire. near Parramatta, New South Wales, Joseph Lycett, 1825. This painting provides an indication of the agricultural landscape of the area at the time with fenced and cleared fields, and occasional huts isolated from the main property. AGSA, 20044P29.**



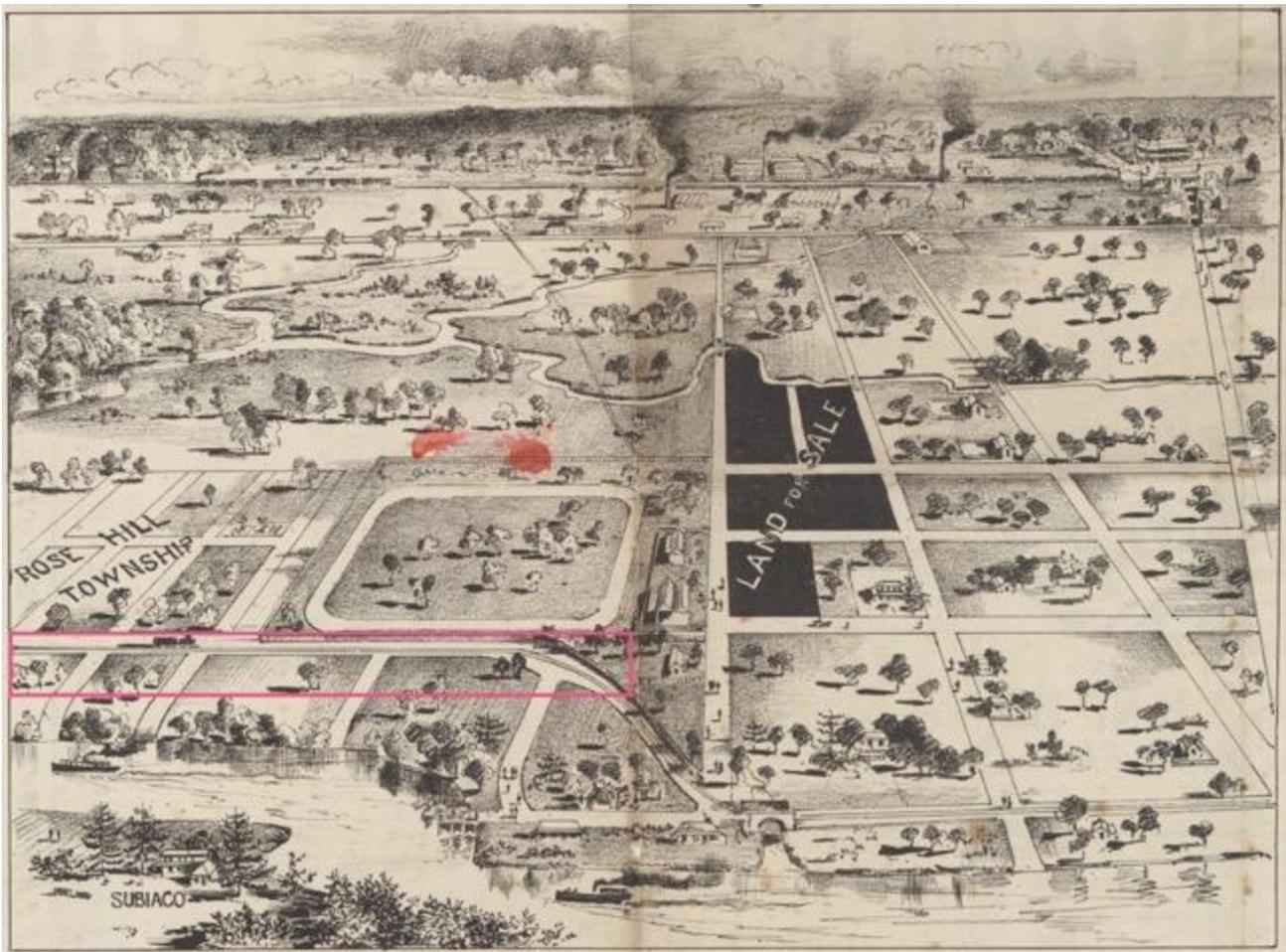
Figure 4-7: Sketch of Red Bank by Emmeline Leslie (nee Macarthur) c.1847. SLNSW FL1084950

By 1865 Edward Macarthur had leased the entirety of the estate to various tenants. He had hopes that tenants would improve or at least maintain it. However, by the later 1870s it was seriously dilapidated (Broadbent, 1984). In 1881 the estate, then totalling 1,100 acres, was sold to Septimus Stephen for £50,000. The estate was subdivided in that year and a second subdivision was made in 1884.

Various companies and individuals purchased different parts of the estate including John Bennett, who purchased 140 acres for a racecourse in 1885. Advertising material from the various sales presents the landscape as largely open and sparsely occupied at this time (refer to Figure 4-8).

### 4.3.3 The Camellia Grove Nursery 1852-1906

In 1852, part of the estate was leased to Silas Sheather who as a nurseryman established the Camellia Grove Nursery on the banks of the Parramatta River. Sheather built a house on his lease and eventually increased its size through a further lease in 1874, he purchased the land, totalling five acres during subdivision in 1889. He continued to farm it until his death in 1906.



**Figure 4-8: Extract from Rose Hill Heights - Illustrated advertising pamphlet, 1885, regarding subdivision. Although an artist's representation, it demonstrates that much of the land within the project site was still largely open at this time. The construction of the tramway along Grand Avenue had been completed by this time. The approximate location of the project site is shown in pink. The Sandown Line had yet to be built. SLNSW, FL9144451.**



#### 4.3.4 The Parramatta Tramway 1881-1943

By the later part of the 19th century, the former Elizabeth Farm Estate had ceased to be farmed, had been subdivided and began a transition towards industrialisation. The establishment of a tramway across the site in 1881, and railway station at Clyde to the south in 1880 facilitated the transformation from a large agricultural area to an industrial one.

By the 1880s, the Parramatta River had become severely silted; the public wharf was relocated to Duck Creek. Charles Edward Jeanneret who was the manager of the Parramatta River Steam Company, commissioned a tramway in order to connect the wharves at Duck Creek with the centre of Parramatta (Rutledge, 1972) (refer to Figure 4-9 and Figure 4-11).

In August 1881 the NSW Parliament passed Jeanneret’s Tramway Act which enabled Charles Edward Jeanneret to construct his private tramway. A condition of consent was a minimum of six trips a day had to be operated and the Parramatta Council were to receive £48 per year rent for right-of-way in areas they owned (McCarthy, 1973).

The tramway was purchased by Sydney Ferries Ltd in 1900 for £16,500. This company continued to operate the line until its eventual closure in March 1943.



**Figure 4-9: Halycon’ at Duck Creek – Parramatta River tram and ferry terminus by Henry King c.1890, Powerhouse Collection, object No. 30782.**

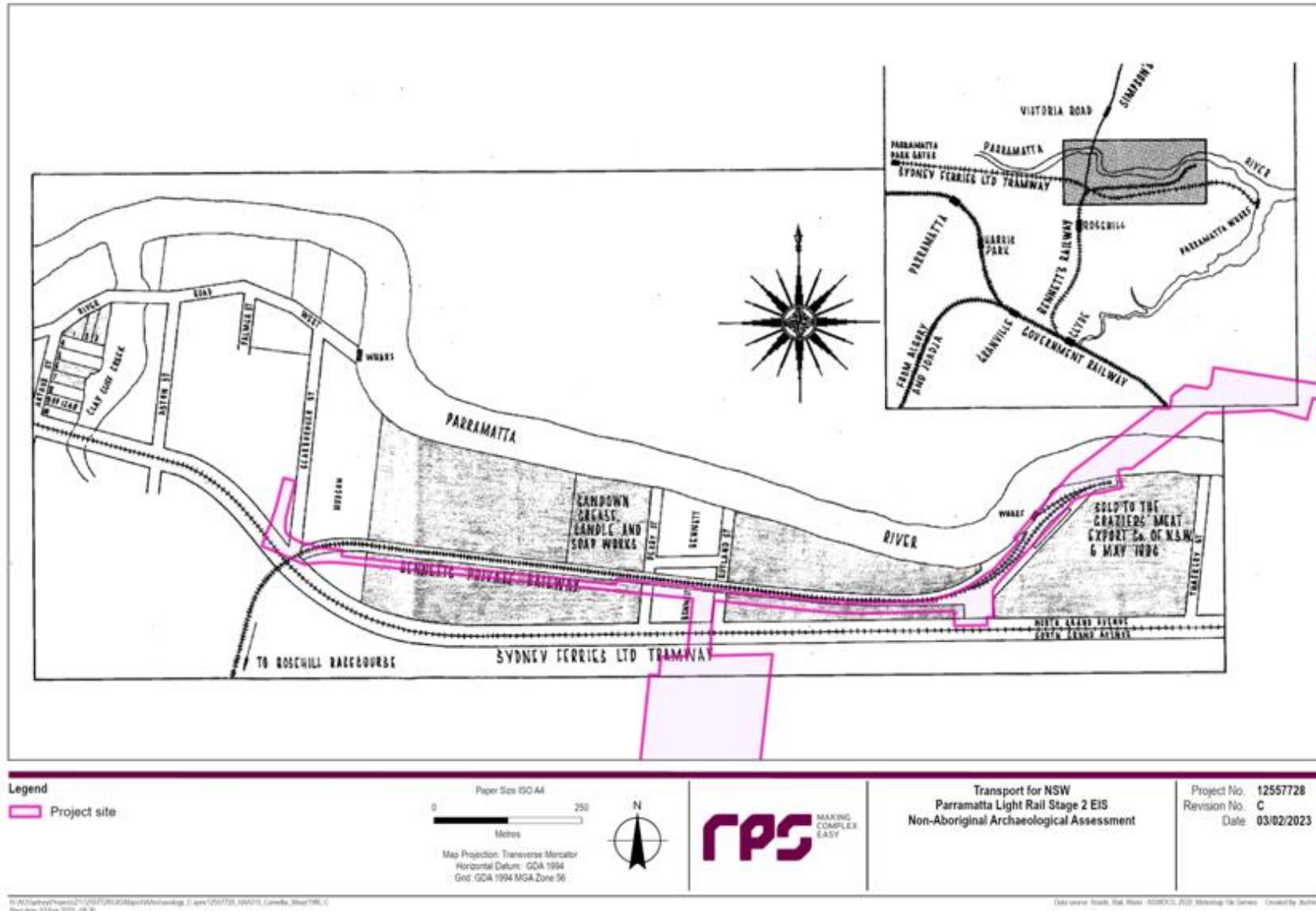


Figure 4-10: Land held by the Australian Kerosene Oil and Mineral Company at Sandown, Sydney 1886. The Sandown line running west to east in its final alignment is shown in addition to the location of some of the various works. Mead 1986 Fig 10.27 p.496

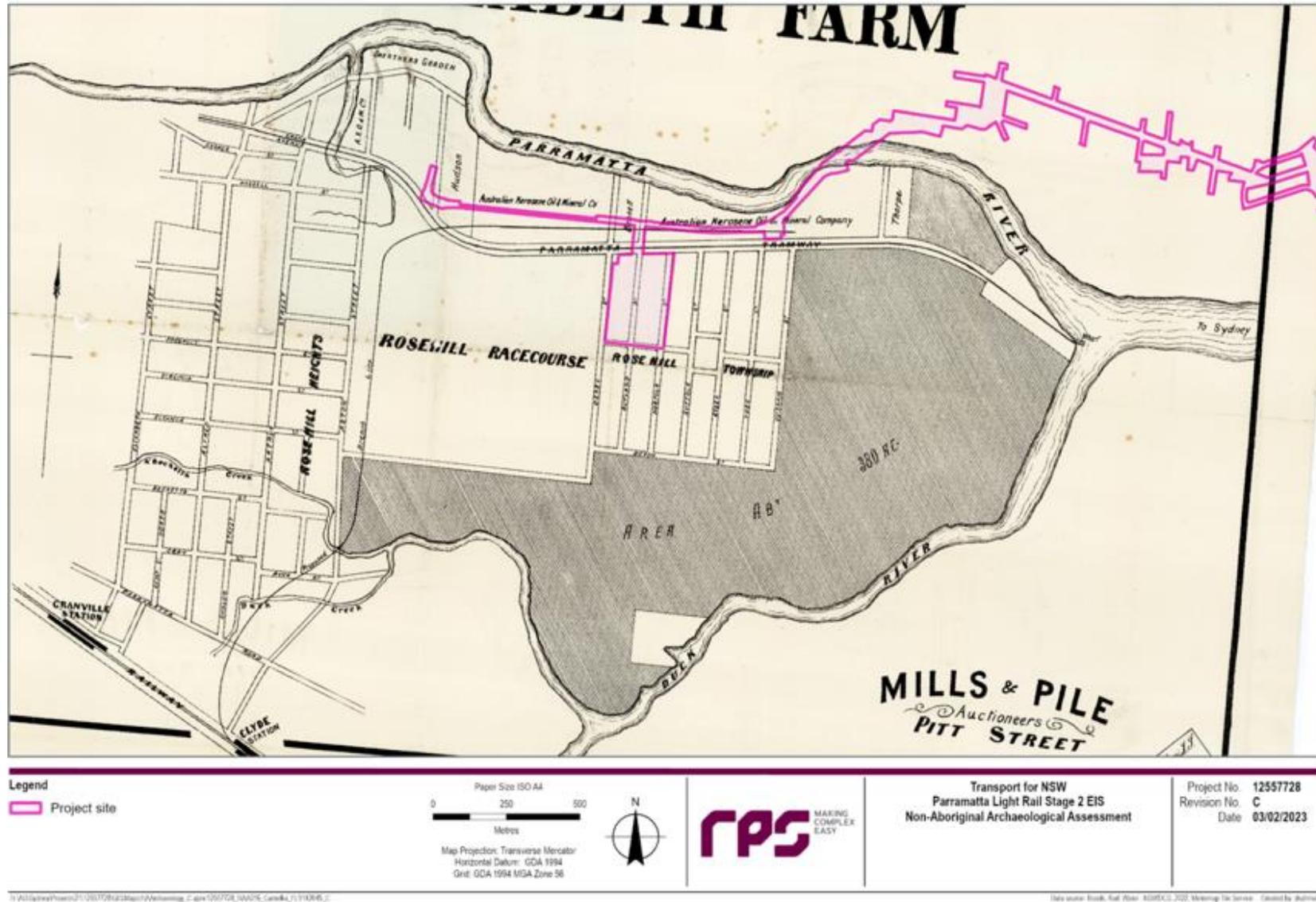


Figure 4-11: Subdivision plan prepared in c.1889 showing the full extent of the tramway. It also shows AKO holdings in addition to other occupants including Hudson, Bennett, and Thorpe. Sheather’s Garden can be seen. The project site is shown in pink. Elizabeth Farm. SLNSW, FL9142045.

### 4.3.5 Industrialisation 1881 onwards

From the late 1880s onwards, the suburb of Camellia has been primarily an industrial area and remains so. The establishment of the tramway was the beginning of a period of development that enabled more and easier access to this suburb. Three large companies have dominated the landscape in and around the project site: the Australian Kerosene Oil and Mining Company (AKO&M), the Goodyear Tyre and Rubber Company, and the James Hardie Company. As part of the subdivision, it was intended that a new Rosehill township would be created to provide housing for workers. Despite numerous attempts to sell the land, this township was never built (refer to Figure 4-13). New wharves were built in the 1880s to support the industrial works along the river.

#### Railways

A key part of the industrialisation of the area was the establishment of railways. Trains especially serviced the industrial sites that had begun to be built on the subdivisions, but other new improvements contributed to this aspect of local development. John Bennett, who purchased 140 acres from the subdivision in 1885 to build a racecourse gained permission in 1888 to construct a private railway that branched off at Clyde to a new platform at the racetrack that he named Rosehill. In 1896 the railway line was further extended from Rosehill to Carlingford, with it then becoming known as the Carlingford line.

As part of his works, Bennett also constructed the Sandown Line, which branched off north of Rosehill station and ran eastwards through Camellia, north of the tramway. This line would eventually have three stations, Hardies, Goodyears and Sandown, and numerous sidings each related to the industrial requirements of the line. It was electrified in 1959 and, following electrification, carried passenger services to the surrounding area including Lidcombe. It was formally closed in June 2019 (Gov Gaz 66 28/06/2019) The project alignment extends along HAMU 01 and HAMU 27.

#### The Australian Kerosene Oil and Mining Company

In 1885, 67 acres of the Elizabeth Farm subdivision estate along the Parramatta River was purchased by AKO&M at £300 an acre, for a total of £18,425 (The Cumberland Mercury 11 July 1885 p.4). This property encompassed most of the land between the tramway and the river (Figure 4-12). The AKO&M was formed in 1878 by a consortium of individuals involved in mining shale in the Joadja Valley (Jack, 1995). By the mid-1880s the AKO&M was expanding to diversify its range of products and the types of raw materials it used.

The company selected the Camellia site within the Elizabeth Farm subdivision to create a factory to manufacture these new goods under the brand name 'Southern Cross'. The new factory was designed to be able to process both oil-shale by-products from Joadja and animal tallow. The main products produced at the Camellia refinery were candles, soaps, and lubricants. Stops on the Sandown Line were constructed so that the factory had direct access for raw materials to be brought directly to the site. The river frontage enabled distribution.

These products were protected by tariffs in the 1880s but during the 1890s these were slowly reduced or removed altogether. This, combined with a rise in the price of tallow meant that the refinery became uneconomical and was shut in early 1898 (Mead, 1986). The site was sold and subdivided in 1916 by GR Sutton who oversaw the demolition of the AKO&M refinery.

#### The Goodyear Tyre and Rubber Company

The AKO&M site was purchased by the Australian branch of the Goodyear Tyre and Rubber Company. They began construction of a new factory in February 1927 and were producing tyres by October of that year. The factory was formally opened by NSW Governor Admiral Sir Dudley de Chair on 27 October 1927.

From its opening to the onset of World War II an intensive building program saw the addition of a plant for hose and belting (1928-30), employees' sports ground (1932), unspecified works (1934), engineering shop (1937), wharf, electric crane and pump-hole (1937-39), and an extended rail platform (1939). Further expansion continued following the Second World War with additions including an administration block in 1945 and the conversion of the sports ground into an industrial rubber products manufacturing and warehouse facility between 1950 and 1952. By the mid-1950s the plant covered 17.5 acres. The limits of the plant size were reaching by 1961. Following the merger of Goodyear and Dunlop in 1987 production at the Camellia plant was wound down; it ceased in 1991 and the buildings were demolished in 1997 (Godden Mackay, 1998).



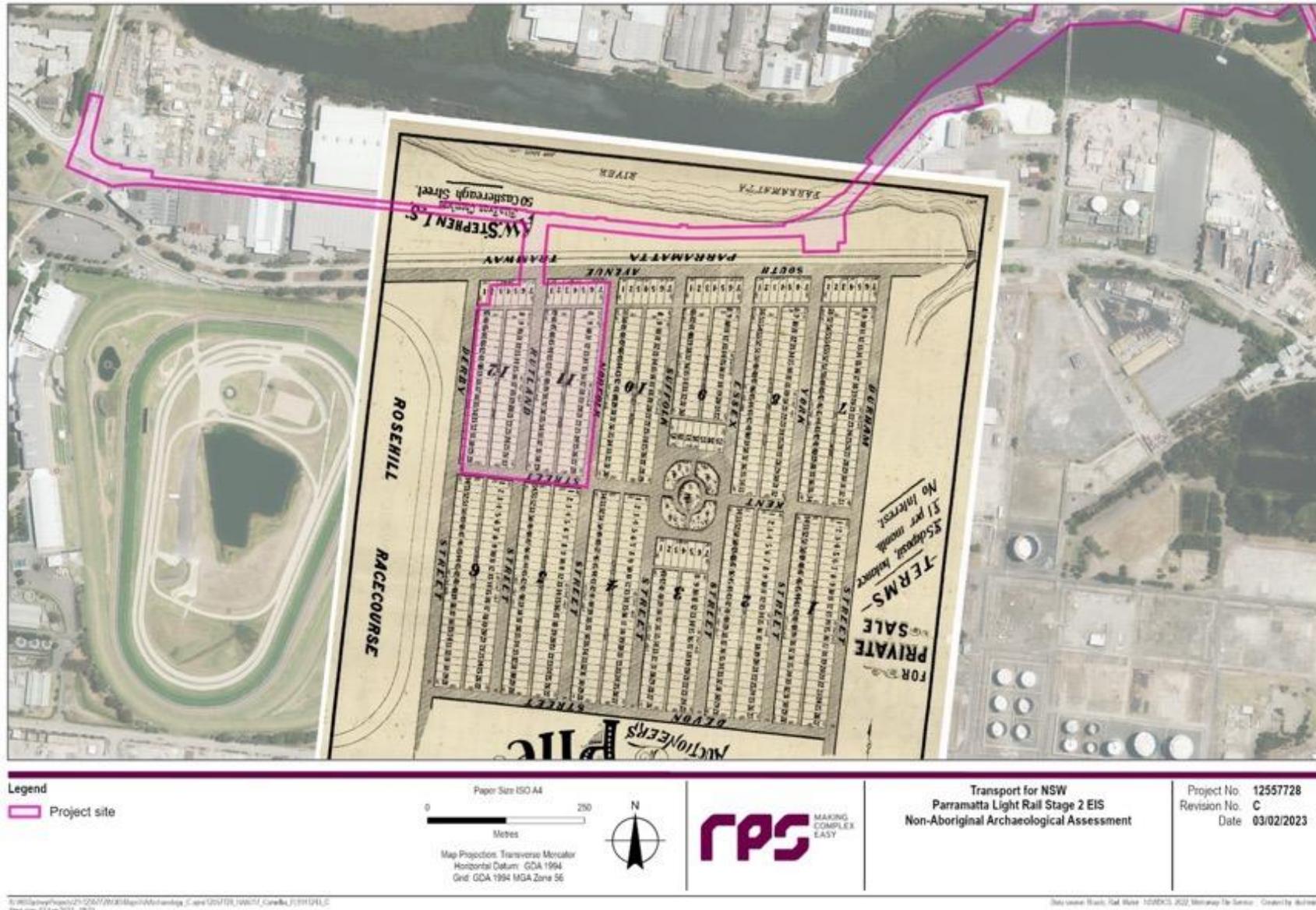


Figure 4-13: Subdivision plan prepared in c.1889 showing the proposed c.1900 Rose Hill Township which was never built. The project site is shown in pink. SLNSW, 051 - Z/SP/P6/48, FL9141243.

### The James Hardie Company

The James Hardie Company produced asbestos based products in the area from 1916 until 1996. Between 1995 and 2001, James Hardie Industries demolished 95 per cent of above ground infrastructure at Camellia; remediation of the land is ongoing.

### 4.3.6 Camellia timeline

Analysis of historical plans and other resources indicate the following occurred with the project site in Camellia prior to, or on, the dates listed in Table 4-1.

**Table 4-1: Camellia project site timeline**

Date	Events
1792	First land grants made to a combination of free settlers and convicts
1793	John Macarthur granted his first lot that he named Elizabeth Farm
By 1806	All land in Camellia part of the Elizabeth Farm Estate
By 1833	Red Bank locality established
1844	Minimal development within the project site, steps built at Red Bank
1852	Parcel of the estate let to Silas Sheather who established the Camellia Grove Nursery
1859	Square enclosure built at eastern end of project site with a rectangular building in the centre. Labelled 'Garden Hut' Track way from Garden Hut across the Elizabeth Farm Estate to main house.
By 1865	Edward Macarthur had leased the entire Estate
1870s	Estate described as 'dilapidated'
1881	Estate, totalling 1,100 acres sold to Septimus Stephen
1883	Jeanneret's tramway opens along Grand Avenue.
1885	AKO&M purchased land north of the tramway and built factories.
1888	Sandown Rail Line opens.
1900	Jeanneret's tramway sold to Sydney Ferries
1916	AKO&M refinery sold, subdivided and demolished Part of the site purchased by James Hardie and asbestos production begins
1927	Goodyear purchase most of the area and commence production of tyres
1930s	Goodyear expand the factory to include new plants, shops, facilities and wharfs
1943	Tramway closes, it being the last surviving steam tramway at the time of closure
1959	Electrification of Sandown Rail Line
1987	Goodyear production begins to be wound down
1995 onwards	Demolition and remediation of James Hardie site
1997	Goodyear factories demolished

## 4.4 Rydalmere

### 4.4.1 Initial land grants, 1791-1793

The first land grants within the project site in Rydalmere were made throughout the 1790s to convicts and marines all of whom were granted land with the intention of stimulating agricultural production (refer to Figure 4-14).

The first grants were largely rectangular blocks that abutted each other and ran northwards from the Parramatta River (refer to Figure 4-14 and Figure 4-39). They were granted as follows:

#### James Manning

Lot 4: 80 acres granted to James Manning in 1792 (refer to Figure 4-14). He arrived in the colony on the *Prince of Wales* as a marine private attached to the 56th Portsmouth Company in 1788, later transferring to the NSW Corps. He remained in the military, eventually transferring to the 73rd Regiment and serving in Sri Lanka in 1810 (Gillen, 1989). By 1812 he had relocated to Windsor but returned to the UK in 1815 having been invalided home. His grant was described as being in the Field of Mars on the north shore at the entrance of the creek leading to Parramatta (Colonial Secretary Special Bundles 1794-1825, p.1331). Manning appears to have done little with his farm, named "Manning's Farm". In 1809 a notice appeared on behalf of John Larkham placed by his mother Mary Ware that warned "*All persons are hereby cautioned against cutting timber, turning stock of any kind or any other manner trespassing upon those farms situate at the Field of Marks known by the names of James Manning and John Carver's Farms, adjoining and comprising 80 acres each (more or less) situate an lying on the Northern Banks of the Parramatta River, nearly opposite the Red Bank; as any person or persons hereafter trespassing will be prosecuted*" (Sydney Gazette, 22 Oct 1809, p.02).

#### John Carver

Lot 5: John Carver was granted 80 acres in 1792 (refer to Figure 4-14). He arrived in 1788 on the *Friendship* as a marine in the 24th Plymouth Company. By 1806 he was working for Isaac Nichols and was an inmate of the Sydney Benevolent Asylum in 1825. He died in December 1826. The advertisement described above infers that like Manning's land, Carver had also done little to his property by 1809. Manning and Carver were clearly close friends or associates. Carver witnessed Manning's wedding in 1792 (St John's Marriages, 1790-1966). Both Manning's and Carver's farms were in possession of Alex McDonald by 1814 (see section 4.5.1).

#### John Seymour

Lot 6: John Seymour was granted 50 acres in 1793 (refer to Figure 4-14). He arrived as a convict aboard the *Scarborough* in 1788. He joined the NSW corps in August 1799 and died at Port Dalrymple, Tasmania, in February 1808.

#### William Reid

Lot 7: William Reid was granted 60 acres in 1791 (refer to Figure 4-14). He arrived as a seaman aboard the *Sirius* in 1788 and was discharged in March 1791. Reid was supported and clothed from the public stores for eighteen months, had a hut built for him and was given grain and tools, two pigs, one cock and six hens. He was an industrious farmer for many years. He returned to sea in 1797; he left the colony in 1801.



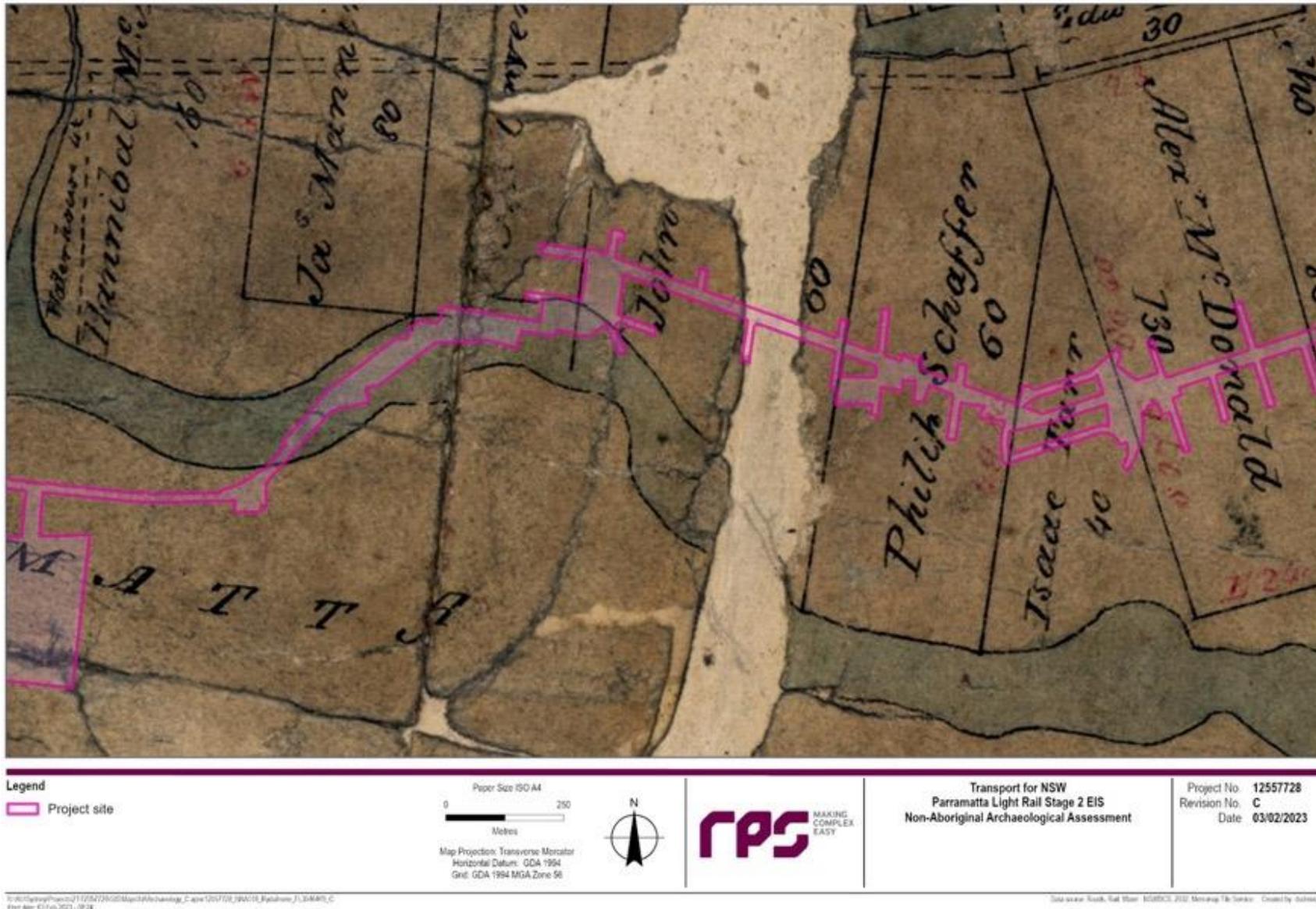


Figure 4-14: Extract from a c.1820-1834 parish map that shows the land grants made in Rydalmere at this time, Later parish maps provide clarity on the names of the grantees. The project site is shown in pink. SLNSW, Maps/0033, FL3546449.

#### 4.4.2 The Vineyard Estate 1791-1849

In addition to these small land grants, larger grants were also made close to the project site. These grants were awarded to two free settlers, Phillip Schaeffer, and Hannibal Macarthur. Schaeffer's grant was owned by numerous important historical figures over a relatively short period of time before eventually being owned by Hannibal Macarthur who consolidated the two grants into one estate, The Vineyard.

##### Phillip Schaffer

Phillip Schaffer arrived aboard the *Lady Juliana* in 1790 as a free settler. His arrival in the colony was a direct response to Governor Phillip's requests to the British Authorities for farming settlers (Bladen, 1892). He was granted 140 acres of land on the Parramatta River at Rydalmere in 1791. The land granted to Schaffer was located between Vineyard Creek and Subiaco Creek. He was also granted land within the project site in Ermington (refer to section 4.5.1).

He improved the land by building a brick house in addition to the house provided by the government (Tench, 1998 (1793)) (refer to Figure 4-15). By the end of 1792 he had cleared 23 acres and had planted 12 acres with maize, one acre with wheat, and one acre with tobacco and vines (Collins, 2003 (1802)). Schaffer was one of the pioneers of viticulture in the colony. At his estate in 1795 he produced 90 gallons of wine (Paterson, 1795). However, his early success was derailed by the difficulties encountered in production, and finally, an outbreak of blight (McIntyre, 2009).

##### Henry Waterhouse

Schaffer sold the estate, by then known as The Vineyard to Captain Henry Waterhouse in 1797 for £140. Waterhouse was granted a small addition to the estate equalling 4.5 acres immediately to the east of the property on the other side of Subiaco Creek on the 17 October 1797 (Hunter, 1797).

Waterhouse's principal interest was in sheep breeding. He had imported the first pure-bred Spanish merino sheep into the colony from the Cape of Good Hope on the *HMS Reliance* and introduced the flock at The Vineyard in 1796 (Parsons, 1967). He sold sheep to many of the large landholders in the colony including John Macarthur, the chaplain Samuel Marsden and Thomas Rowley, all of whom pioneered sheep farming. Upon leaving the colony in 1800 Waterhouse sold his remaining herd to William Cox the paymaster of the NSW Corps (Waterhouse, 1806b).

##### Gregory Blaxland

Despite leaving the colony Waterhouse retained ownership of The Vineyard. Waterhouse leased his estate to Gregory Blaxland in 1806 (Waterhouse, 1806a). Blaxland appears to have done little or nothing to the property. The property was valued in 1813 prior to its sale. By this time the fences and building had gone to ruin and the only thing considered to be of value aside from the land was the sawn timber in the ruins. The property was valued at £160 (Marsden and Hassall, 1813).

##### Hannibal Macarthur

The Vineyard was finally purchased by Hannibal Hawkins Macarthur (nephew of John Macarthur) in 1813 for £160 (Macarthur, 1813). Hannibal was born in England in 1788. His uncle John Macarthur convinced him to travel to NSW in 1805. He commenced a commercial career as a trader with minimal success. He was better equipped at farming writing to John Macarthur in 1812:

"Indeed the business of a merchant is so incompatible with that of the Farmer that one or the other must be given up, and as the latter is by far the most promising at present and an employment so much more suited to my abilities. I am convinced it is better to live up the country as there one can pursue profitable employment without observation and at the same time live at half the expense." (Macarthur, 1812)

He was initially granted land between Subiaco Creek and Manning's grant in 1805 which he amalgamated with The Vineyard in 1814 (see section 4.5.1). By 1822 he had acquired more land along the Parramatta River considerably expanding the size of the property. Macarthur lived on the estate between 1814 and 1849 first in Waterhouse's house (refer to Figure 4-16) and, later, a stone mansion he commissioned in 1836 (refer to Figure 4-17). Macarthur was nearly financially ruined during the severe economic recession that beset the colony in the 1840s. His properties were sequestered in 1848. The Vineyard Estate was sold in 1849.



Figure 4-15: Captain Waterhouse's house, the Vineyard, about 1798 (unsigned, undated). This house was outside of the project site but provides an indication of the landscape along the project site at the time. SLNSW, SSV1B / Parr / 6.



Figure 4-16: This view of the Vineyard Estate likely shows the same house occupied by Waterhouse outside of the project site but provides an overview of the landscape at the time. Vineyard. N.S. Wales (Annie Macarthur, 1834). SLNSW, FL3266685.



**Figure 4-17: View of the Vineyard Estate House by Emmeline Leslie (nee Macarthur) 1847. SLNSW, FL1084944.**

### Subiaco

The Vineyard Estate was purchased by Bishop John Bede Polding. He renamed the mansion Subiaco and used it to create a convent for Benedictine nuns who conducted a school there (Nairn, 1967). The Benedictine nuns lived and worked at Subiaco mansion until 1957 (Anderson, 2013). Apart from the grounds around Subiaco the rest of the Vineyard Estate was subdivided and sold. The name Subiaco eventually came to be assigned to the land between Vineyard and Subiaco Creek.

### 4.4.3 Rural Subdivisions and Post-war Housing 1849-1945, 1945 onwards

By 1866 Thomas O'Neill, who came from Rydal in Britain, had purchased part of the Estate. It is claimed that it is from O'Neill that the suburb of Rydalmere gained its name with him adding the suffix 'mere' to the name of his hometown to enhance the scenic qualities of the estate (Finlay, 2019). By 1878 Victoria Street, South Street and Wharf Road (Park Road) had been laid out and the land divided into allotments (refer to Figure 4-18).

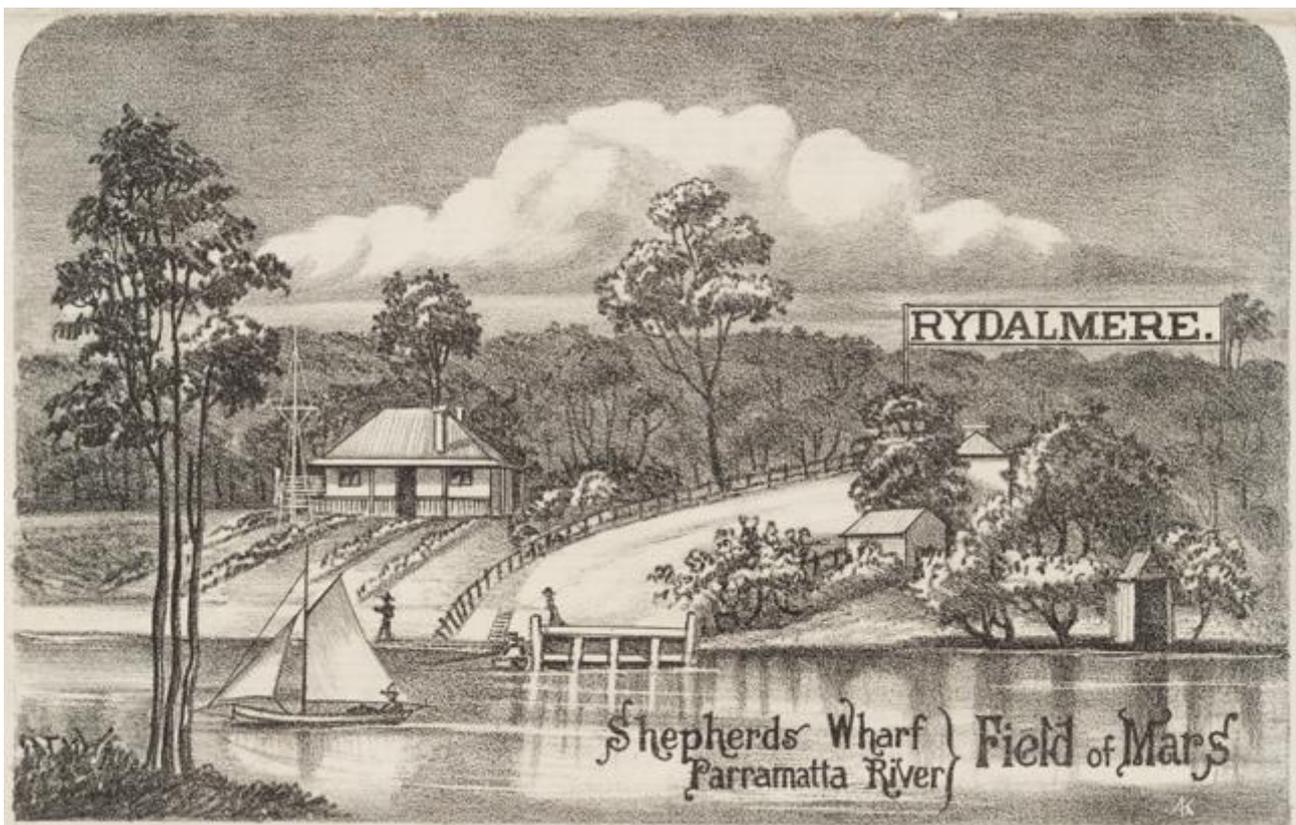
Throughout the latter half of the 19th century Rydalmere was primarily a horticultural landscape, particularly for orchards. Produce required access to markets and most transportation for this purpose was accomplished using the Parramatta River. A government wharf, commonly known as Shepherd's Wharf (SMH, 16 Feb 1881, p.8) was constructed at the end of Wharf Road (Park Road) to facilitate this trade (refer to Figure 4-19). The wharf is discussed in detail in section 4.4.4.



Another subdivision was made in 1886; the area was described as elevated and possessing fine soil for growing fruit (*SMH* 13 Feb 1886:21, Figure 4-19). This subdivision was for a block of land located north of Victoria Street and west of Wharf Street. Other subdivisions included:

- the Broadoaks Estate in 1886 which included land south-west of the junction of Victoria Street and Dundas Road
- the Grand View Estate in 1909
- the Fairmount Estate in 1926 which included most of the land south-east of the intersection of Victoria Street and Wharf Road
- the Riverside Estate in 1921 that included land north-east of the confluence of the Parramatta River and Subiaco Creek as far as South Street.

Purchases from these subdivisions were slow. By the 1940s the land within the project site remained largely semi-rural and sparsely occupied. Development accelerated very quickly following World War II, with Parramatta designated as a growth centre, and sections of Rydalmere zoned as industrial land. By 1955 most of the lots within the project site had been built upon with the NSW Housing Commission. The land was used to build homes for Australian returned servicemen and their families (refer to Figure 4-20). Across the suburb from 1950 factories at Rydalmere produced steel and concrete pipes, hot water systems and earth moving equipment.



**Figure 4-19: Extract from an advertisement for subdivision in 1886. Shepherds Wharf is west of the present project site, but this image provides an indication of the kind of landscape around the project site at the time. SLNSW, FL9094644.**

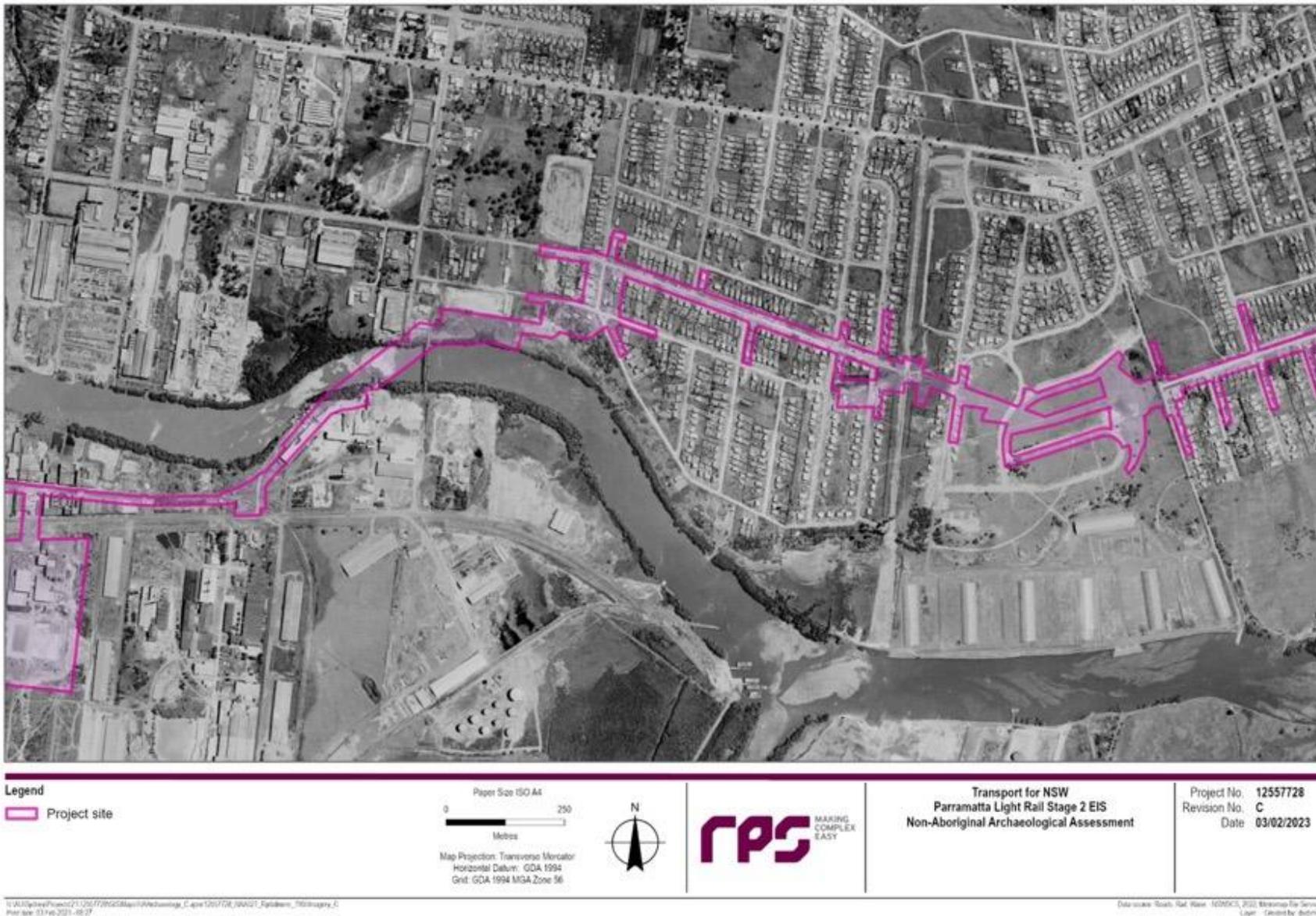


Figure 4-20: The project site on the 1955 aerial photograph showing the increasingly residential nature of the landscape at this time. The project site is shown in pink.

#### 4.4.4 Shepherd's Wharf

Rydalmere's importance as a centre of agricultural, particularly fruit, production necessitated the transportation of produce to other parts of Sydney; most of which was done via the Parramatta River. The earliest clear evidence of a wharf comes from the 1844 plan of Parramatta (Brownrigg, 1844) which shows a location approximately at the end of the present day Park Road (former Wharf Road). Written historical sources which refer to a wharf at what is today Rydalmere date to the late 19th century. Most of these sources make reference to 'Shepherd's Wharf' with the name likely coming from the Shepherd family who were in possession of parts of John Carver's and John Seymour's grants in the later 19th century. The name is commonly used by the 1890s such as in the following 1893 excerpt from *The Cumberland Argus and Fruitgrowers Advocate*:

*Ermington and Rydalmere Municipal Council: From the Public Works Department, with reference to letter of 23<sup>rd</sup> ultimo, in regard to representations made by the Council, concerning the state of the Government wharf, known as Shepherd's wharf, at Rydalmere, stating that the Minister had approved of the necessary repairs to the wharf being carried out and instructions given accordingly.*

*Received and Mr. Garrard to be thanked for his efforts in the matter. From Frank Farnell, M.P., with reference to matters brought under notice a few days ago, stating that he had taken action in every case, and some of the more urgent matters were receiving attention from the Government, with a view, he hoped, of having just requests brought to a successful issue. He would ask action in the matter of constructing a bridge over the river at Rydalmere. The Minister, of course, would have to approach the Rosehill-Dural railway promoters first. He had also taken the liberty of asking the Harbours and Rivers Department to dredge as far as Shepherd's wharf, so as to make the river navigable to that point*

These sources also highlight the difficulties associated with river transport during this period resulting from silt build-up. Aside from the practical challenges of maritime transportation, the wharf structure itself appears to have been in constant need of maintenance works. The following excerpt from a local newspaper in 1915 details the frustrations of local fruit-growers:

*RYDALMERE WHARF: Alderman Doe asked the Mayor on Wednesday if he was aware the wharf at Rydalmere was barricaded, and, if so, why? The Mayor replied that some time ago the Harbours and Rivers Trust asked the council to take over the wharf, and the request was turned down. It was pointed out at the time by a certain Alderman that the structure was in a state of disrepair, and was not a regular calling place of the Sydney Ferries Co., owing to the presence of dangerous rocks in the vicinity of the wharf. Alderman Doe said he was informed that the men from Sandown works used the wharf a good deal, and they had to climb over the barricades to get on to the street. 'Could not something be done to obviate this inconvenience?' asked Alderman Doe. Alderman Randall said a new track was being used by people from Sundown. The Mayor said he would make inquiries.*

From 1907, it appears that regular ferry services ceased along the river altogether as the result of silting. In 1969, Stannard Brothers Launch Services Pty Ltd ran a ferry service between Meadowbank and Circular Quay. By 1973, however, the service was no longer financially viable and was discontinued. In 1988, the Parramatta River was dredged between Duck River and Parramatta in preparation for a ferry service.

In 1993, the present Rydalmere Wharf structure was constructed for the RiverCat ferry service, which resumed operation between Meadowbank and Parramatta after a hiatus of 85 years. The first vessel to navigate the newly dredged river, the 'Marlene Mathews', named after the famous Olympic sprinter, travelled from Rydalmere to Circular Quay in June 1993. The 1943 aerial mapping possibly indicates the presence of a wharf structure at the former 'Shepherd's Wharf' site but it is unclear and if present is in a poor state of repair and unusable. It is therefore likely that it was not until 1993, with the establishment of the RiverCat service at Rydalmere, that a wharf was once again constructed, though it was now at a new location to the east of the former 'Shepherd's Wharf' site (City Plan Heritage, 2018 p.25). By the first decades of the 21st century the significance of the area at the end of Park Road was recognised, with signage being erected showing the location of Shepherd's Wharf (Figure 4-22).

Rydalmere Wharf was also upgraded as part of the Transport Access Program and reopened in March 2019.







Figure 4-22: Modern signage erected at the former site of Shepherd's Wharf in Rydalmere

#### 4.4.5 Rydalmere timeline

Analysis of historical plans and other resources indicate the following occurred with the project site in Rydalmere prior to, or on, the dates listed in Table 4-2.

**Table 4-2: Rydalmere project site timeline**

Year	Events
1791	Schaffer establishes The Vineyard Estate and plants the first wine vines in the colony on it.
1792	Further land grants made to a combination of former convicts and marines
1791	Schaffer sells The Vineyard Estate to Henry Waterhouse
1796	Waterhouse imports Marino Sheep to The Vineyard Estate
1805	Hannibal Macarthur first granted land within the area
1806	Waterhouse leases the estate to Gregory Blaxland having left the colony in 1800
1813	Valuation of The Vineyard Estate indicates it had gone to ruin, purchased by Hannibal Macarthur
By 1822	Hannibal Macarthur expands The Vineyard Estate to include land to the east along the Parramatta River
1836	Stone mansion named 'Vineyard' built
By 1844	Shepherd's Wharf opens
1849	The Vineyard Estate sold following the deep recession of the 1840s with the mansion purchased by Bishop Polding who renamed it Subiaco
By 1866	Part of the former estate purchased by Thomas O'Neill who names it Rydalmere
By 1878	Streets established and lots demarked
1881	Project site appears still undeveloped, indicated as salt swamp
1880s	Various attempts at subdivision go largely ignored
1890s	Shepard's Wharf in use.
1907	Silting causes regular river transportation to cease.
1943	No construction within the project site.
By 1955	Few post-war houses built across the area and irregular structures in Broadoaks Park.
By 1971	Increased housing and demolition of structures in Broadoaks Park.
1993	Rydalmere Wharf reopens to passenger services.

## 4.5 Ermington

### 4.5.1 Early Farming 1792-1871

The land in Ermington was first granted during the 1790s to marines who arrived on the First Fleet. The first grants were largely rectangular blocks that abutted each other and ran northwards from the Parramatta River (refer to Figure 4-23 and Figure 4-39). They were granted as follows:

#### Phillip Schaffer

60 acres: Phillip Schaffer granted in 1791 (refer to section 4.4.2 and Figure 4-23).

#### Isaac Tarr

40 acres: Isaac Tarr granted in November 1799 (refer to Figure 4-23). Tarr was a marine who arrived on the *Sirius* as part of the First Fleet. He was granted land on Norfolk Island but returned to Sydney in 1794 where he joined the NSW Corps. He had 12 acres under cultivation by 1806 (Gillen, 1989). He named his farm "Watkin Farm" (NSW Register of Land Grants and Leases 1792-1809, Volume 1). By 1822 Tarr was in extremely poor health and his wife petitioned the Governor for the family to be placed on stores (Col Sec Paper Letters Received, 1788-1826, p.15749). He died in 1828.

#### Alex McDonald

130 acres: Alex McDonald granted in 1792 (refer to Figure 4-23). He was a marine in the 20th Portsmouth Company and arrived on the First Fleet aboard the *Friendship*. McDonald had a mill on his property by December 1792 and was selling flour. By 1806 he was reported to be holding 158 acres and supporting his family, two convicts and three free workers off stores (Gillen, 1989). It was known as McDonald's Farm. By 1814 McDonald was in possession of Carver's Farm and Manning's Farm in Rydalmere which he sold to Hannibal Macarthur for inclusion into the Vineyard Estate (NSW LRS PASB 13445). McDonald built the Rose Farm House in circa 1820 (still extant at 15-17 Honor Street 40 metres south of the project site) (Figure 4-24). McDonald and his family drowned in December 1821 (Sydney Gazette 22 Dec 1821:3).

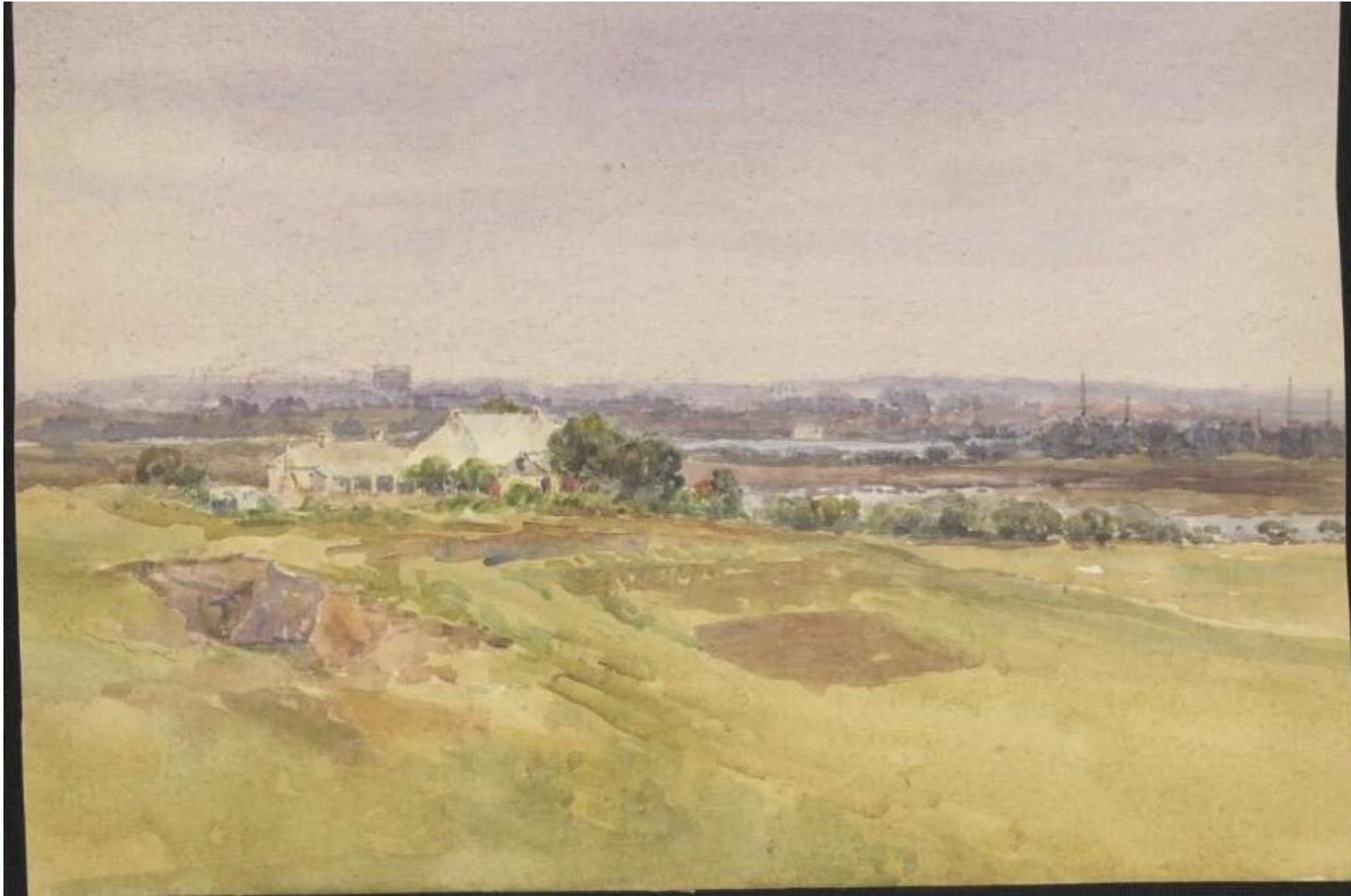
McDonald's grant passed to George McDonald (Sydney Gazette 29 December 1821, 01) who sold it in 1833 to Henry Harvey for £1,500. Harvey, a former convict, became one of the first aldermen of Parramatta Municipal Council in 1861 (Tsang 2020). Rose Farm House was placed up for auction in 1872 (SMH 26 Feb 1872) at which time the sale included the 130 acres original granted. The estate at the time is described as having an orangery of upwards of 1,000 trees, an orchard with apple, pear, and stone fruit trees and well grassed and watered paddocks. There was the original cottage, a large kitchen, storeroom, and laundry, brick stable of four stalls, coach house and other out offices (SMH 26 Feb 1872 p.11). It was then known as Rose Hill Farm.

#### Thomas Swinerton

80 acres: Thomas Swinerton granted February 1793 (refer to Figure 4-23). He arrived aboard the *Alexander* as a marine in the First Fleet. He was discharged on 10 December 1791 (Alt, 1792). By 1805 the land granted to Thomas Swinerton had been incorporated into the Samuel Marsden's land to the east which later was inherited by his daughter Jane Marsden. She was still in possession of the land in 1858. In 1824 the land was still referred to as "Swinerton's Farm" (Sydney Gazette, 29 April 1824, p.01) and described as lying at the Field of Mars on the North Shore at the entrance to the creek leading to Parramatta granted by Governor Phillip to Thomas Swinerton.

Throughout the 19th century the parcels of land in Ermington were farmed and the area remained essential rural.





**Figure 4-24: Rose Cottage (Rose Farm House) in 1932. Although slightly south of the project site this watercolour provides an indication of the nature of the landscape at the time. Cosh, J 1932 NLA, PIC Drawer 8818 #R7577.**

### The Swane Brothers Nursery 1919-1967

In 1919, the Swane brothers, Edgar Norman (Ted) (1892-1974) and Harold Rudyard Kipling (Tim) (c1899-c1965) began growing fruit trees for orchardists on property owned by their father Edgar Henry Swane, town clerk and former mayor of the Ermington and Rydalmere Municipality. The following year, Edgar Norman together with his younger brother Harold became the proprietors of a nursery trading as Swane Bros' Enterprise Nursery. Their main stock was citrus and roses, although they also grew crops of fruit and vegetables to supplement their income while the plants grew. In December 1920 Edgar Norman purchased Lots 1 and 12 in Deposited Plan 3370, acquiring street frontage to Hope Street, Hughes Avenue and Atkins Road, Ermington (Heritage NSW 2021b).

From 1921, the brothers brought innovative improvements to the business, including the purchase of a 1921 Model-T Ford for delivery of vegetables, use of the motorised Howard rotary hoe, and the technique of 'growing-on' plants in large containers.

In December 1922, the brothers purchased an existing orchard on the east side of Hughes Avenue which comprised an area of about 10 acres. This property had been part of John Woodcock's fruit and produce business. Woodcock (1840-1919) had purchased the land in 1904, but he had been growing fruit in the Ermington area since the 1870s. This land purchase consolidated the family's local holdings (Heritage NSW 2021b).

In 1923, they received permission to build a shed and stables on Hope Street and in 1924, to erect a new cottage at 64 Hughes Avenue, within the project site (Bulla Cream Dairy (Willowmere) Parramatta LEP Item No. I64). The house was called Willowmere. The front garden and west paddock (horse paddock) were used at one stage for the propagation of plants for sale at the adjacent nursery. Edgar Norman and his family resided at 64 Hughes Avenue from the time of its construction until the 1960s, with the nursery operating from the adjacent lands on Hope Street. However, in the early part of 1926 the two Swane brothers went their separate ways. Harold acquired Lot 1 to the west of No. 64 Hughes Avenue (now 61 Atkins Road and 2B & 2C Hope Street) from his brother and Edgar Norman retained Lot 12 (64 Hughes Avenue) (Heritage NSW 2021b).

The Swane Bros. Enterprise Nursery was highly successful. The principal lines of nursery stock were fruit trees, both citrus and deciduous, rose plants (bush and climbing), and a wide variety of shrubs, and flowering and ornamental trees. By the early 1940s the nursery had on hand some 35,000 plants and published a sales catalogue that was posted free on request, which included hints on planting, pruning and spraying. The nursery premises were open to the public weekdays and on Saturdays (The Cumberland Argus and Fruitgrowers Advocate, 26 March 1941: 7).

In the County of Cumberland Planning Scheme gazetted in 1951, the area of Swane's nursery operations was zoned Industrial. Later in that decade, in 1959, part of the nursery lands to the east of Hughes Avenue were sold to McNamee Holdings Pty Ltd; and in 1966, the other half of the nursery lands were sold to Gantrell White (Cakes) Pty Ltd. Swane's dwelling at No. 64 Hughes Avenue (Lot 12) was sold in 1967 to Bulla Cream (Heritage NSW 2021b).

### 4.5.2 Subdivision, Post-war Housing

Much of the suburb was subdivided in the early 20th century, however, Ermington was slow to develop and remained rural through to the mid-twentieth century. Following World War II, the NSW Housing Commission acquired and developed sections of Ermington to accommodate returned servicemen and their families. Up to 1,500 houses were initially constructed. The scheme continued into the 1980s, with land continually acquired under the Housing Act 1912 (Government Gazette of the State of NSW, 8 April 1983: 1644).

While much of Ermington was developed in the post-war years for housing, land bordering Melrose Park was being industrialised. Food processors, cosmetic and pharmaceutical companies established factories and warehouses, many of which remain.

The eastern river frontage area of Ermington remains as parkland. Having been used for landfill during the 1970s, much of the area has now been redeveloped into George Kendall Reserve. The western riverfront area has been converted into a residential subdivision in recent years.

### 4.5.3 Ermington timeline

Analysis of historical plans and other resources indicate the following occurred with the project site in Ermington prior to, or on, the dates listed in Table 4-3.

**Table 4-3: Ermington project site timeline**

Date	Events
1792	Lands granted to marines of the First Fleet including the project site. No indication of use of land within project site.
c.1820	Alex McDonald builds Rose Farm House
1833	Henry Harvey purchases Rose Farm House at which time it includes a well-established orchard and paddocks
1872	Rose Farm placed up for auction at which time it included an orchard of over 1,000 trees
1919	Swane Brothers nursery established in eastern part of project site.
1924	Willowmere built on the nursery
1943	Rural trackways and roads established in western part as part of subdivisions including Spurway Street, Boronia Street and Hope Street. Little construction had occurred though.
1951	Rezoning occurred leading to the nursery area being zoned Industrial
1965	Substantial residential construction across the project site including redesign of some roads.



## 4.6 Melrose Park

### 4.6.1 Initial land grants 1792-1805

The land within the project site in Melrose Park was first granted to three individuals: two ex-marines and a prominent Anglican missionary and priest (refer to Figure 4-25 and Figure 4-39). The first grants were rectangular blocks that abutted each other and ran northwest from the Parramatta River. They were granted as follows:

#### John Colethread

80 acres (Parcel 15): was granted to John Colethread on 3 January 1792 (refer to Figure 4-25). He arrived in the colony as a marine aboard the *Lady Penrhyn*. He was still in possession on the land in 1800 but also still on stores possibly implying that his farming efforts were not successful. He died around August 1802 (Gillen, 1989).

#### Isaac Archer

80 acres (Parcel 14): was granted to Isaac Archer in 1792 (refer to Figure 4-25). He arrived as a marine on the *Alexander*. By 1802 Archer had amassed 240 acres including the adjoining 80 acres granted to Colethread and land in Wentworth Point (refer to section 4.7.2). By 1822 he had two horses, 38 cattle, 10 pigs and 348 sheep. Archer sold his land to Reverend Frederick Wilkinson in 1825 (Gillen, 1989). Wilkinson later sold these two grants to Edmund Lockyer.

#### Samuel Marsden

The grant (335 acres) ran from the Parramatta River and included a section of the Pennant Hills Road (refer to Figure 4-25). This was only one of several estates he had acquired by 1805 totalling 1730 acres (Yarwood, 1967). Marsden arrived in NSW aboard the *William* in 1794 to become the assistant chaplain of New South Wales. Marsden was based out of Parramatta, and actively engaged in farming, particularly sheep farming, alongside his clerical duties as the resident chaplain in Parramatta.

In 1827 the eastern portion of the estate, divided by Pennant Hills Road, was purchased by Edmund Lockyer. The land to the west of Wharf Road remained in the possession of Samuel Marsden's family, being inherited by his daughters Elizabeth Mary Bobart (nee Marsden) and Jane Marsden in 1838. By the 1840s Elizabeth Bobart, along with Edmund Lockyer, were the largest landowners in the district. Bobart's inheritance was subdivided in the 1850s with the allotments large enough to support farms and orchards.

### 4.6.2 Early Farming & Edmund Lockyer 1792-1827

Edmund Lockyer purchased the land east of Wharf Road from Samuel Marsden in 1827. By this time, he had also purchased Archer's land which included Colethread's initial grant, incorporating them into the Ermington Estate. He was born in Devon, England in 1784 and arrived in Sydney on the *Royal Charlotte* in April 1825 as a major in the 57th regiment. As well as purchasing the land at Ermington in 1827, he was granted 2,560 acres in the Marulan district which he named Lockyersleigh. In the following years, Lockyer undertook various public appointments, including police magistrate at Parramatta (1828), principal surveyor of roads and bridges (1829), serjeant-at-arms to the Legislative Council (1852) and in 1856 usher of the black rod. Lockyer died in 1860 (Shaw, 1967). In 1828, a year after his purchase of the land from Samuel Marsden Lockyer built Ermington House. This is outside the project site (refer to Figure 4-26).

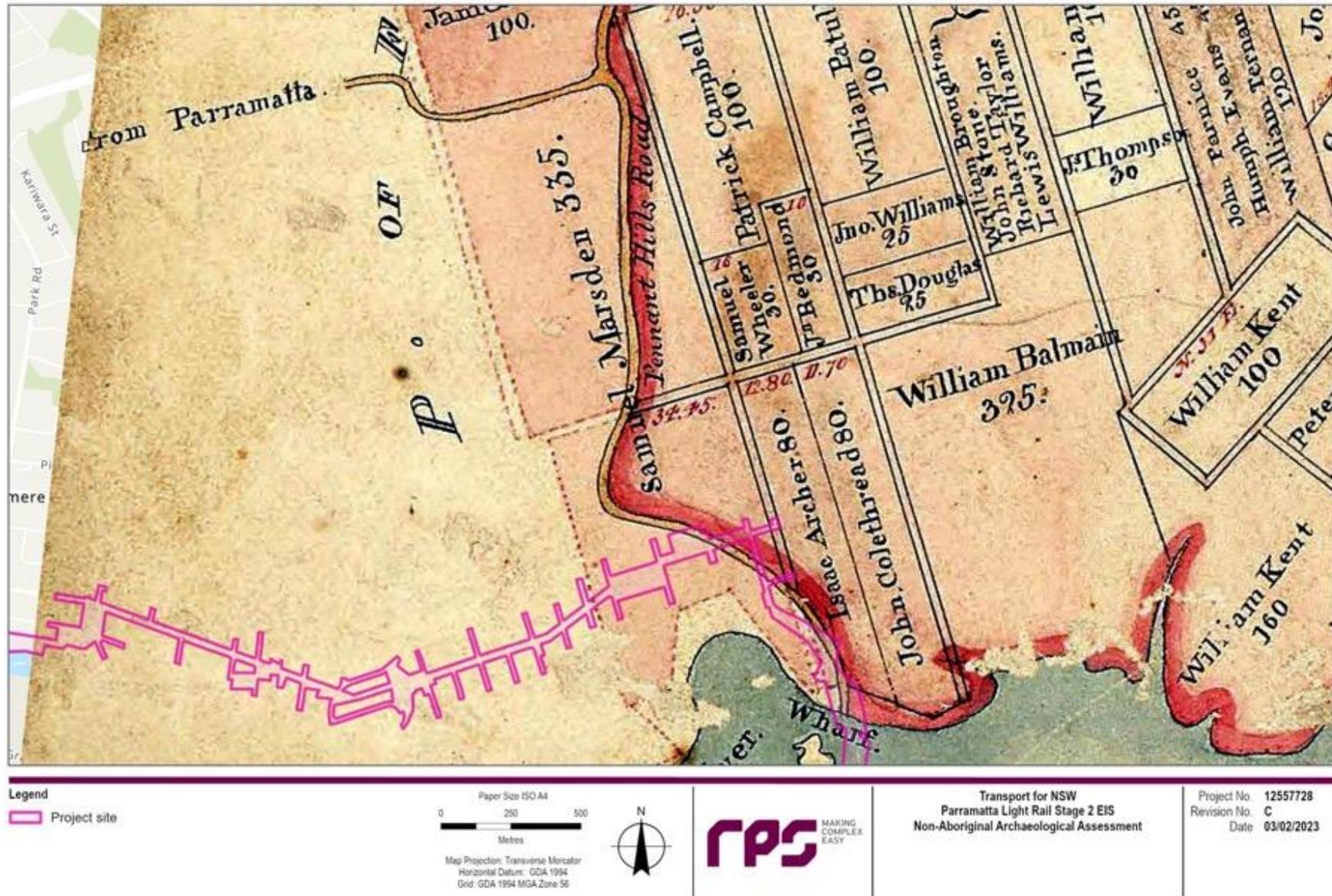


Figure 4-25: Hunter's Hill Parish map with the project site shown in pink. HLRV, Parish of Hunter's Hill, Historical Parish Maps Sheet 1 n.d.



**Figure 4-26: Near Pennant Hills Wharf – Parramatta River – My House, 1854 by Frederick Garling. Based on biographical information with the painting it appears to be of Ermington House facing westwards with Ermington Wharf visible in the background. It also provides an indication of the nature of the landscape at the time. SLNSW, FL1717169.**

In 1829 the house and property were offered for lease. It was described as an “unusually handsome building” and, in addition there was a stable, barn, and coach house (Sydney Gazette, 29 Dec 1829, p.04). At least from the 1850s Ermington House was leased to tenants. Jabez King Heydon was an English-born printer and publisher, who arrived in NSW in 1838 as a free settler. He lived at Ermington House with his wife from 1854 to 1876. During this period, they employed German immigrants to work the farm and orchard (Heydon, 1966).

The house was then purchased by John Richard Linsley who was Mayor of Ryde from 1877-1880. Following his death in the mid-1890s the house was tenanted until 1926 when it was purchased by City Mutual Life Assurance Society Limited. The general manager, George Crowley, had a vision of a satellite town complete with its own golf course in line with the popular garden city movement of the early twentieth century. Ermington House was demolished to make way for the Golf Links Estate (Phippen, 2008).

The estate surrounding the house was largely cleared and fenced (SMH, 26 Feb 1847, p.03). Lockyer grew grain crops on his property (Sydney Gazette, 13 Oct 1828, p.02) and established orchards in the area that produced oranges, lemons, apples, and apricots. He also had a substantial herd of sheep (The Colonist, 19 Jan 1837, p.04). The lease notice of 1829 provides good evidence for the extent of improvements; there was a granary and large agricultural buildings “of the best description”. There were four or five acres of productive gardens including numerous fruits trees. They were enclosed with a six-foot tall paling fence (Sydney Gazette, 29 Dec 1829, p.04). He also had an extensive kitchen garden close to the house (refer to Figure 4-27).

By 1841 Lockyer had commissioned a wharf for private use; the location is outside of the project site. There was, as well, a roadway that connected his house to Pennant Hills Street (Wharf Road). At the intersection of these roads, was a hut within a fenced garden built on land which was partially reclaimed. This is within the project site (refer to Figure 4-27). On a separate plan of the same date, it was described as a cottage rather than a hut (Subdivision of the Village of Ermington SLNSW Maps/0233).

The extent of the improvements including the wharf are again defined by advertisements for the lease of the property in the 1850s. Apart from the house there was a three-stall stable, servant’s residences, milking yard, piggeries and other farm buildings. There were eight acres of orchards and several paddocks, in total 200 acres. Twenty-five acres had been divided off for a small farm which had a spacious four-room stone cottage. The wharf was noted to be close to the house (Freeman’s Journal, 21 Dec 1859, p.04).

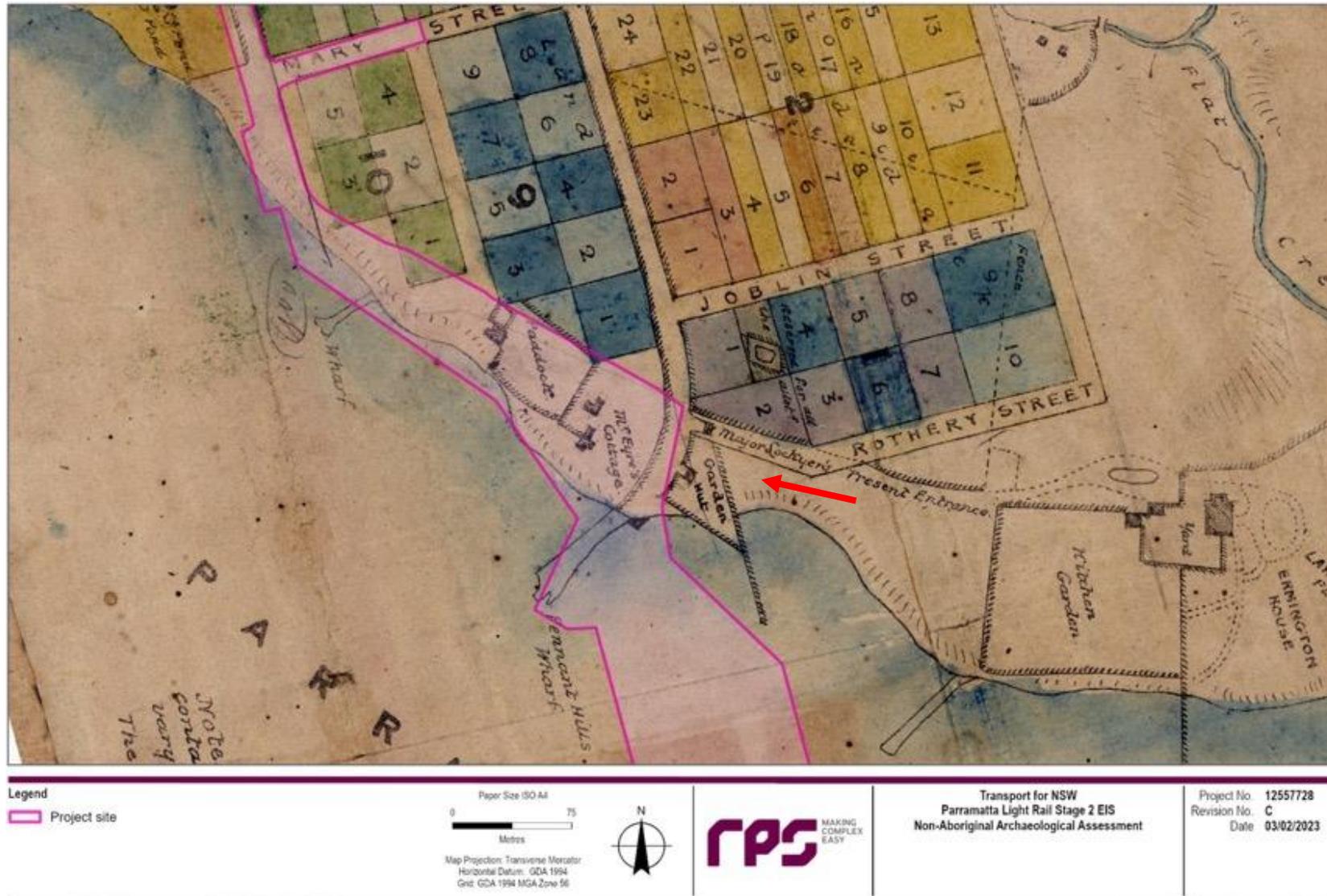


Figure 4-27: Extract from Plan of the village of 'Ermington on the Parramatta River: to be sold by auction by Mr. Blackman, on 23rd April' showing Lockyer's Road and the garden and hut (indicated by the arrow) built close to Pennant Hill Street (Wharf Road); Ermington House with its large kitchen garden is located to the right. (Clint, 1841). The project site is shown in pink. SLNSW, FL3712001.

### 4.6.3 Parramatta River and Ermington Wharves

The Parramatta River has played a number of crucial roles in the development of Sydney and Parramatta, and as a result a diverse range of maritime infrastructure was built along the river's edge. Maritime infrastructure supported the watercraft which travelled between the settlements and enabled the transportation of passengers and cargo in the form of produce, supplies and raw materials. Several wharves were built within the Melrose Park area of the Parramatta River, including the former Ermington Wharf (which is listed as *Ermington Wharf* on the Parramatta LEP, *Wharf* on the Ryde LEP and *Former Pennant Hills Wharf* on the SEPP (BC) and is located adjacent to the project site at Melrose Park and is described in more detail in Section 4.6.3.1.

Multiple other wharves were established and operated in this part of the Parramatta River at various times in the 19th century. Those relevant to this project are discussed below for historical context. As a result of suburb name changes, reconstruction episodes, and changes in function, many similar names have been assigned to a variety of wharves along this stretch of the Parramatta River.

The name 'Ermington Wharf' has been used for many different structures. There were two wharves, also known as 'Ermington Wharf', located about 1.3 kilometres east of the Ermington Wharf. The first of these extraneous wharves was one of the earliest stone wharves built to ferry passengers and cargo to the north side of the river to and from Sydney. It was constructed at the end of Spurway Street (then Dundas Road). This wharf, referred to as *Ermington Wharf No.1* by the National Trust, was extended in 1877 with the construction of an adjoining timber wharf to provide berthing for larger steam ferries. (National Trust, 1986).

A second stone wharf situated near the end of Spurway Street, referred to as *Ermington Wharf No.2* by the National Trust, was also used in the early ferrying of passengers and cargo to the north side of the river to and from Sydney. This wharf had been constructed in a trapezoidal shape to allow various sized ferries to use the wharf at the same time. However, neither of these are the wharf located adjacent to the project site, which is also identified as Ermington Wharf (National Trust, 1986).

The 1841 'Plan of the Village of Ermington' shows three wharves in the Melrose Park area, including the Ermington Wharf that is within the project area and two others (see Figure 4-28 and Figure 4-29):

- 'Pennant Hills Wharf' – so named because it was located at the end of the 'Pennant Hill Street' (now Wharf Road) and is the same wharf located adjacent to the project site at the location of the Ermington Boat Ramp
- 'Major Lockyer's Wharf' – situated near Ermington House around 200 metres east of Ermington Wharf
- 'Wharf' – situated around 200 metres west of Ermington Wharf. This is referred to in this report as 'unnamed wharf'.

A comparison of the 1841 'Plan of the Village of Ermington' and more recent maps of the area show how 'Pennant Hills Wharf' was also sometimes referred to as 'Ermington Ferry Wharf', 'One Tree Wharf' and possibly 'Government Wharf', eventually became known as 'Ermington Wharf, Ermington (Stedinger, 2008 p.13). However, for consistency, this report has adopted the term 'Ermington Wharf' to refer to the former wharf located at the Ermington Boat Ramp.



Figure 4-28: 1841 Plan of Ermington, showing three of the wharves in Melrose Park' The middle wharf (red arrow), is Ermington Wharf, the site located at the end of Wharf Road discussed in Section 4.6.2.1 Lockyer's wharf is to the east (green arrow), and unnamed wharf is to the northwest (blue arrow). (Manuscript map of subdivision of the village of Ermington, 1841).

#### 4.6.3.1 Ermington Wharf circa 1820s – circa 1930

The wharf at the end of Wharf Road in Melrose Park was known as Ermington Wharf and was a public wharf, built around the 1820s, after which it became a critical part of the riverine economy (Figure 4-29). It first serviced the government timber getting establishment at Pennant Hills from the 1820s. This operation was one of the major industrial activities of the colony at that time (Rowland, 2008). Over 70 convicts were employed in felling, sawing, and transporting timber from Pennant Hills, via the wharf, to the various public works instigated by Governor Macquarie. In the late nineteenth century was used in the shipment of blue metal stone from the Pennant Hills quarry.

By the early 1840s numerous structures had been built close to the wharf. Immediately north of Ermington wharf two small buildings, owned by a Mr Eyre had been built (see Figure 4-28, Figure 4-30). Further north of these buildings was a paddock with an attached barn. South of Ermington Wharf, within Lockyer's land, a rectangular cottage had been built within a triangular enclosed piece of land. This land parcel was a garden and the regular shape it is shown to have on historic plans indicates that some amount of reclamation was undertaken to create the garden (Figure 4-29, Figure 4-30). The building is either labelled as 'garden hut' (Figure 4-29) or 'cottage' (Figure 4-30). It appears that this enclosure is outside of Lockyer's Estate.

According to the *Ryde Heritage Study*, Ermington Wharf was constructed circa 1830s, possibly by convict labour, and was built to ship road metal from Dundas Quarries for Sydney Streets (Ryde Heritage Study, 1986). However, other authors have dated its construction to the 1820s, mostly due to the wharf's association with timber getting. Martin refers to an 1829 road plan from Parramatta River to Wiseman's Range shows a road from Castle Hill to the wharf, a road which passes through One Tree Hill. A track branches off from One Tree Hill to the Government Sawyers' Establishment at Pennant Hills (Martin, 1988) According to Martin, the saw pits had been built by convicts at Pennant Hills prior to the *Bigge Commission Enquiry of 1819*. In that year Major George Druitt, Chief Engineer of New South Wales, told the commission that he had '*established saw pits at Pennant Hills ... from this place I am enabled to supply several works at Sydney and its neighbourhood partly by water carriage ..*' (Martin, 1988). Martin attributes this reference to 'water carriage' as evidence of the wharf being constructed at this time. The Society of Australian Genealogists point to the wharf's early timber trafficking history and suggest a similarly early date of construction. The Society asserts that Surveyor Meehan surveyed a new route down to the 'Pennant Hills Wharf' in 1817 and that sometime thereabouts the wharf was built. Meehan's new road 'came down the hill much on the same alignment as Pennant Hills Road today and then followed today's Marsden Road and Wharf Road, Ermington'. (Society of Australian Genealogists, Undated: 70) According to the Society, this road to the wharf was constructed by convict labour under overseer James Power and at the time was known as 'Pennant Hill Road' (Society of Australian Genealogists, Undated: 70). In 1820, Captain John Welsh complained that '*the present road now made use of for the purpose of conveying timber has run through my farm*'; a farm which he had purchased from Samuel Marsden only two years earlier (Society of Australian Genealogists, Undated: 70).

By the 1830s, Ermington Wharf was also used by the fruit growers of Ryde, Pennant Hills and Dundas to transport their produce to markets in Sydney. A roads itinerary published in 1835 described the wharf as: "*Government Wharf where the timber cut at the sawing establishments is embarked, and where the fruits and produce of this part of the country are embarked for the Sydney market.*" Later, in 1871, the same wharf (then described as both "Pennant Hills or Corporation Wharf") refers to "*the basaltic stone from the quarry [being] shipped here for repairing Sydney streets*" (The Empire, 26 July 1871, p.4). The role of Ermington Wharf in supporting the quarry appears to have been substantial and is referenced frequently in contemporary media reports. Bluestone was carted from the quarry to Ermington wharf, where it was then transported by punt to Market Street in Sydney (SMH 25 January 1913, p. 4).

The wharf was heavily used and appears to have been frequently repaired and upgraded, as expected for maritime infrastructure of this nature. By 1862, the wharf was in very poor condition. (The Empire, 10 April 1862, p5). Later that year, Sydney Municipal Council minutes recorded a resolution determining a tender for construction of a jetty at Pennant Hills wharf (The Empire, 17 September 1862, p 2) Shortly after, in 1879, a tender was accepted by the government for erection of a new wharf at Pennant Hills (SMH, 8 January 1879, p.7). In 1885, another government tender was accepted for "enlargement of the Ermington Wharf" (Aust Town & Country Journal, 5 September 1885, p.42). Only a few years later, in 1897, another tender was advertised for repair of the public wharf at Ermington (SMH 27 July 1897 p.3). Although it appears multiple jetties were present at Wharf Road on various occasions, some plans dating from 1880 – 1919 show these are two separate wharf structures (see Figure 4-31 and Figure 4-32). During this period numerous structures were erected in the vicinity of the wharf (see Figure 4-33 and Figure 4-34).



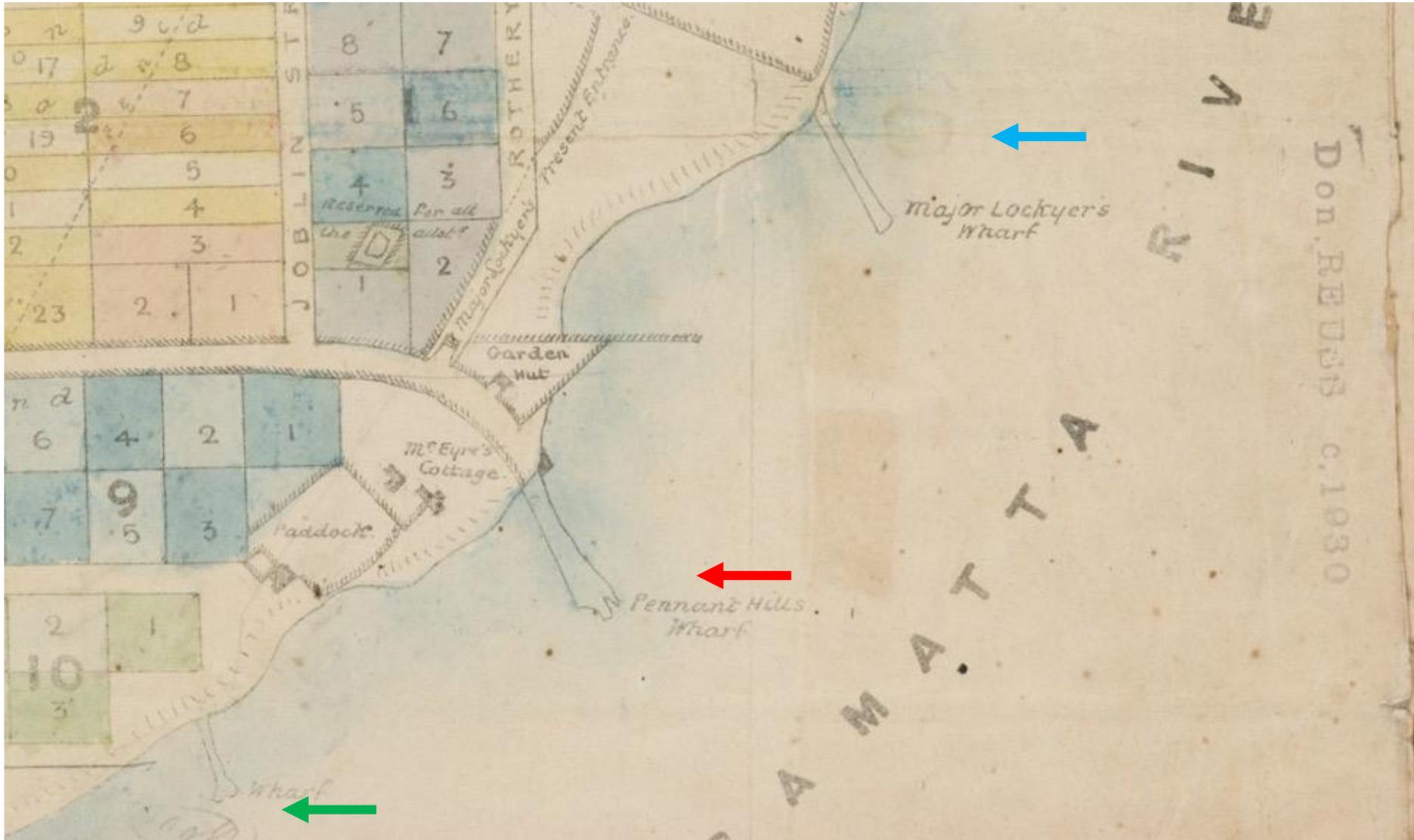


Figure 4-29: Ermington in April 1841. The three wharves discussed in the text area present at this time. The unnamed northern wharf (green arrow), Ermington Wharf (shown here as Pennant Hills Wharf – red arrow) and Lockyer’s Wharf (blue arrow). (Plan of the village of Ermington on the Parramatta River: to be sold by auction by Mr. Blackman, on 23 April).

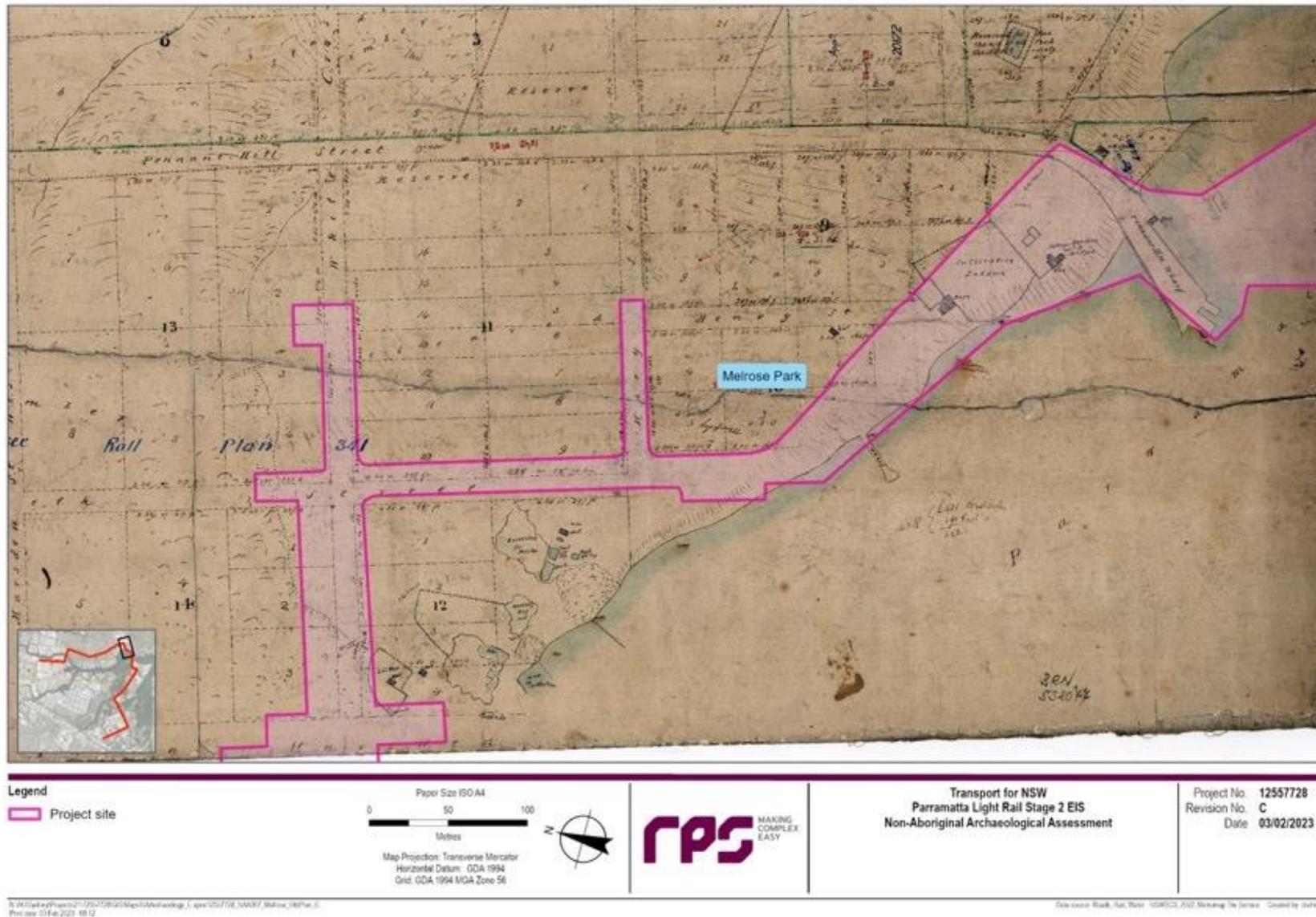


Figure 4-30: Melrose Park c.1841 at which time the public wharf and small farms along the river bank were operating (Manuscript map of subdivision of the village of Ermington c.1841).

By 1925, there was little public use of Ermington Wharf and the Harbor Trust closed the wharf from 1 October 1925 (Evening News, 1 October 1925 p.14). It is likely informal use of the wharf continued after this time, with the area being actively used by the community for swimming baths (see Section 4.6.3).

In 1995, the then Department of Transport proposed to build new wharves at a number of sites along the Parramatta River, including Wharf Road, Gladesville, Kissing Point Park, Putney, and Wharf Road, Ermington (Melrose Park). While the City of Ryde Council rejected many of these sites because of safety and parking concerns they voted to accept the Wharf Road, Melrose Park site (Stedinger, 2008:16).

Shortly after, a new pontoon appears to have been built and the boat ramp was further upgraded in 2010. The jetty was replaced, and the boat ramp widened to three lanes providing an improved boat launching facility for residents and river users (City of Ryde Council, 2010).

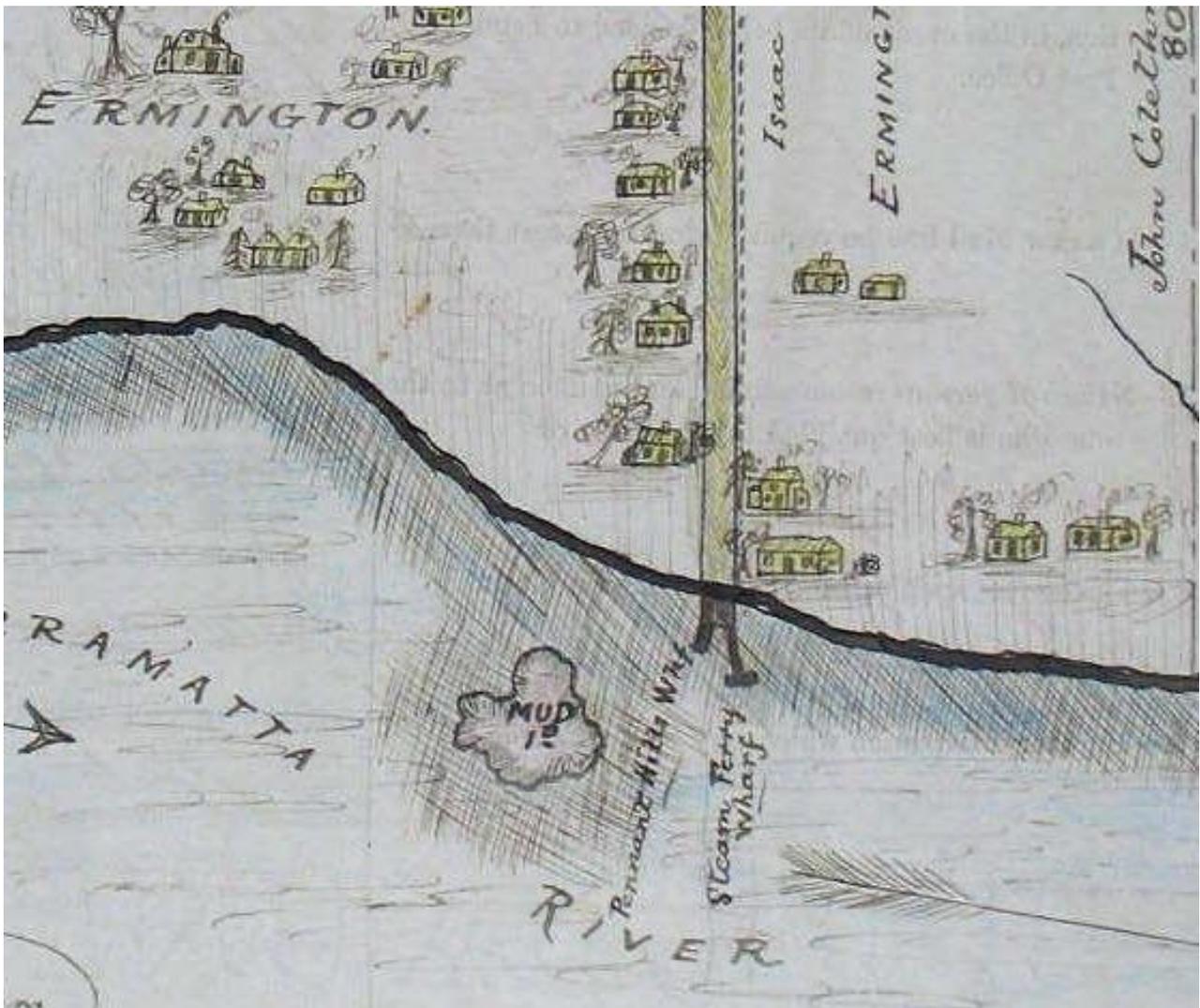


Figure 4-31: Ermington Wharf circa 1880 showing both as “Pennant Hills Wharf” and as the Steam Ferry Wharf and connected but separate structures (NAA: SP32/1, ERMINGTON PART 1).

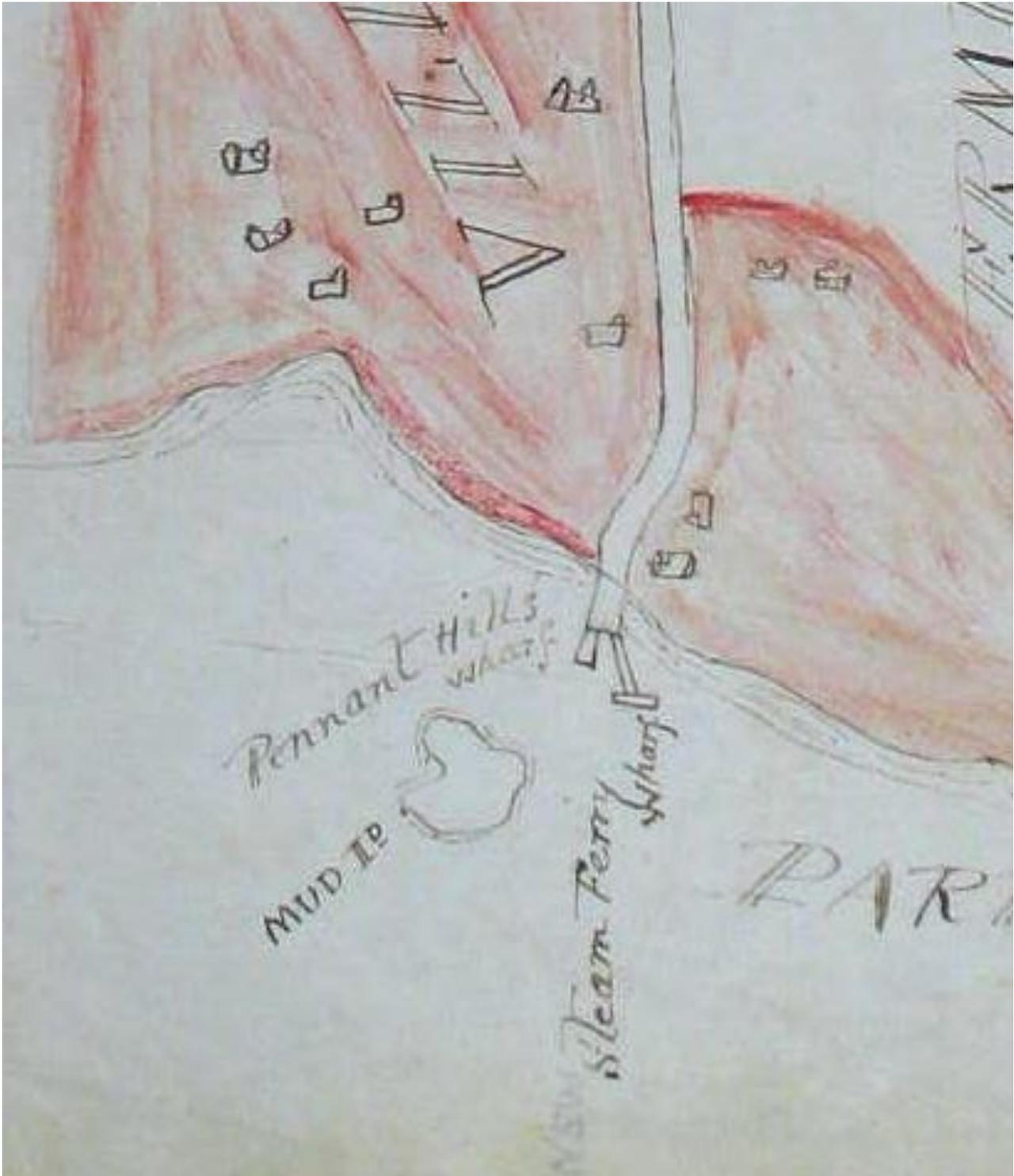


Figure 4-32: Undated image (circa 1880) showing wharf and steamer wharf as connected but separate structures (NAA: SP32/1, ERMINGTON PART 1).



Figure 4-33: West's Cottage at Ermington Wharf No date. Ryde Library and Information Services. Local Studies Collection.



Figure 4-34: Members of the Woodcock family & the fruit-boat "Surprise" at Ermington wharf, around 1888.

#### 4.6.4 Ermington Baths (c.1919- c.1930)

As part of the wharf, swimming baths were incorporated into the design. In 1919, the Ermington Parents & Citizens (P&C) Association constructed the Ermington Baths for local school children (Figure 4-35). The baths were built by volunteers for £50, and it was reported that nearly all school children in the area learned to swim there. By 1924, the baths had fallen into disrepair. The area was leased from the Harbour Trust, who wrote to the P&C that the baths must either be repaired or removed. The P&C requested support from the local council. It was estimated that the baths could be repaired for £5, and that the rent was only £1 year. A sum of £2 was suggested for maintenance. The P&C requested that the council take over the control of the baths. It was also suggested that the Department of Education could be approached to contribute to the

baths as local school students used them extensively (*The Cumberland Argus and Fruitgrowers Advocate*, 21 June 1924: p6). Ultimately, these suggestions were rejected, and the baths continued to be privately funded, including dressing sheds being added in 1927 (*The Cumberland Argus and Fruitgrowers Advocate* 25 March 1927: p13). However, there is no evidence the baths continued past this time. It is unclear when the baths removed but they were no longer present in 1943 (Figure 4-36).



Figure 4-35: 1919 Plan of Ermington Wharf showing the Ermington Baths (Plan of Municipalities of Ermington and Rydalmere and Ryde, Parishes of Field of Mars and Hunters Hill, County of Cumberland - Marsdens Road, 1919).

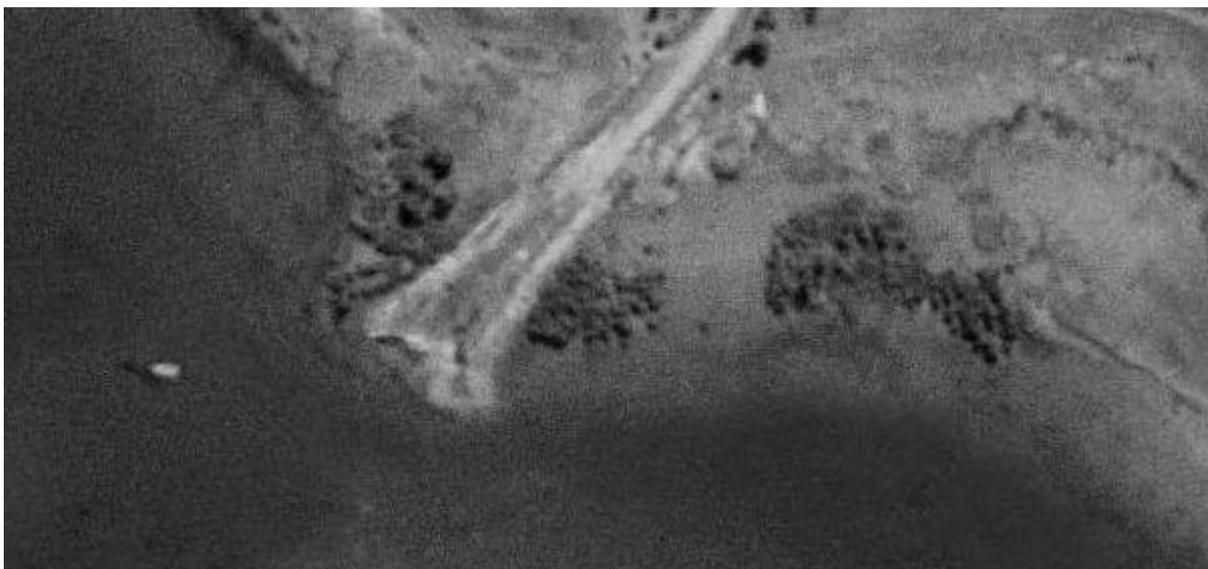


Figure 4-36: Aerial showing the site of the former Ermington Wharf and baths, which are no longer visible at this time (SIX Maps).

#### 4.6.5 Subdivision, growth and recent land use 1840s-1945, 1945 onwards

From the late 1850s subdivision increased on the land along the waterfront and around the roads. Several new streets had been formed here. A subdivision plan of the area at this date shows the impact of this process. Eyre’s cottage, for example, was still present but the other buildings and cultivated areas no longer existed. The divisions created in 1858 are still present and the street numbering remains the same (refer to Figure 4-38).

By the early 20th century John Woodcock was in possession of the land between the foreshore and Waratah Street. John Woodcock was a pioneer of the district. He was born in 1840 (CA&FA, 23 Aug 1919) and worked as a fruit commission agent. He resided in Ermington for over 50 years prior to his death in 1919. He lived on Wharf Road (CA&FA, 20 Jun 1908). By 1945, the area east of Wharf Road was predominantly residential, while the western side remained in use for agriculture (refer to Figure 4-38).

Throughout the latter half of the 20th century, the former agricultural land west of Wharf Road was industrialised. Between 1971 and 1985 modification to the foreshore was undertaken including the construction of an artificial island to accommodate a high voltage transmission tower.

#### 4.6.6 Melrose Park timeline

Analysis of historical plans and other resources indicate the following occurred with the project site in Melrose Park prior to, or on, the dates listed in Table 4-4.

**Table 4-4: Melrose Park project site timeline**

Year	Events
1792	Initial land grants made to marines John Colethread and Isaac Archer and Samuel Marsden
1802	Archer purchases Colethread’s grant
1825	Archer sells all his land to Frederick Wilkinson
1827	Marsden sells his land east of Pennant Hills Road to Edmund Lockyer. Lockyer also purchases all of Wilkinson’s land and creates the Ermington estate
1828	Lockyer builds Ermington House, first mention of Pennant Hills Wharf (Ermington Wharf)
By 1841	Some roads established including Hope Street, Waratah Street and Wharf Road and unnamed wharf to the northwest of Ermington Wharf Multiple buildings along the river west of Ermington Wharf; a large rectangular paddock, barn, and Mr Eyre’s cottage Triangular enclosure east of Ermington Wharf with ‘Garden Hut’. Trackway to Lockyer’s property established.
By 1850	Ermington House leased to tenants including Jabez-King Heydon
1858	Eyre’s cottages and the northern wharf are still present.
1862	Ermington Wharf described as being in very bad condition and the Sydney Municipal Council tendered for a new wharf to be built
1879	New Ermington Wharf built
1876	Ermington House purchased by John Robert Linsley
1885	A second wharf constructed at Ermington Wharf
1919	Ermington baths established.
1925	Ermington Wharf formally closes but use likely continues
1943	Few buildings but numerous cropmarks indicating rural activities. Baths no longer present.
1955	Sheds erected in southside of Hope Street.
1971-1986	Modification of the foreshore including artificial peninsular.

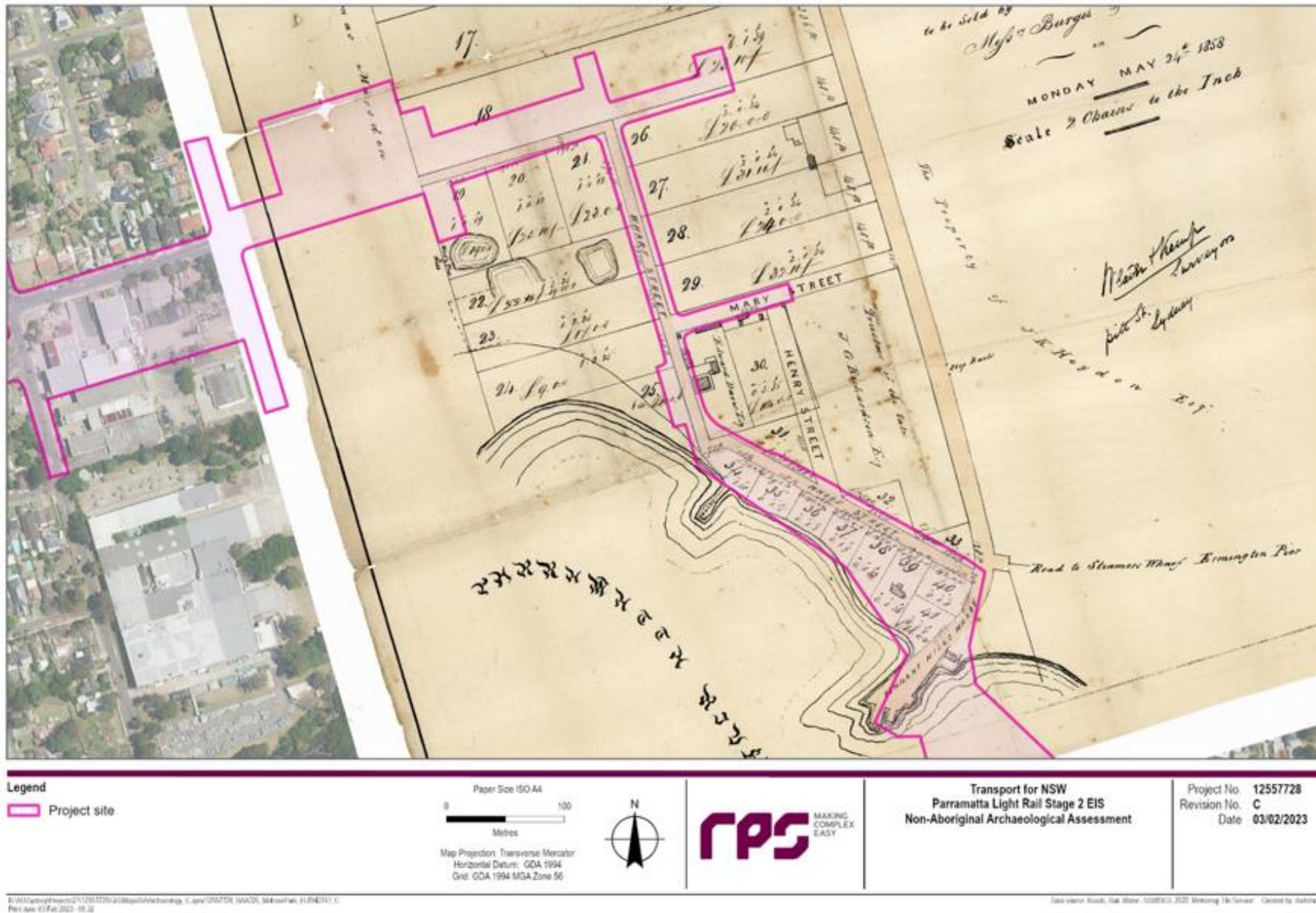


Figure 4-37: 1858: The cottage near Ermington Wharf is present however the barn and fields have gone. Wharf Street has numbered lots. The project site is shown in pink. SLNSW, 017-Z/SP/E11/17, FL8942741.





<p><b>Legend</b></p> <p><span style="border: 1px solid pink; display: inline-block; width: 15px; height: 10px;"></span> Project site</p> <p><span style="border-bottom: 1px solid black; width: 15px; display: inline-block;"></span> Railway</p>	<p>Paper Size ISO A4</p> <p>0 50 100 150</p> <p>Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 50</p>			<p>Transport for NSW Parramatta Light Rail Stage 2 EIS Non-Aboriginal Archaeological Assessment</p>	<p>Project No. 12557728 Revision No. C Date 10/02/2023</p>
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Figure 4-38: 1943 aerial showing the different land use either side of Wharf Road. The project site is shown in pink.

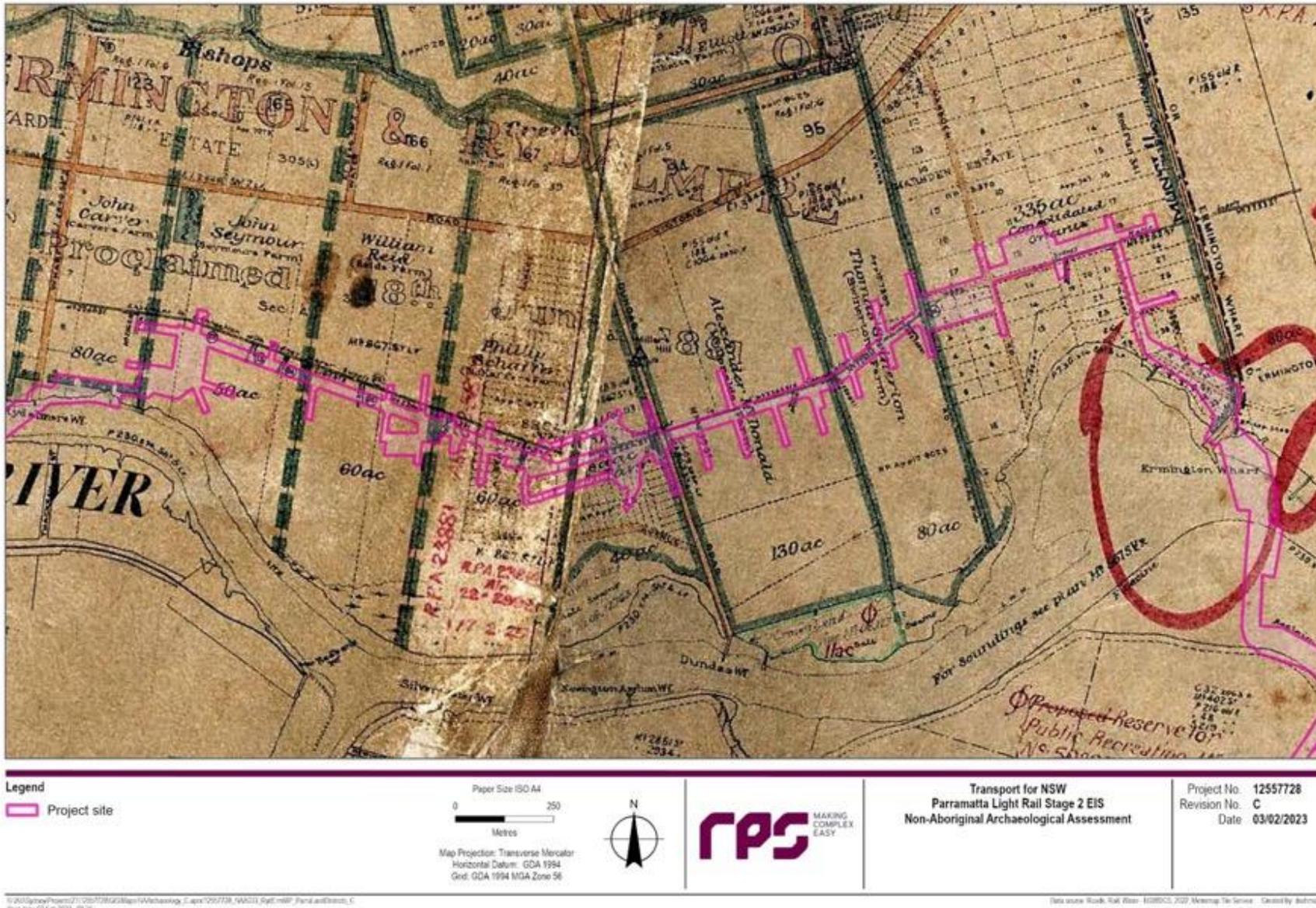


Figure 4-39: The project site (in pink) through Rydalmere, Ermington and Melrose Park on late 19th century parish maps showing the names and locations of the original grant holders. HLRV, Parish of Field of Mars, Historical Parish Maps Sheet ref 2 and 3: Edition 4 1890

## 4.7 Wentworth Point

### 4.7.1 Exploration 1788

During their initial survey of Port Jackson in early February 1788, John Hunter and William Bradley reached the head of the harbour at Homebush Bay and named the land along the western side of the bay 'The Flats'. The area was named due to the extensive wetlands, mudflats and mangroves in the area which were covered at high tide (Bradley, 1802, p.75). Plans prepared by Bradley in 1788 demonstrate the narrow form of the navigable channel and how extensive were the mudflats in the area (SLNSW FL6068774). The difficulty in maritime traffic negotiating The Flats was an issue in the early years of the colony; specially built wherries that could pass over the flats were in use by the end of 1793 (CA&FA, 26 Oct 1933).

Later in February 1788 Phillip accompanied Hunter and Bradley to The Flats and briefly explored the area; it was considered at the time to be of little interest as their primary focus was locating land suitable for farming (Kass, 1996).

### 4.7.2 Early grants 1792-1949

The area of Wentworth Point was not included in any initial grant likely owing to its near-uninhabitable nature. Land grants on the east bank of Homebush Bay and elsewhere in the vicinity were first made to free settlers who arrived on the *Bellona* as part of the Second Fleet. The free status of these colonists gave the area the name Liberty Plains. The first grants were irregularly located and varied in shape and size. They were granted as follows:

#### Thomas Rose

Thomas Rose who came to the colony with his family in 1793. He was granted an initial 80 acres on Powells Creek, and then a further 120 acres in Liberty Plains. The land granted here was poor and Rose decided he had made "a hasty and poor decision" and relocated to Prospect, and eventually the Hawkesbury where he died on 15 November 1833 aged around 79 (McMartin, Arthur 1967 – ADB Vol 2).

#### Frederick Meredith

Frederick Meredith, who was a steward on the *Sirius* in the First Fleet and then returned aboard the *Bellona* in the Second Fleet. His initial grant was for 60 acres which was located on the eastern banks of Homebush Bay. He later gained land on Liverpool Road and Bankstown. He died on 23 June 1836 aged 73 (Gillen, 1989, pp 243-44).

#### Thomas Webb

Thomas Webb also first arrived on the *Sirius* and then returned on the *Bellona*. He was granted 80 acres, but by 1795 had relocated to the Hawksbury. He died, aged 36, in May 1795 and was buried in the Old Sydney Burial Ground (Dunn n.d.).

#### Edward Powell

Edward Powell first came to New South Wales aboard the *Lady Juliana* before returning on the *Bellona*. He was granted 80 acres at Liberty Plains on the east bank of Homebush Bay but moved to the Hawksbury in 1799. There he was found guilty of the murder of two Aboriginal people but received a conditional pardon for his crime. He eventually returned to Liberty Plains, opening an inn and began amassing property. He died in 1814 owning around 500 acres (Fletcher, 1967).

#### Joseph Webb

Joseph Webb, the nephew of Thomas Webb, was granted 60 acres. He died suddenly while working his land 21 October 1794 (Collins, 2003 (1802)).

The short tenures each man had on their properties likely indicates that the land surrounding Wentworth Point was of poor quality and not particularly suited to farming. Certainly this was the conclusions of Thomas Rose when he relocated because of the poor circumstances of his property.

In the final years of the 18th century, three grants were made towards the north-eastern end of Wentworth Point. These contiguous grants may have been placed to take advantage of the salt marsh adjoining,

particularly for salt production. Elsewhere salt works were established to take advantage of these natural conditions.

The three grants, shown in Figure 4-40, appear to be west of the project site however inaccuracies in early mapping, especially in marginal areas means the locations of grants should be interpreted as indicative at best meaning there is the possibility the project site traverses these grants. They were granted as follows:

### **Isaac Archer**

See section 4.6.1. Isaac Archer acquired 240 acres over time including the land at Wentworth Point.

### **John Shortland**

Shortland was a naval officer who initially arrived on the First Fleet on board the *Sirius*. He departed in 1792 and eventually returned in 1794 with Governor Hunter aboard the *Arrogant*. He was granted 25 acres at Liberty Plains in 1797 and a further 300 acres near Bankstown in 1800. Despite his land holdings, Shortland maintained his naval career and eventually died in Guadeloupe in January 1810 following a sea battle against French ships (Arthur McMartin, ADB Vol 2).

### **Henry Waterhouse**

Waterhouse acquired this grant in 1797. His property was offered for sale in 1805 (Sydney Gazette, 6 Jan 1805); the wording of the sale notice suggests that the land was at that time unoccupied. Also see section 4.4.2.

From around 1807 onwards Wentworth Point become part of John Blaxland's Newington Estate which is discussed in section 4.8.2.

## **4.7.3 Reclamation and dredging 1949 onwards**

In 1882 land in the north-eastern corner of the former Newington Estate was resumed as a site for a powder magazine. This site encompassed 20 acres. This area was enlarged in 1884 with provision made to add an additional 270 acres for a magazine. Work began in 1891 to enclose the land and building works commenced in 1897 (refer to Figure 4-41). Additional land was acquired for the depot in 1941 (Thorp, 1985).

The Arms depot was constructed initially on the low lying swamp ground; the site required extensive reclamation works. The first phase of construction encompassed retaining walls along the river. These works probably began in circa 1889 and by 1893 it was reported that two miles of fascine banks had been formed on Homebush Bay and an area of 500 acres was in the process of being reclaimed. Work continued on reclamation until 1901. The work included the construction of Muddy Creek Canal and entailed huge quantities of hand packed rubble being placed along the embankment walls.

In the beginning of the 20th century further reclamation was undertaken along the southern bank of the Parramatta River and western shore of Homebush Bay creating a formalised 'point' which soon became known as Wentworth Point (Figure 4-42). The reclaimed land around the Point, approximately 201 acres, extended further than the earlier reclamation undertaken for the magazine and was initially appropriated for the Homebush Abattoir on 2 September 1914. This was one of several land acquisitions made at the time to enable the creation of a State Abattoir; eventually this was constructed on land located further to the south.

Following the decision to locate the State Abattoir elsewhere, much of the project site remained undeveloped into the middle years of the 20th century. From 1948 onwards the Maritime Services Board of NSW commenced dredging of Homebush Bay to provide deep water access for shipping to the upper Parramatta River.

Apart from dredging in the middle part of the 20th century, around 120 hectares of land was reclaimed for warehouse and waterfront industry, further altering the natural landscape. By 1958 parts of the site were available for lease. Ralph Symonds Ltd were amongst the earliest tenants, purchasing 26 acres leasehold in 1958 for a plywood factory. Symonds factory opened on 16 November 1959 and at the time was the largest single factory in the Southern Hemisphere (refer to Figure 4-43). The grand opening was widely publicised; the scale and scope of the factory was seen as embodying post-war optimism in Australian advancement (Daily Telegraph, 17 Nov 1959).

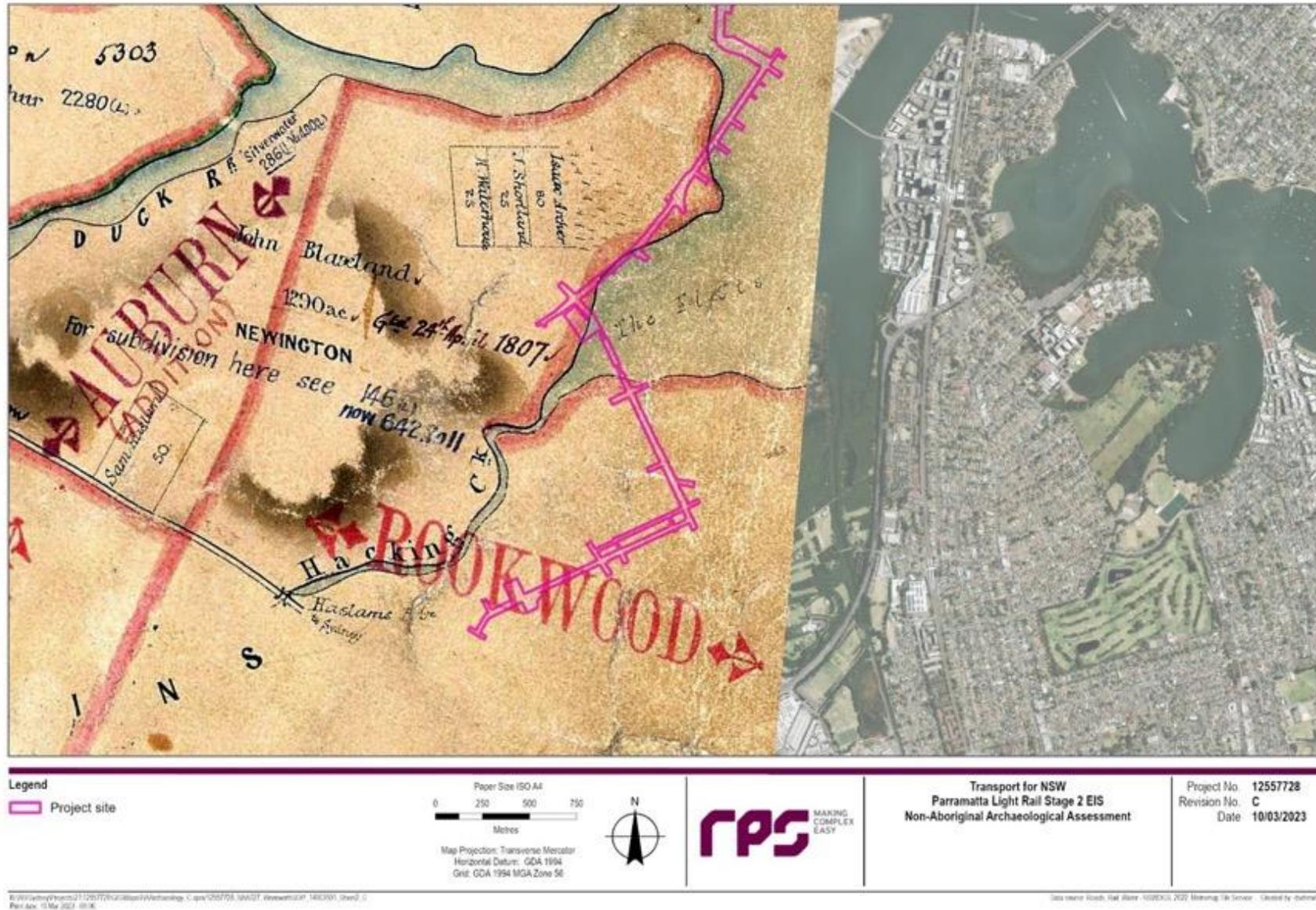


Figure 4-40: Extract from an undated Parish Map showing the three contiguous grants on Wentworth Point of Archer, Shortland and Waterhouse. The project site is shown in pink. HLRV, Parish of St John, Historical Parish Maps, Sheet ref 2, n.d.

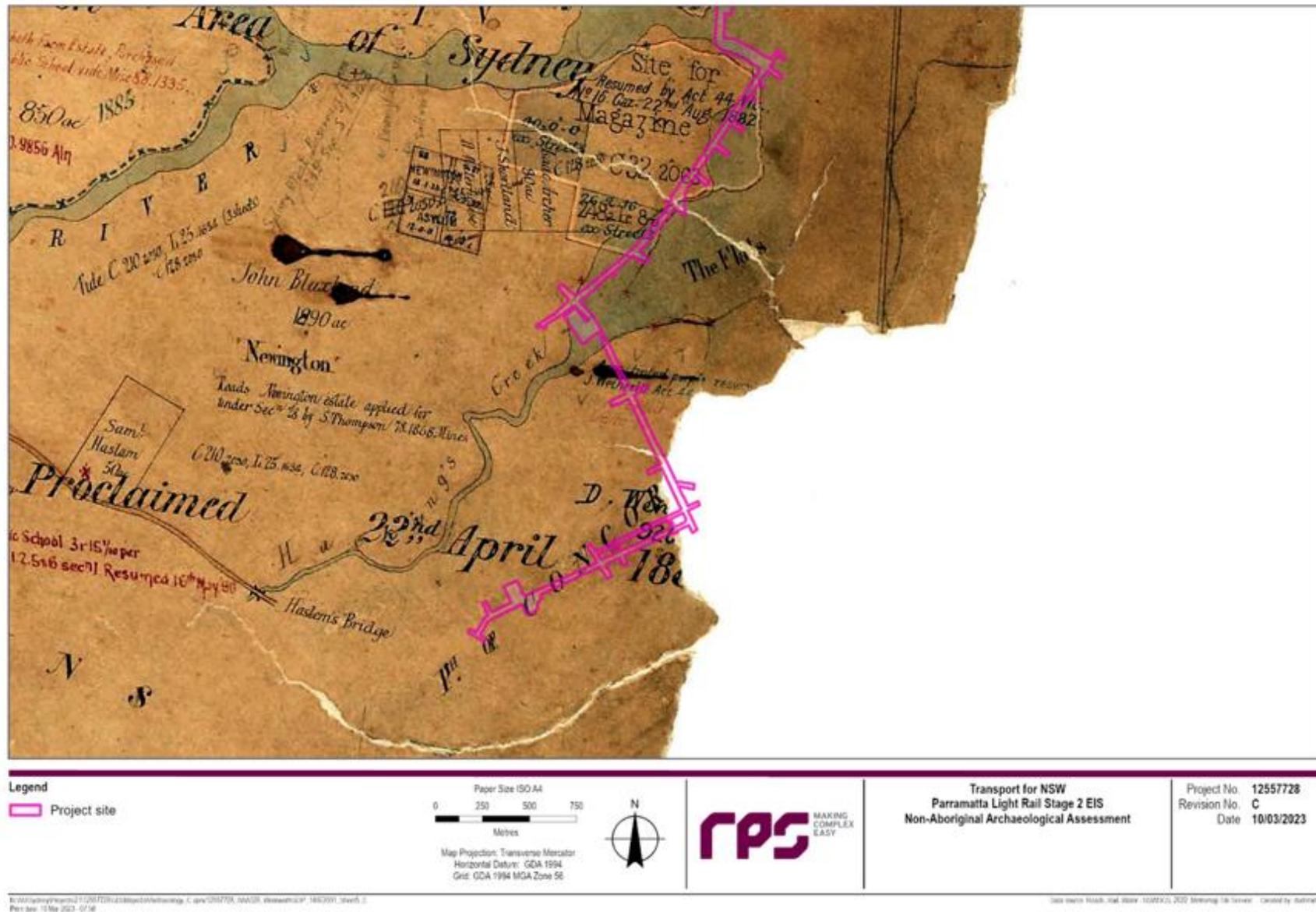


Figure 4-41: Undated Parish map (post 1880) showing the area that had been gazetted for the magazine. The project site is shown in pink. HLRV, Parish of St John, Historical Parish Maps, Sheet ref 5.

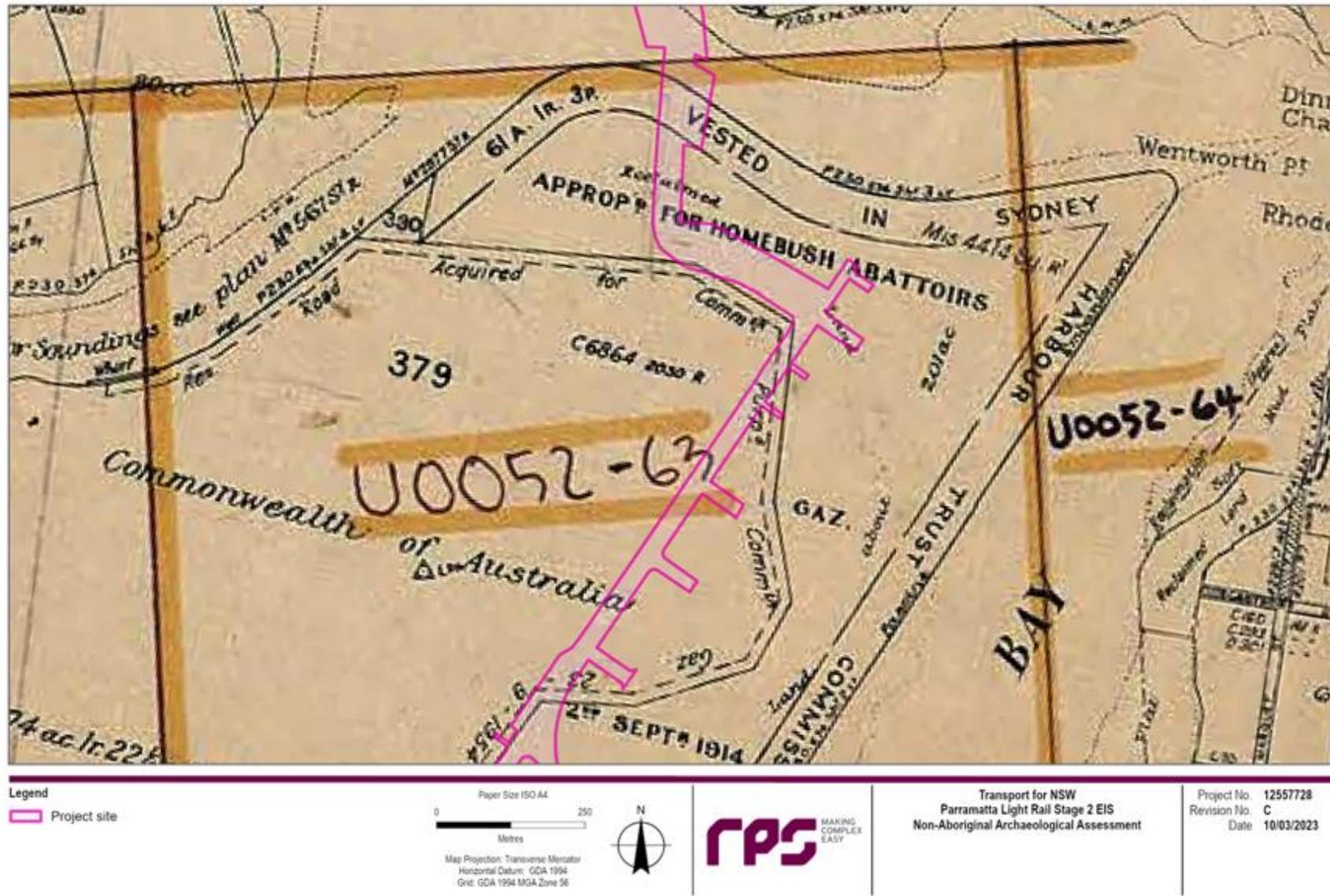


Figure 4-42: LTO Charting map showing the reclamation that occurred initially for the magazine and later for the abattoir. The project site is shown in pink. HLRV, Parish of St John, LTO Charting 1957.



**Figure 4-43: Aerial photograph of Ralph Symonds plywood factory, with unusual timber arch clerestory roof designed by Symonds, Homebush Bay. SLNSW, IE914726, FL914731**

By 1965 the alignment of Hill Road was established, and additional smaller factories were built to the south of the Symonds Factory (refer to Figure 4-44). Construction was also underway in the north of the area at the same time. The land to the east of Hill Road was fully developed by 1971 with factories and stores. There was continual growth into the 1980s.

#### 4.7.4 Wentworth Point timeline

Analysis of historical plans and other resources indicate the following occurred with the project site in Wentworth Point prior to, or on, the dates listed in Table 4-5.

**Table 4-5: Wentworth Point project site timeline**

Date	Events
1788	Area explored and named 'The Flats'
1792	First land grants made in the surrounding area
c.1797	Three contiguous land grants made to Isaac Archer, John Shortland and Henry Waterhouse in the area
1808	Area becomes part of the Newington Estate
1882-1884	Resumptions for the construction of a powder magazine
c.1889	Work begins on retaining walls and fascine banks
1914	Further reclamation creates the 'point' of Wentworth Point
1949	Dredging of Homebush Bay occurs to create access for shipping.
1958	Factories including Ralph Symonds built on reclaimed land
c.2000 onwards	Change in use from industrial to present residential area





## 4.8 Sydney Olympic Park and Carter Street precinct

### 4.8.1 Early farming 1794-1810

The land within the project site in Sydney Olympic Park was first granted in the 1790s. Unlike other areas it was not divided into numerous small parcels but instead was largely given to a single individual.

#### Thomas Laycock

Laycock arrived in the colony aboard the *Gorgon* as part of the Third Fleet in 1791. He was enrolled in the NSW Corps, rising to be Quartermaster. He received a 100 acre land grant, described as "Howe Brush Laying and situated at the south end of the Flats at the upper part of the Harbour of Port Jackson." This grant was cancelled and consolidated into a larger grant made on the 6 November 1794 which totalled 780 acres (Registers of Land Grants and Leases Entire colony, including Van Diemen's Land 1792-1804 (Vol. 1A). This made him one of the largest landowners in the colony at the time.

He was appointed Deputy-Commissary in 1796 but resigned in 1800 although he retained his position as the NSW Corps Quartermaster. He was replaced as Quartermaster in 1808 and in 1809 members of his family petitioned Lt-Governor Paterson that he was unable to manage his affairs. His estate management was assigned to his sons-in-law, William Broughton and D'arcy Wentworth. It was Wentworth who reported to Lieutenant Governor Paterson on Laycock's health and gained ownership of his estate in 1810 following Laycock's death on 27 December 1809 (ADB Vol 2).

### 4.8.2 Newington Estate 1807-1880

In 1807, John Blaxland acquired 1,290 acres of land in the area north of Haslams Creek which he named Newington Estate. Here he created the Newington Estate (Sydney Gazette, 24 April 1807) (refer to Figure 4-48). He added to his initial grant of 1,290 acres by acquiring the Archer, Shortland and Waterhouse properties in 1808, eventually owning all land on Wentworth Point. The estate was mortgaged in 1843 and then sold in 1851. The family regained it in 1854 but finally sold again in 1860 (Thorp, 1985).

The original house for the family was a weatherboard cottage; it was replaced by the still extant Newington House which is outside of the project site. The old timber building became a wing of the college that was established on the site in 1863. It appears to have survived into the 1890s. The second and extant Newington House was built between 1829 and 1832. There were a substantial number of out-buildings clustered around the main house and throughout the estate but there are few identified locations for these structures. An advertisement in 1858 noted that there were stables, a coach house and 25e estate houses for workers. There was also a row of houses for the original convict workers on the estate. Many of these survived into the later years of the 19th century (Thorp, 1985).

The landscape of the estate was an important component. There were extensive landscaped gardens around the house and a large orchard along the river. Advertisements of the 1850s describe fenced paddocks over 20-60 acres, 130 acres of cultivated land and 288 acres of cleared grazing land, fenced bushland and tracks. There was a large kitchen garden. Much of this landscape was still intact in the 1890s although in poor condition in places (Thorp, 1985).

#### Industrial works

An important component of the estate was its industrial development. The most famous was Blaxland's salt works. It was established on the marsh lands and encompassed extensive trenching and embankments and excavated pans located over 40 acres. The salt was produced by evaporation and then boiling in pans. For many years it was the principal salt-making works in the colony producing 1,000 tons per annum by 1838. Following Blaxland's death, the industry continued under the management of a company and salt was still being extracted in the 1880s. The works were finally closed in the 1890s. Plans prepared at that time show the abandoned pans extending for a considerable length along the river frontage, as well as two or three ponds and several buildings (Thorp, 1985).

As well as salt Blaxland established a tweed mill on his property; the location is unknown and it appears to have had a short period of usage. Lime was also produced on the estate; there were three lime kilns producing 4,000 bushels of lime per week. This was still being manufactured up to the 1860s. The one

unsuccessful industrial venture undertaken on the estate was coal mining. Several trial pits were excavated to depth to try and locate coal, but none were successful (Thorp, 1985).

### **Sale to Charles Kent**

Following the sale of the property in 1860 it was acquired by a merchant, Charles Kent. He established an abattoir and associated industries including a boiling down works and bone crushing mill. These works seem to have been centred on the house and, therefore, outside the project site. Elsewhere existing salt works and lime works continued in operation (Thorp, 1985).

### **Newington College**

In 1863 the estate house and 25 acres of the estate were leased to the Methodist Church for the purpose of establishing a boarding school. The house and out-buildings became the nucleus of the college. Newington College was moved Stanmore in 1880.

### **Subdivision**

At the time that the College was established on the estate, the remainder of that property began to be subdivided; this commenced in 1878 and continued into the 1890s. However, much of the estate was resumed for other purposes including an armaments magazine and state abattoir. Planned subdivisions included the creation of an extensive street grid (shown in Figure 4-45). Very little of this was constructed.

## **4.8.3 Newington Armament Depot and prison 1880 onwards**

By 1882, the Newington Armament Depot had been established. In 1897, the Government acquired about 19 hectares of land including Newington House, built by Blaxland in 1832, for the site of an Aged Women's Asylum. The first buildings were established on the site in and by 1890 there were 450 patients. Various buildings were added to the property over the years until the asylum closed in the 1960s. In 1968, the Government decided to transfer the property to the Department of Prisons becoming the Silverwater Correctional Centre.

## **4.8.4 Homebush Estate 1794-1870**

In 1810, D'Arcy Wentworth acquired 980 acres of land, including Thomas Laycock's estate; the latter retained the name of the Homebush Estate (refer to Figure 4-46 and Figure 4-48). The following year he established a horse stud and became one of the most noted breeders in the colony. In 1819, Wentworth acquired more land and constructed Homebush House, within the Homebush Estate, near the corner of Figtree Drive and Australia Avenue 250 metres to the south-east of the project site (SOPA, 2022).

In 1825, he developed a horseracing track on the estate, which was used as the headquarters of the Australian Jockey Club from 1841 to 1860. Shortly following the development of the racing track in 1827, D'Arcy Wentworth passed away and ownership of the property passed to his son, Charles Wentworth. The Wentworth family had drained and reclaimed tracts of land around Powell's and Haslams Creeks, and under Charles' ownership portions of the estate were tenanted. In 1839, Louisa Meredith along with her husband Charles travelled to Sydney on the *Letitia*, first living in Bathurst, then at Homebush (O'Neill, 1974). Meredith described Homebush as:

Homebush was a fair specimen of a New South Wales' settlers residence... The house stood on the highest ground in the estate and for some hundreds of acres all around not a native tree nor even a stump was visible, so completely had the land been cleared, although not worth cultivation (Meredith 1861:129).

Meredith (1861, p.169) also described parts of Homebush as consisting of salt-water marshes, covered in high tides, throughout which deep drains had been cut and embankments formed. Furthermore, Meredith (1861, p.175) noted the sole source of water at Homebush came from two or three "holes" on the Estate that described as being not unlike "old clay-pits".

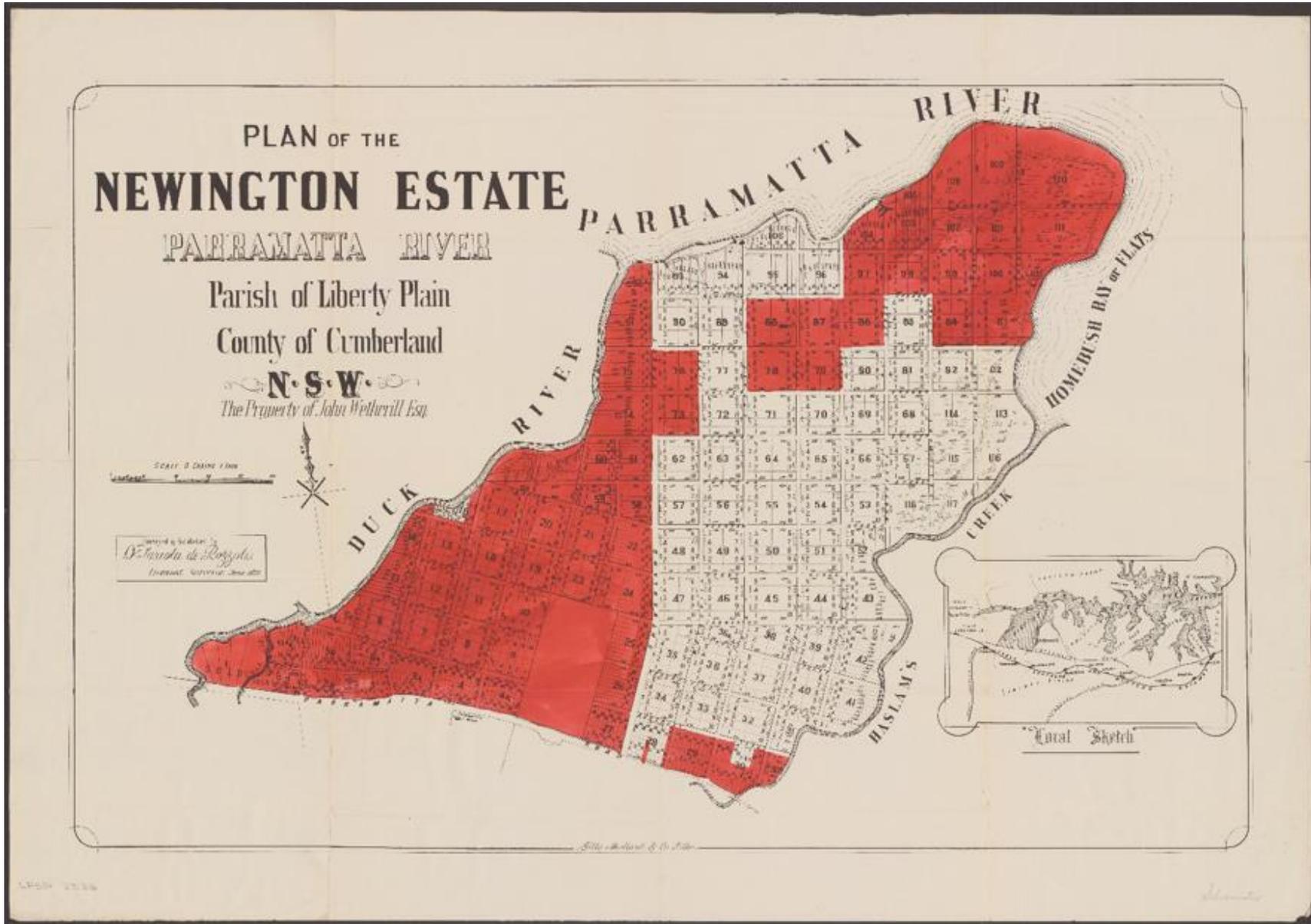


Figure 4-45: Subdivision Plan of Newington Estate in 1877. NLA, MAP LFSP 2336, Folder 146.

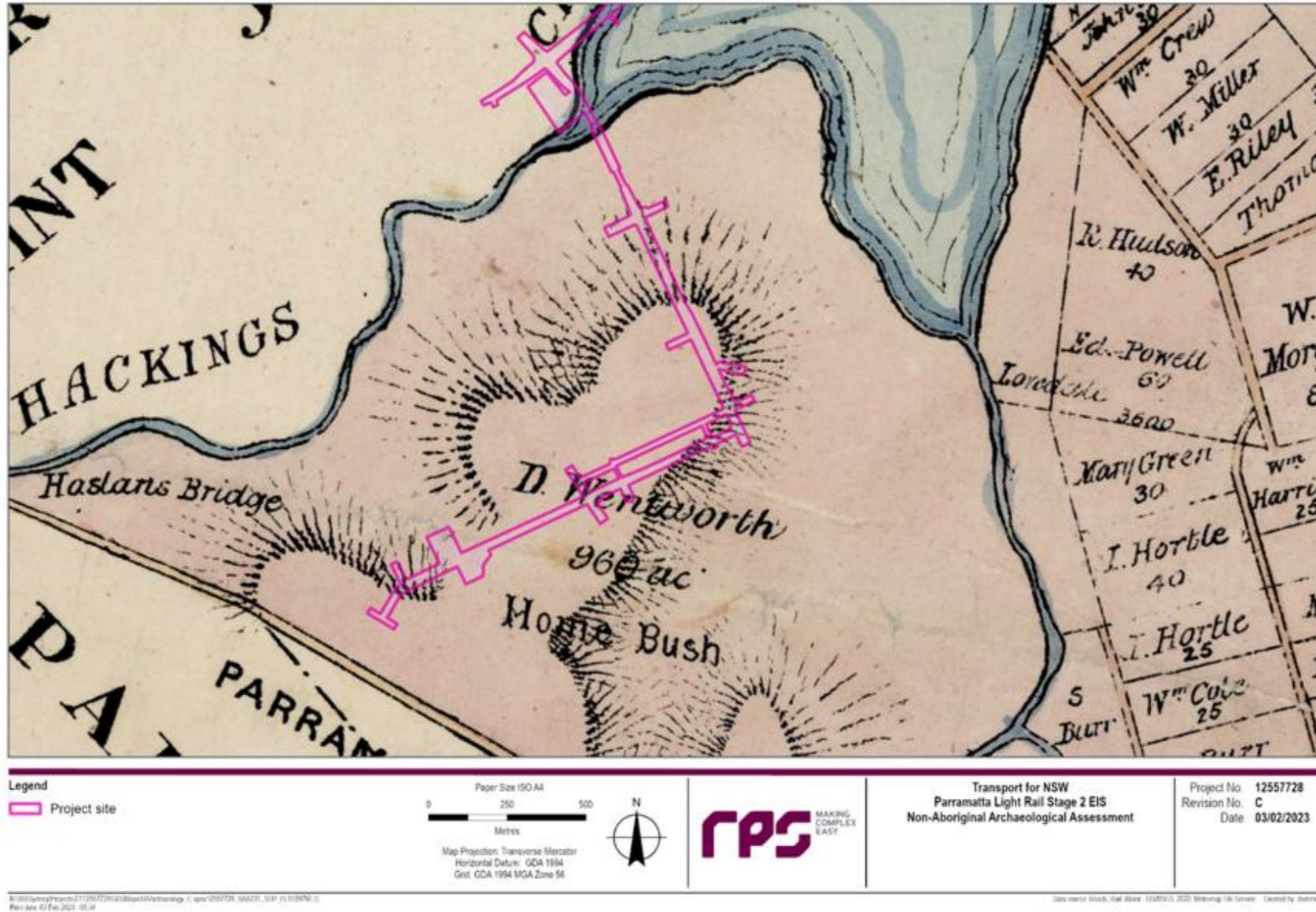


Figure 4-46: Extract from Parish of Concord 1881 showing the extent of Wentworth’s Homebush Estate. The project site is shown in pink. SLNSW, Z/M2 811.183/1881/1, FL9189750.

#### 4.8.5 Subdivision 1870-1910

Homebush was subdivided in 1883 under the name Homebush Village (SOPA, 2022). The following year, Homebush Park Building Estate was advertised for sale. This estate extended over the project site, covering all the land between Parramatta Road and the Parramatta River, between Haslams and Powells Creeks. The subdivision was unsuccessful, and the estate remained relatively intact until the Public Works Department resumed the land in 1907 for the establishment of the State Abattoirs.

#### 4.8.6 State Abattoir and State Brickworks 1907-1991

##### State Abattoir

The State Public Works Committee decided in 1902 to relocate the public abattoir from Glebe Island and in 1906, 909 acres of land from the Homebush Estate was resumed for a new abattoir (refer also to section 4.8.2). In 1909, the tender for construction was advertised, and awarded to the McLeod Brothers in April 1910. Plans were drawn up by the Department of Public Works under the direction of Government Architect Walter Vernon. The first stage of works was to include 38 slaughterhouses for beef, mutton, veal and pork, an Administration Block, gatekeepers office, entry gates, refreshment and locker rooms, as well as stables and buggy shed (GAO, 2013, pp.118-19).

When the McLeod Brothers contract expired in 1913, the slaughter rooms and administration building were complete, however the abattoir was not yet operational. Delays continued throughout 1913 and 1914, and although not yet finished, the official opening of the abattoir took place on 7 April 1915. Following the opening, slaughtering began in the mutton houses, with the chilling rooms and treatment of by-products also underway. However, construction of the yards and extra buildings continued. Also, levee banks were built along Powell's and Haslams Creek to resume the tidal flats for extra resting paddocks. Works continued on the site until 1922. Finally in 1923, the abattoir was fully operational (GAO, 2013, pp.119-20).

Improvements and additions continued throughout the working life of the abattoir. In the 1960s, the site was modernised and an unused part of the site fronting Parramatta Road subdivided and sold as an industrial park (refer to Figure 4-47). However, by the late 1970s, mounting debts, a fall in meat exports and a need for further modernisation put pressure on the government to close the abattoir. Subsequently, the abattoir closed on 10 June 1988. Prior to its closure, those areas surplus to requirements had been sold off and redeveloped (GAO, 2013, p.144).

Sydney's successful bid for the 2000 Olympic Games marked a new stage of development for the site. The remaining land was developed into Games venues and commercial spaces, while the Royal Agricultural Showgrounds and Moore Park were relocated to the area. Remediation work and road re-alignment was also undertaken (GAO, 2013, p.145). Today, the administration buildings precinct and gardens are all that remain of the abattoir.

##### State Brickworks

In 1910, the Minister for Public Works put forward a proposal to build a brickworks to supply the Department of Public Works as a cost savings effort. In 1911, 9.5 hectares of land from the State Abattoir was resumed for the State Brickworks. By 1925, the brickworks comprised 23.5 hectares, however by the 1930s, the brickworks was in decline and sold to Brickworks Limited in 1936. The site was closed in 1940 and was taken over by the Naval Armament Depot for use as a munitions store in 1942. The post-war housing boom saw the Government re-open the facility. Peak production was reached in 1969, however this was short lived, with the facility in decline in the 1970s. The brickworks ceased operation in 1988. Sandstone was still removed from the site until 1992. The clay pit ceased excavation much earlier and was used a municipal waste depot from the 1960s. This site was redeveloped as a wetland area associated with Sydney Olympic Park (SOPA, 2022).



### 4.8.7 Sydney Olympic Park timeline

Analysis of historical plans and other resources indicate the following occurred with the project site in Sydney Olympic Park prior to, or on, the dates listed in Table 4-6.

**Table 4-6: Sydney Olympic Park project site timeline.**

Date	Events
1791	Thomas Laycock granted land and starts farming at Homebush.
1794	Laycock’s grant expanded to 780 acres
1807	Blaxland creates Newington Estate with various industries, no evidence of land use within the project site.
1809	Following Laycock’s death D’arcy Wentworth acquires Homebush.
1825	Wentworth established a horse racing track at Homebush
1827	D’arcy Wentworth dies and Homebush is inherited by his son Charles who tenants some of the estate
By 1838	Major saltworks at Newington
1850s	Newington described as having extensive landscaped gardens, fenced paddocks, 130 acres of cultivated land and 288 acres cleared for grazing
1860	Newington sold to Charles Kent
1878-1890s	Various attempts to subdivided Newington were unsuccessful
1882	Newington Armory established
1883	Homebush subdivided unsuccessfully
c.1890s	Newington saltworks closed
1907-1910	State Abattoir established in south of Homebush and State Brickworks to the north-east of Homebush.
1968	Part of Newington Armory becomes Silverwater prison





## 4.9 Parramatta CBD

The history of the Parramatta CBD has previously been assessed as part of the Parramatta Light Rail Stage 1 EIS. For consistency with previous assessments, the history previously prepared by Artefact Heritage has been included below (Artefact, 2017 pp 50-58).

### **Initial Settlement: 1788-1811**

*Following the success of farming at Rose Hill, Governor Phillip decided to expand the settlement. This led to the laying out of the town plan for what is now the Parramatta CBD by Phillip and Surveyor Augustus Alt in 1790. The new township occupied land previously used for cultivation, and was centred around two north-south orientated roads (Bridge and Church Streets) and two east-west originated roads (High and South Streets, now George and Macquarie Streets respectively), forming a grid pattern. On the allotments in the spaces between these streets, wattle and daub huts were built to house the convicts who were brought to the area. Early maps suggest that within the next two decades there were approximately 17 huts located along both sides of Church Street, as well as an additional one located along the east side of Macquarie. During this period settlement was mainly restricted to the south side of the river. However, the maps do indicate that a jail was built on the north side of the river near Church Street.*

### **The Soldiers District**

*The Soldiers District was located at the east end of George Street, within present day Robin Thomas Reserve, the Harris Street road corridor and approximately within the area bounded by Macquarie, Harris and George Streets, and Argus Lane. In 1790, an allotment of land was granted by Phillip for the purposes of constructing a Barracks. By September of that year convicts were working a rudimentary brickworks for the new storehouse and barracks. The barracks were occupied by May 1791. By 1817, due to the poor methods used to construct the barracks at the east of George Street, Macquarie identified that a new barracks would be needed. By 1820, a replacement barracks had been established on the site of the current Lancer Barracks, and by 1823, the original barracks appear to have been demolished as they are not present on a map dating to that year.*

*In 1829, the land previously containing the Soldiers District was granted to Archdeacon Thomas Hobbes Scott. Scott does not appear to have ever occupied the land, preferring to occupy his house in Woolloomooloo. Scott was granted a house in Parramatta but its location is unknown. In October 1829, the land was leased to Mr Orr, the Parramatta postmaster, with the condition that he 'keep the fences and buildings in good repair'. In 1832 it was reported that the buildings on the land were uninhabitable, and could not be adequately maintained. Orr abandoned the land until it was offered for purchase in May of 1832. It is uncertain whether Orr occupied the land after purchase, as he held other land in Parramatta at the time. The Brownrigg plan of 1844 indicates that the property contained at least six structures, including a more substantial building on the corner of Harris and George Streets. The land remained in the ownership of the Orr family until 1851, when it was conveyed to John Purchase. The Purchase family held the land for many decades, and established a large nursery on the land. E.J. Knapp's field book of 1854 indicates that a brick building with a rear timber extension oriented to Harris Street was located on the corner of George and Harris Streets at this time. A shop is listed as being located on the corner of George and Harris Streets from the mid-1880s, with an adjacent dwelling at the corner of Purchase and George Street, known variously as 'Somerset Cottage' and 'Rubiana'.*

### **The first and second Parramatta Gaols**

*By 1796, Governor John Hunter was committed to building gaols in Sydney and Parramatta but the lack of masons and the need for urgent action necessitated construction of the first gaol in double log and thatch. He issued a 'General Order' which required every settler and householder to furnish and deliver 'ten logs weekly each'. Parramatta Gaol, 100ft long, was probably complete by May the following year. The gaol was destroyed by arsonists in 1799 (SHI Inventory Sheet, AMU 3110).*

*Construction on the new Parramatta Gaol finally began in August 1802. The plan was a modest variant of an army barrack, with a central transverse corridor with wards to the left and right, constructed in ashlar stone. At some time during construction, King decided to add a 'linen and woollen manufactory' to the gaol. The layout of the complex consisted of two functionally separate precincts (gaol to the south and the factory to the north). The factory yard was the domain of female convicts. The factory continued to function until December 1807 when both factory and gaol were damaged by fire. In 1833, the gaol was described as in a*

*'falling state'. Rather than undertaking major work, the building was shored up until a new gaol could be built. In 1837, Governor Bourke decided that the land should be measured for a reserve for the townspeople.*

*It was authorised as a 'village green' on 27 November 1837. The land was levelled and fenced but complaints were made in 1853 that this ground which was set aside as a promenade was being used as a rubbish dump. In September 1869, the land known for many years as the 'Gaol Green' was planted with trees by members of the Council. In 1874, the Council was gazetted as Trustees of the reserve which became known as Alfred Square in the 1860s to commemorate the visit of Prince Alfred to the town.*

### **Reorganisation and Expansion: 1810-1844**

*In 1811, Macquarie regularised the streets and alignments of the settlement, renaming George Street in the process. By 1814, Macquarie had established several new streets, including O'Connell, Charles, Smith, Marsden and Elizabeth (now Harris) Streets, forming the main street grid of Parramatta as it appears today.*

*Following Macquarie's replacement in 1821 by Sir Thomas Brisbane, the Surveyor-General, John Oxley, was given the task of properly organising the settlement. During Macquarie's time the majority of the grants in Parramatta were held by permissive occupancy alone, leading to a great deal of uncertainty amongst the occupants. In order to properly document the owners and occupiers of the land, Parramatta was comprehensively surveyed and mapped between 1822-3. The map from this period indicates that by this time houses and other buildings had spread out further along Church, Macquarie and George Streets including a military hospital located on Macquarie Street near present day Barrack Lane. In addition, during the early 1820s a brick oviform drain was constructed through the settlement by convicts, which passed under Macquarie Street at its junction with Civic Place.*

*The area continued to grow through to the middle of the nineteenth century, as evident on Brownrigg's 1844 map. New buildings lined the streets, including a police office, church and school along Church Street, a chapel along Macquarie Street, the Albion Hotel on the west corner of George and Harris Streets and a more substantial building on the east side, and additional buildings along the north side of George Street opposite the former barracks.*

### **Continued development: 1845-1904**

*During the second half of the nineteenth century the Parramatta CBD Precinct continued to grow much as it had done during the previous phase. By 1895, many of the earlier buildings were still present, though in many cases they had been repurposed. An example of this is the former military hospital on Macquarie Street which had since become the 'Government Benevolent Asylum for Old Men'. However, over time the CBD continued to build up and by the end of the century nearly all of the allotments along Church and Harris Streets had been bought and had buildings constructed on them. This included a number of banks and hotels, suggesting the CBD's growing commercial importance. Further development had also occurred on either side of Macquarie Street; however, it was not as extensive as other areas within the precinct.*

*Development along Macquarie Street was more spaced during this period, and there continued to be large open spaces between buildings. This pattern was more pronounced towards the east end of Macquarie Street within the precinct, while in comparison the density of development along the street closer towards Church Street was more typical of the remainder of the CBD.*

*In 1881, a private tramway was constructed along George Street, connecting the George Street gatehouse at Parramatta Park to the Duck River. A plan dated to 1905, shows an additional tramway travelling down the length of Church Street.*

*George Street through the east side of the precinct also saw significant changes in the late 19th century. On the south side of George Street, the allotments containing the former barracks were*

*purchased by nurseryman Samuel Purchase in the 1870s. On these lands, Purchase established a nursery, which contained some 70,000 fruit trees, other trees and shrubs, roses and ferns. By 1895, the few remaining smaller buildings that had been present at the time of Purchase's occupation had been demolished and replaced by a more sizeable complex of buildings and associated outbuildings. Following Purchase's bankruptcy and death in 1902, the nursery was closed and sold.*

*The 1895 Detail Series shows the shop on the corner of Harris and George Streets. A large north-south oriented building appears to have been the Purchase residence and seven brick cottages with outbuildings to the rear are oriented to George Street in the east.*

In 1872, land on the north side of George Street (opposite the nursery and along the Parramatta River), was purchased by the Parramatta Gas Company, who established the Gas Works in 1873. In 1890, the Australian Gas Light Company (AGLC) purchased the Parramatta Gas Company. An 1895 plan shows the location of the former gasometer and associated structures. The plant closed at some time prior to the turn of the century.

**Modern Development: 1905-present**

In 1912, the old Purchase estate was listed as containing a stone cottage, a weatherboard cottage, plant sheds and bush houses. The stone cottage was demolished in the 1930s. By 1951, the subject area had been redeveloped. The terrace row of cottages had been demolished and replaced by four free-standing houses. The rear of the large rectangular building at 137 George Street had been demolished, along with a number of the outbuildings.

The first half of the twentieth century again saw the Parramatta CBD continue to build up from the previous phase. Church Street and the west side of Macquarie Street in particular had become densely occupied. By 1943, although many of the buildings from the previous phase were still present, most of the former outbuildings associated with these had been demolished while the main buildings themselves were expanded. Continuing the pattern from the previous phases however, development throughout the eastern half of the precinct was more mixed. Along some sections of the roads developments had increased, namely with additional rows of houses along the north side of Macquarie Street between Charles Street and Argyle Lane and along the south side of George Street to the east of Harris Street. However, there were a number of large open areas, including the former locations of the Asylum for Old Men and the AGLC works. In the case of the former location of the Asylum, and Prince Alfred Square at the northern end of the precinct, the open spaces then featured zigzagged shaped air raid trenches.

During the second half of the twentieth century, the CBD developed into the modern commercial precinct that is seen today. Many of the earlier buildings had been either replaced by larger commercial premises, or had been upgraded for a more commercial use. This change also occurred in the eastern half of the precinct, though again to a lesser degree than the western half, with some open allotments still remaining.

**4.10 Parramatta River**

**4.10.1 River transport and ways of life (1788 – 1900)**

Before a comprehensive road and rail network was developed, the Parramatta River was the main westward artery for Sydney's transport. Sail boats and later steamers travelled up and down the river ferrying goods and people to and from Sydney. The earliest steam ferries, the *Surprise* and the *Sophia Jane*, operated on the river in the 1830s, ferrying passengers and cargo as far as Parramatta. Competition increased as more ferries began to operate: the *Experiment* in 1832, the *Australia* in 1834, the *Rapid* in 1837 and the *Emu* paddle steamer in 1842. Throughout these years, and even earlier, the Parramatta River was becoming too silted for boats to travel far upstream. An inquiry in the 1820s found that nothing could be done to rectify the problem. In 1846 an 'all-tides' wharf was built at Red Bank and eventually steamers relocated to the Red Bank wharves. As roads and rails were extended, the early Parramatta River ferries were less frequently used. In particular, the 1855 opening of the Sydney to Parramatta rail service and later extensions to the tramway system into Sydney's outer western suburbs compounded the demise of the Parramatta River ferries. By the beginning of the twentieth century the river had lost much of its transport significance. (Stedinger, 2008: 8)

The extent of siltation and shallowing resulted in the ferry service being withdrawn in 1928. It was reinstated in 1993 when RiverCats, purpose-designed catamaran ferries, were introduced. The RiverCats were immediately successful and have since catered for a growing demand for river travel as more housing developments have been completed along the waterway. However, while dredging in the 1990s had made the upper river accessible, the service there would again become dependent upon tidal access and frequently ferries terminated at Rydalmere east of Parramatta. Because of this, and the environmental effect of wash upon the riverbank, the *Report of the Special Commission of Inquiry into Sydney Ferries Corporation* in 2007 recommended a discontinuation of services to this upper stretch while acknowledging the likelihood of greater ferry use on the lower river. Nonetheless, the tide dependent service continues. (Hoskins, 2012).

## 4.11 Historical summary

The project site covers a large tract of land that has been occupied by European settlers from the late 18th century onwards. Much of the project site was initially granted to European settlers and freed convicts in the late 18th century and over time became part of large estates owned by significant families in the early history of New South Wales. The Parramatta River was a crucial transport link for goods and people during the late 18th and 19th centuries and was crucial to the success of the early township providing a vital link between Sydney and Parramatta.

Uses of the land in the first decades following colonisation were in part defined by the pre-existing environment, with fertile lands that were ideally suited to European agriculture and horticulture exploited first. The mangroves and wetlands along Parramatta River conversely prohibited exploitation.

Many of the key features of these estates, such as main residences, are outside of the project site. Much of the project site contains land that remained marginalised and undeveloped into the 20th century. This means that although the project site is within lands associated with the significant development of NSW, evidence of key events is unlikely to be located within the buried archaeological resources it contains.

Later 19th and early 20th century development of the project site is primarily characterised by subdivision and change from farming to either industrial or residential development. Many of the subdivisions were slow to sell and large tracts of land retained rural characteristics until the 1940s. This made them prime candidates for the development of post-war housing estates many of which continue to occupy the land today. Away from the post-war housing, and especially in areas along the river, private and state-owned industrial factories, refineries, and other works dominated the late 19th and 20th century landscape and evidence of these likely to be located in certain suburbs.

## 5 ARCHAEOLOGICAL CONTEXT

### 5.1 Archaeological studies in the vicinity

An examination of previous archaeological investigations within and around the project site was undertaken to help contextualise and characterise the project site. Each archaeological site has a unique series of site formation processes that include variations in how a site came to be buried and what happened to it after the archaeological resource was formed.

Whilst recognising this, comparative examination of other nearby and related sites is a useful undertaking for multiple reasons:

- it can provide an indication of the nature of the archaeological resource, e.g. is it a deep site, are there a lot of artefacts, is the evidence robust or more transient etc
- it can inform about the kinds of site formation processes, e.g. is there high organic preservation, is there a lot of mixing between stratigraphic units, has the site been regularly truncated etc
- it can help to show the kinds of excavation methods previously undertaken and whether they have either been successful or not.

Archaeology is a constantly evolving field with new methods and technology regularly becoming available which can enhance the data generated and new theories and perspectives which can enhance interpretations. It is also most successful when it builds upon previous work.

Further analysis including detailed examination of site plans, artefact catalogues, and Reduced Levels, would be undertaken as part of any archaeological research design. Likewise, comparative analysis of similar sites external to the vicinity of the project site should be undertaken at that stage to understand how rare or representative the resource may be and to devise the most appropriate strategy for managing the archaeological resource.

The project site straddles the Parramatta River between Parramatta and Sydney, in an area granted to various individuals in the first decades of the colony. It remained a partially agricultural area for much of the 19th century and into the 20th century. The core of both Sydney and Parramatta has been subject to intensive archaeological investigation, however the hinterland, in which the project site is situated, has been less intensely examined.

#### 5.1.1 Parramatta River region

##### 5.1.1.1 Parramatta River Heritage Study, European Heritage and Conservation (Stage 2) (Thorp, W. & Tropman, L., 1985)

This extensive report examined a large area of the Parramatta River and assessed the river and its immediate environment as an item of heritage in and of itself. It summarised that the river had significance as a vital link to establishing the second European settlement (Parramatta), as a focus for early farming, as a sporting venue, as a recreational area, and as repository of physical information of the development of Sydney. The study identified 32 sites which are of either local or State significance.

The report went on to examine the agrarian and industrial history of the river on a broad basis. It highlighted early land ownership and use for farming, concluding that the early agrarian settlement along the Parramatta River was one of the most significant in colonial development. It also concluded that later light industry in the area was historically important with examples such as the Newington saltworks used to demonstrate this. The report also noted that the Rydalmere and Ermington area were the site of the first viticulture in Australia.

##### 5.1.1.2 Geotechnical investigations

As part of the preliminary works for Parramatta Light Rail Stage 2, an investigation into the underlying subsurface conditions was undertaken. Primarily this consisted of a series of terrestrial boreholes, overwater boreholes and a geophysical survey. In many instances the bore hole data show that road construction may have removed all topsoil beneath the modern surface such as in Rydalmere (LDBH15 and LDBH16). Elsewhere such as in Ermington (e.g. BH22) and Melrose Park (e.g. LDBH27) fill deposits, which may

possible contain historical archaeological evidence is found either above geological deposits or above possible earlier soil horizons. Detailed analysis of the results of the geotechnical testing is incorporated into the RDEM in Appendix B.

### 5.1.2 Camellia

Three relevant reports were located for Camellia, all of which involved works within or immediately adjacent to the project site. They are largely focused on the 20th century industrial archaeology of the precinct.

#### 5.1.2.1 Goodyear site, Camellia: industrial heritage and archaeological assessment, (North, M. & Cremin, A., 1997)

This assessment encompassed a substantial trapezoidal area extending from Grand Avenue to the Parramatta River, including part of the project site. Based primarily on historical and technological criteria, it assessed the site as being locally significant and suggested that limited monitoring of removal works was an appropriate methodology for managing the archaeological resource during the activity. The assessment suggested that any evidence of Elizabeth Farm would be significant but was unlikely. Irrespective of this, it recommended a minimum of a watching brief (monitoring) be undertaken by a suitably qualified archaeologist.

#### 5.1.2.2 Goodyear Site, Camellia: research design, (Godden Mackay Heritage Consultants, 1998)

This Archaeological Research Design was prepared in response to the assessment prepared the previous year. It identified research criteria for the site, including the nature of the pre-contact environment, evidence of Aboriginal occupation, evidence of contact, evidence of early European impact, and evidence of the AKO works. It agreed with the previous assessment of the site that monitoring of certain areas was an appropriate methodology.

Despite the assessment and research design, no excavation report has been located for the Goodyear site.

#### 5.1.2.3 Parramatta Geotechnical Investigation Monitoring Program - Parramatta Light Rail Preworks Geotechnical Investigation under Exception in 2017 (Artefact, 2019)

Preliminary preparatory works undertaken in 2017 by Artefact Heritage included two test pits within or close to the present project site. These test pits demonstrated the extant soil profile at either end of Grand Avenue with Test Pit (TP) 53 at the western end and TP57 at the eastern end. At TP53 the present surface was a 50 millimetre thick layer of asphalt beneath which was 600 millimetres of sandy gravel fill. Both related to the extant car park. No historical archaeology was identified, and works were halted at this depth. TP57 was initially excavated as a test pit and later changed to a borehole when large amounts of concrete were found within the test pit. The borehole indicated silty clay fill to a depth of 1.8 metres followed by a further 1.2 metres of mottled orange and red silty clay. Aside from the concrete, no archaeological evidence was located.

This works indicate that much of the Camellia part of the project site may be disturbed as a result of 20th century construction and industrial activity. Car parks, roadways, and other asphalt surfaces cover much of the area and these may all have a similar 600 millimetre thick base as seen here. The existence of 1.2 metres of “fill” at TP57 does indicate though that at least a partial historic soil profile may remain in pockets of the site which may be identifiable on the ground. Where they do remain there is the possibility that they may contain evidence of early farming practices.

#### 5.1.2.4 An Introduction to the Maritime Archaeological Significance of Ten Sites on the banks of the Parramatta River (Wolfe, 1990)

This study was undertaken prior to the expansion of ferry services along the upper reaches of the Parramatta River. It includes two locations identified as “Industrial Wharves – Camellia” of which one is the location of the ferry terminus at the end of Grand Avenue and the other is located within HAMU 27 on the

Sandown Line. Both wharf structures are still present at the time of reporting (1990) although it is stated that they have considerably deteriorated and are not in use. The wharves in Camellia are considered to be significant as part of the wider riverine landscape but also as items in their own right. They are ranked as 7 on a scale of 1 to 9 with 9 being the highest significance.

### 5.1.3 Rydalmere

No record of previous archaeological or heritage investigations within or immediately adjacent to the project site were identified for Rydalmere. Further from the project site but within the suburb, work has included numerous projects within the Western Sydney University Parramatta Campus. The campus and surrounding area has a very different history compared to the project site with works focused around the Rydalmere Hospital building, which was a government run institution of various forms from 1813 onwards. This means the archaeological resource and approach taken is likely to be very different to the areas of Rydalmere within the project site and so these works are not relevant. One relevant site within the suburb is discussed below

#### 5.1.3.1 Archaeological Test Excavations, 1 Alan Street, Rydalmere, (Heritage Concepts, 2005)

Heritage Concepts carried out archaeological test trenching in 2005 at 1 Alan Street, approximately one kilometre west of the project site. The excavations here anticipated evidence of Hannibal Macarthur's Vineyard Estate including a watermill on the banks of Subiaco Creek and agriculture features. Evidence of either was assessed as being of State significance. In the area adjacent to the creek a complex sandstone and sandstock brick structure was found which, following further research, was interpreted as being the mill built by Hannibal Macarthur. Very few in situ artefacts were recovered from the mill and it was largely infilled with rubble. The area tested for agricultural features was abandoned prior to works being completed due to water ingress. This site demonstrates the potential for remnants of 19th century structures to still be present even in areas of substantial later development along the Parramatta River. It also supports the assessment of evidence of early farming being of State significance.

### 5.1.4 Ermington

No records of previous archaeological investigations within or immediately adjacent to the project site were identified for Ermington.

### 5.1.5 Melrose Park

Much of the previous archaeological investigations within Melrose Park have focused on the Ermington Wharf and Lancaster Avenue.

#### 5.1.5.1 Statement of Heritage Impact and Results of Test Trenching for 100 Lancaster Avenue, Melrose Park, 2007 (Archaeology and Heritage Pty Ltd, 2007)

Archaeology and Heritage Pty Ltd carried out test trenching at 100 Lancaster Avenue, approximately 140 metres east of the project site, to investigate the potential archaeological resource. It was anticipated that evidence relating to the occupancy of the land by Major Lockyer in the 1820s and the infrastructure he commissioned including roads and a wharf would be encountered. Two 15 metre long test trenches were excavated and both showed around 0.5 metres of clay fill laid atop natural silt and beach sand of the foreshore. Nearby to the excavation site part of a corduroy road was seen preserved on the foreshore. These excavations give an indication that the earlier foreshore may be well preserved beneath the present surface and that levels of organic preservation (i.e. plants, macrofossils and pollen) are likely to be high on the site.



### **5.1.5.2 Archaeological Excavations at Ermington Wharf, Melrose Park. Monitoring of Boat Ramp Reconstruction Works (Stedinger Associates, 2010)**

Monitoring of repairs to current Ermington Wharf (boat ramp) were carried out by Stedinger Associates in 2009. These works occurred within the present project site. Boreholes along the shoreline showed a profile first of recent (circa 30 years old) sandstone rubble, beneath which was a deposit of rubble and soil which in turn overlaid ballast or bluestone rubble. Bedrock was reached at 1.5 metres below the surface. It is suggested that the ballast may have been deposited during the use of the wharf in the 1830s as a place to load stone from the Dundas Quarry. Two worked sandstone blocks were also found in the vicinity of one of the boreholes indicating that archaeological features may be visible or present on the current land surface.

### **5.1.6 Wentworth Point**

No records of previous relevant archaeological investigations within or immediately adjacent to the project site were identified for Wentworth Point.

### **5.1.7 Sydney Olympic Park and Carter Street**

Much of the archaeological and heritage investigations undertaken within Sydney Olympic Park have focused on the built heritage items that remain, such as the Newington Armament Depot and Nature Reserve (SHR 01850). The SHR listed part of the Armory is outside of the project site. As such, it has only limited relevance to this archaeological assessment which is focused on the significance and potential for buried archaeological evidence. A CMP prepared for the Newington Armament Depot and Nature Reserve (Tanner Architects, 2013) included an assessment of the likelihood for areas to contain historical archaeological relics. The areas of the reserve closest to the project site are shown as being unlikely to contain relics.

#### **5.1.7.1 Homebush Bay Project, Review of Archaeological Data and Studies Relating to Homebush Bay (Thorp, W., 1993)**

This extensive overview was undertaken to examine and more closely define the archaeological resource in Homebush Bay to devise management strategies. It is an acknowledged synthesis of previous work carried out across the project site and includes above and below ground potential archaeological resources whilst recognising the need for further investigation to accurately define any buried resource. It concluded that there are unlikely to be any potential archaeological sites of significance relating to the State Brickworks. This review also indicates that evidence of D'Arcy Wentworth's original home, which predates Homebush House, may have been located adjacent to the administrative building of the State Abattoir or located in a nearby paddock. The study concluded however, that later construction is likely to have destroyed or disturbed the archaeological evidence.

#### **5.1.7.2 Archaeological Monitoring Report, Former AJC Racecourse, Olympic Tennis Centre, Homebush 1998-2000 (AMAC, 2000)**

Archaeological monitoring was undertaken during the construction of the Olympic Tennis Centre, located to the south of the current project site. This was within D'Arcy Wentworth's Homebush Estate. Aside from historical artefact scatters, no evidence of Wentworth's use of the land was found during these investigations. The artefact scatters dated to the use of the site as a racetrack (i.e. mid-19th century), with a predominance of ginger beer and alcohol bottles.

#### **5.1.7.3 Archaeological Test Excavations & Survey, Australia Avenue, Fig Tree Avenue Circuit 2000 Olympic Site (AMAC, 1997)**

Survey and test excavations were undertaken in an attempt to locate Homebush House, south of the present project site. No evidence of the house was found however, the soil profile was examined in some detail. Excavations showed that the pre-1788 soil profile was partially eroded after colonisation and reformed in the late 19th or early 20th century.

## 5.1.8 Archaeological studies with evidence of farming in 18th and 19th century Parramatta

### 5.1.8.1 Preliminary Results Archaeological Investigation 15 Macquarie Street, Parramatta (Casey & Lowe, 2009)

At 15 Macquarie Street Parramatta, farming related deposits, some capped in 1804, were encountered during the 2009 archaeological investigations. Those from pre-1804 consisted of 80 millimetres wide east to west orientated plough lines found in association with random ovoid cuts. These were cut into the subsoil, which was likely deeper than intended. Away from the capped deposits the topsoil was modified and had likely been ploughed from the 1790s until the 20th century. It consisted of a mid-brown silty clay with charcoal, brick, pottery, and bone inclusions. It was not possible to distinguish chronological phases of occupation as all the material was so mixed. Ephemeral features were recorded within the topsoil layer including postholes, pit bases and burnt trees. This provides examples of the types of archaeological features that can be present on a late 18th and early 19th century farming site.

### 5.1.8.2 3 Parramatta Square, Parramatta Formerly 153 Macquarie Street, Parramatta, Archaeological Investigation, (Casey & Lowe, 2020)

Excavations at 3 Parramatta Square, Parramatta, encountered extensive evidence of late 18th and early 19th century farming in Parramatta.

Evidence of farming here included hoe marks that were dated to before 1822. These consisted of shallow, roughly ovoid and triangular cuts with a max length of 300 millimetres. Other shapes included short linear, half-moon and sub-rectangular. Soil testing from the fill contained within these marks found fungal spores, casuarina pollen, hornwort spores and egg cases of unidentified microfauna. Dandelion pollen (Liguliflorae) was also found indicating that the marks were definitively made post 1789 to 1790 land clearance as this is an invasive species. The presence of cloacasporites with the fill also provides evidence that either latrines were located nearby or that human effluent waste was being spread as fertiliser.

As well as the early hoes marks, plough lines were also encountered. These consisted of linear ditches with gradual concave sides forming a 'U' shape. The average width of the plough lines was 450 millimetres with a range in thickness from 30 to 100 millimetres. Based on the morphology of the features it is interpreted here that they were made with a Rotherham Plough in the 1830s. Few artefacts were recovered in association with the plough lines. Those artefacts that were recovered were consistent with a post-1830 date. Pollen analysis from the fill of the plough lines shows background plants but little else and no evidence of what was being grown.

Part of the historic topsoil encountered on the site was capped below an early cottage that dated to 1822. Geochemical analysis of this topsoil indicated that it had a very low phosphorous content which only could have grown two or three more wheat crops with a low yield of 1 to 14 bushels per acre without manuring. This evidence of poor quality soils contributes to discussions on climate and early agriculture and provides an example of how geochemical and botanical analysis can provide crucial data to examining research questions.

### 5.1.8.3 Report on the Archaeological Excavation of 50, 50A & 52 O'Connell and 6-12 Grose Street, North Parramatta, N.S.W., (Edward Higginbotham & Associates, 2007)

Excavations at this site encountered evidence of early 19th century viticulture within the Lisle Estate purchased by George Suttor in 1838. Deep trenching on this site was interpreted as being evidence of husbandry of the land for vineyards dating back to the mid 1840 to late 1850s. These agriculture marks were seen in various parts of the site. At 50A O'Connell Street were north west to south east running parallel trenches spaced 400 millimetres apart. Each trench was 400 to 500 millimetres wide and they were found cutting 300 millimetres into the subsoil. These were provisionally dated to the 1870s. The trenches at 8 Grose Street were each 200 millimetres wide and spaced 300 to 400 millimetres apart on an east to west alignment. This provides a useful comparison for examination of other archaeological features that relate to viticulture.

### 5.1.9 Summary of archaeological studies in the vicinity

This study of work in the vicinity of the project site provides some limited information that primarily relates to the archaeological potential of some parts of the project site. It also highlights that little in-depth archaeological research has been undertaken in this part of Greater Sydney. It provides a general indication that subsurface archaeological relics may be present in parts of the project site but is not sufficiently detailed to provide an indication of the significance in most instances.

The *Parramatta River Heritage Study* (Thorp & Tropman, 1985) provides a clear overview of the area along the Parramatta River and demonstrates that it is of great importance to the history and development of NSW. This study provides background and context when formulating assessments of potential for some of the HAMUs within the project site.

Within Camellia, the investigations of the Goodyear site (North & Cremin, 1997, Godden Mackay Heritage Consultants, 1998) demonstrate the importance and significance of 20th century industrial sites which can often be underappreciated due to their relatively young age. The works undertaken as part of the Parramatta Light Rail Stage 1 EIS (Artefact, 2019) are useful in demonstrating that in some areas of the suburb there is good potential for intact archaeological resources. Only limited results available to date do not provide an indication of the significance of the archaeological resource encountered.

Within Rydalmere, the test excavations at Alan Street (Heritage Concepts, 2005) support the assessment here that evidence of early farming is of State significance and also demonstrate that despite extensive later development, 19th century structural evidence can survive.

Investigations in Melrose Park have primarily focused on Ermington Wharf and riverbank areas. The test trenching at 100 Lancaster Avenue (Archaeology and Heritage, 2007) demonstrated that organic preservation was high along this part of the river. This should be considered in formulating excavation methodologies and research questions. Likewise, the repair works to Ermington Wharf (Stedinger Associates, 2010) demonstrate there is high potential for archaeology in the area as substantial 1830s deposits were encountered.

Investigations undertaken within Sydney Olympic Park and the Carter Street precinct have indicated that there are unlikely to be any archaeological sites that relate to the State Brickworks (Thorp, 1993) but that 19th century artefact scatters (AMAC, 2000) and a partially intact pre-1788 soil profile (AMAC, 1997) may be present, although this soil profile is likely to be at least partially eroded.

## 6 ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL AND SIGNIFICANCE

This chapter provides an assessment of the archaeological potential and significance for each HAMU on a suburb by suburb basis for the project site. The following approach was adopted:

- providing a brief description of the proposed works within the suburb
- noting any relevant listings that have been considered
- identifying key historical phases for each suburb
- assessing the **significance** of occupation using the criteria in Section 3.3.1:
  - this primarily involved assessing the significance of the possible archaeological resource with criteria (e) (Research Potential) the most important as the ability of the archaeological record to address research questions is a core part of its significance. The assessment also considered that significance can go beyond the physical remains with historical association being a key aspect of this. A place may have significance if a key event occurred there or an important figure resided there even if no clear physical remains of the association remain. Knowledge of the association can be sufficient to create significance
- examining the archaeological **potential** of each individual HAMU using the gradings in Section 3.2.1:
  - this included a description of the HAMU, an analysis of land use based on historical imagery, a summary of the types of archaeological evidence expected for each relevant phase of occupation and consideration of impacts from existing buildings. It also included an assessment of the likelihood that the archaeological resource will be able to contribute to addressing research questions, acknowledging that the presence of substantial physical remains such as rail tracks and wall footings does not necessarily mean they have a strong ability to contribute new data to research
  - results of relevant archaeological excavation, including test excavation, were also considered
- summarising the **significance** and **potential**, and combining to then provide a management rating from the HAMU (refer Section 3.5 for more information on Management Ratings).

### 6.1 Camellia

#### 6.1.1 Description

Located on the southern shores of the Parramatta River, Camellia is a largely industrial suburb with factories and associated infrastructure dominating the landscape. The former freight rail (Sandown Line), and former tramway transect the northern part of the suburb.

The project site extends from Parramatta Light Rail Stage 1, east along the route of the former Sandown Line parallel to the Parramatta River until a fork in the rail line in the centre of the suburb. From here it continues along the Sandown Line to the northeast (Figure 6-1, Figure 6-2, Figure 6-3). It also includes the Stage 1 stabling yard at 2 Grand Avenue and a small section crossing Grand Avenue to connect the stabling yard to the rest of the project site. Near the terminus of the Sandown Line, the project site continues as a bridge that will cross the Parramatta River heading northeast making landfall around the southern end of Park Road in Rydalmere. This bridge would provide a regionally important new crossing of the Parramatta River, connecting future and existing communities with light rail and active transport facilities (Figure 6-4).

In Camellia, the project site is within three PHALMS management units which have been taken into account in the following assessments of significance (Figure 6-5). These are:

- 2996 – Parramatta and Duck Rivers - local significance and moderate research potential
- 2948 – unnamed – local archaeological significance and little archaeological research potential
- 2972 – Tramway Avenue, route of 1884 tramline - local state significance and moderate research potential.



**Figure 6-1: The Sandown Line, Camellia, within the northern part of the suburb. The line in this location is in a good state of repair.**



**Figure 6-2: The southern bank of the Parramatta in Camellia within the project site. This area has been subject to extensive shoring**



**Figure 6-3: Grand Avenue, Camellia where the project site crosses Grand Avenue showing the general industrial nature of the suburb at present**



**Figure 6-4: Industrial activity adjacent to wetlands in Camellia, viewed from existing footbridge**

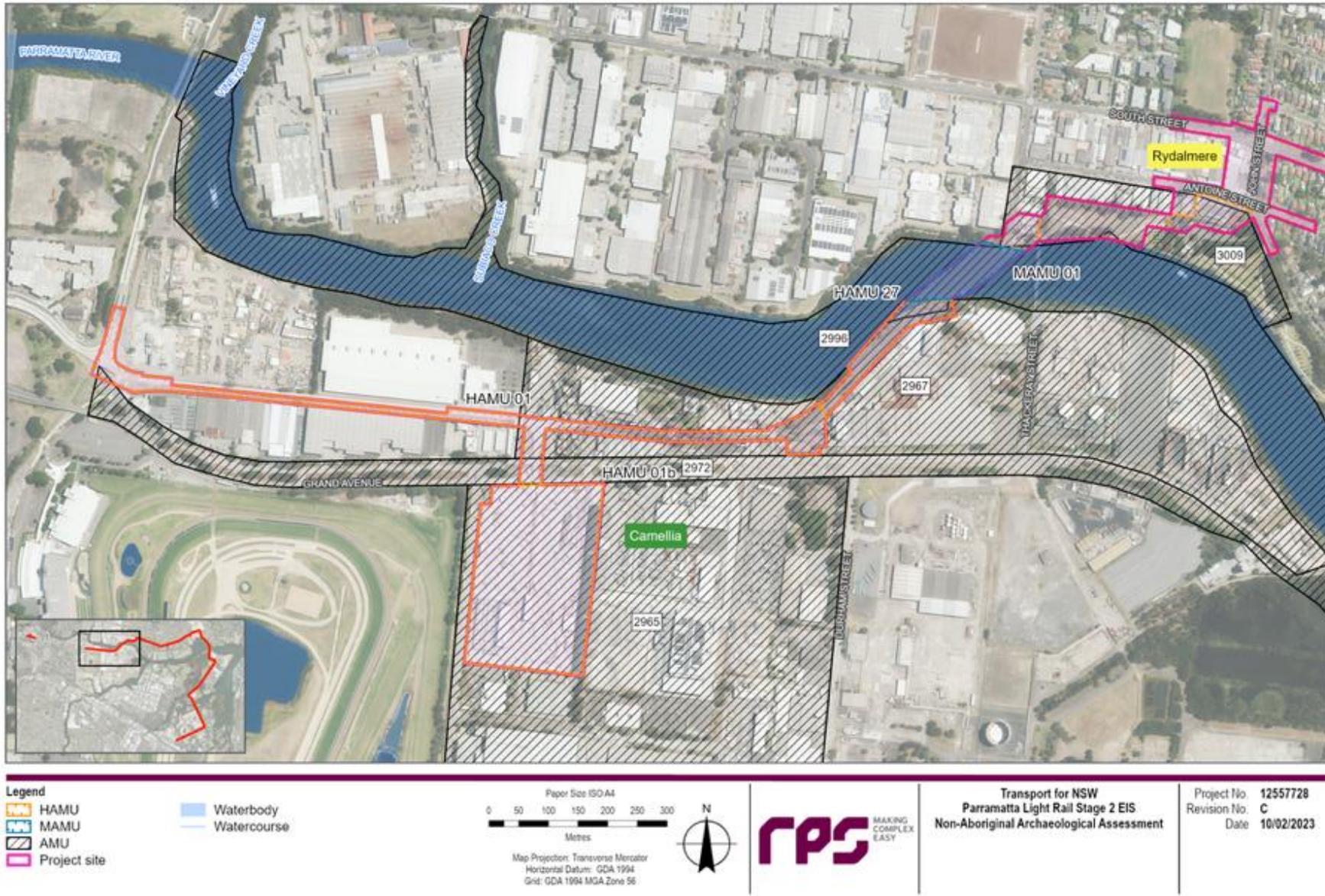


Figure 6-5: Relevant PHALMS units (AMUs) considered in this assessment in Camellia in relation to the HAMUs

### 6.1.2 Phases of occupation and significance within Camellia

Examination of the historical context and archaeological potential of the four HAMUs in Camellia indicate four phases of occupation which may have an archaeological resource with research potential of at least local significance. Each of these phases overlaps as change across the project site was not simultaneous and not all areas saw change or development related to all phases. The four phases are:

1. Elizabeth Farm Estate (1793–1881) (Table 6-1)
2. Sheather’s Camellia Grove Nursery (1852–1906) (Table 6-2)
3. The Parramatta Tramway (1881–1943) (Table 6-3)
4. Industrialisation (1881 onwards) (Table 6-4).

**Table 6-1: Assessment of significance within Camellia during phase 1**

<b>Phase 1: Elizabeth Farm Estate (1793–1881)</b>	
<b>Criteria (a) Historical significance:</b>	The Elizabeth Farm Estate was established by John Macarthur who used it to raise sheep primarily for wool, amongst other agricultural endeavours. As a pioneering farm, the Elizabeth Farm Estate would have seen some of the earliest experiments in farming practices. Sheep farming became an integral and defining characteristic of Australian national farming identity, as such early pioneering farms such as this.
<b>Criteria (b) Historical association significance:</b>	John Macarthur was a prominent figure in the early years of the colony. His actions had influence in political, cultural, and economic spheres and he was a leading member of the Rum Rebellion and subsequent military rule of the colony. Elizabeth Macarthur likewise played a strong role in the early colony. She successfully managed the Elizabeth Farm Estate for many years and oversaw the development of the wool industry.
<b>Criteria (c) Aesthetic/Technical significance:</b>	There is no anticipated aesthetic significance. Any evidence of the farming practices undertaken would be technologically significant. This may be direct evidence such as tools and implements or indirect evidence such as plough marks and fence alignments.
<b>Criteria (d) Social/Cultural significance:</b>	The extant Elizabeth Farm Homestead is considered to have strong links with the Parramatta community. This link is unlikely to extend to more transitory archaeological features such as plough marks however more substantial evidence such as wall footings and wells may have some social significance.
<b>Criteria (e) Research potential:</b>	Any evidence of cultivation or pastoralism would have high research potential and could provide novel data for examinations of early farming practices and colonial responses to a different environment. Food production was a key goal of the early colony and evidence of the types of foods produced may be critical in enhancing the understanding of the development of farming. This may include evidence of methods and techniques used as well as species not mentioned in the historical record. There is also the potential to examine soil chemistry to discuss nutrient levels which can provide indications of yields and evidence of manuring. Collectively this all can contribute to wider questions related to the development of the agricultural economy. Evidence relating specifically to Elizabeth Macarthur’s use of the site would have very high research potential for exploring the role of women in early colonial society with reference to the economic and social spheres. It is unlikely that chronological precision will be high enough to be able to specifically identify periods where Elizabeth was in charge of the estate. Evidence of the steps or wharf at Red Bank would have high research potential which may facilitate an examination of riverine trade and technology from the 19th century. This assessment covers a 10 kilometre corridor and includes some of the earliest cultivated land in Australia. This includes both successful and unsuccessful farms and areas that are regarded today as pioneering in their respective industries. Likewise it includes large Estates and smaller scale enterprises. The ability to undertake a largescale cross-site comparison of early farming along the Parramatta

**Phase 1: Elizabeth Farm Estate (1793–1881)**

River is unprecedented and the research potential of each farm is enhanced by its ability to contribute to the greater whole.

**Criteria (f) Rarity:** Evidence of surviving early farming practices is rare archaeologically. Partially this stems from later development but also the transitory nature of the evidence with features such as plough lines being seasonally re-dug. Other sites in Parramatta (e.g. 3 Parramatta Square) show evidence of hoe marks and plough lines however these relate to smaller-scale enterprises.  
The rarity of this site specifically also comes from the potential farming related deposits that may provide some insight into the crops and plants grown, animals husbanded, and the technologies employed by Macarthur in the 18th and 19th century in the parts of the estate covered by the project site. It may also provide some indication of the degree to which it was successful. It is also rare to have the possibility to examine numerous different early farming sites within the same project and to have the opportunity to undertake cross site comparison.

**Statement of Significance**

The Elizabeth Farm Estate was a pioneering farm that undertook some of the earliest farming practices in the colony. If substantially intact archaeological evidence that demonstrated multiple facets of early farming including the technologies applied, evidence of change in farming approaches and the breadth of crops and plants grown over the 18th and 19th century across the Estate, it would be of **State** significance linked to its research potential. It was owned by John and Elizabeth Macarthur both of whom were important figures in the history of NSW. Evidence relating to their use of the site has historical significance at the **State** level.

**Table 6-2: Assessment of significance within Camellia during phase 2**

**Phase 2: Sheather’s Camellia Grove Nursery (1852–1906)**

**Criteria (a) Historical significance:** The Camellia Nursery established by Sheather provided the present-day suburb with its name, as such it has some local significance.

**Criteria (c) Aesthetic/Technical significance:** There is no anticipated aesthetic significance relating the Sheather’s Nursery. There may be some technological significance if the methods used in flower cultivation are identifiable during excavation. This may include implements and tools as well as more substantial features such as greenhouses.

**Criteria (d) Social/Cultural significance:** Sheather is a known figure amongst the Camellia growing community and is recognised as being the creator of multiple varieties including *Camellia japonica* 'Prince Frederick William' which is regarded as one of the most popular varieties in Australia (Savage 1965)

**Criteria (e) Research potential:** The growth and development of a nursery business that occupied the site over a 50-year period may have research potential. As with other luxury goods, flowers can be useful in examining complex economic systems and any archaeological evidence may compliment that in the historical record (trade magazines etc.). Evidence of the technologies used at the nursery could also have research potential. Whilst common features such as building foundations are anticipated, it is unclear to what extent more specific nursery related evidence would be present archaeologically which may limit the research potential of this phase.

**Criteria (f) Rarity:** By the late 19th century over 160 varieties of Camellia had been developed in Australia indicating a blooming industry. Flower nurseries cannot be considered then rare themselves. That said, few have been investigated archaeologically and so the possibility to excavate and record a 19th century nursery could be considered rare.

**Statement of Significance**

Sheather’s nursery was a successful business in the late 19th century and was well known in the area. It provides the modern suburb with its name and is known within flower growing communities as such there is some degree of historical and social significance to the site at a **local** level. If a highly intact archaeological resource is present, it may also have technological significance at a **local** level.



**Table 6-3: Assessment of significance within Camellia during phase 3**

<b>Phase 3: The Parramatta Tramway (1881–1943)</b>	
<b>Criteria (a) Historical significance:</b>	The Tramway is part of a continuum of developing public transport links between Sydney and Parramatta that continues to this day. It was the last steam tramway to be operated in NSW closing in 1943.
<b>Criteria (c) Aesthetic/Technical significance:</b>	The physical evidence of old tramlines is commonly used in regenerations of areas to provide a tangible link to the past. This is especially true in areas currently designated as pedestrian zones. They can provide aesthetic enhancements to areas. Steam trams were a crucial part of the evolution of public transport in NSW any evidence of the technology used would be significant.
<b>Criteria (d) Social/Cultural significance:</b>	The study and appreciation of antiquated public transport is commonplace with vibrant community support as evidenced by the numerous transport museums that exist throughout NSW. Any substantial physical evidence may carry social significance for community groups.
<b>Criteria (e) Research potential:</b>	The remains of the Tramway have only limited archaeological research potential. The form of the Tramway and types of technology used are already well documented and it is unlikely archaeological examination would contribute further knowledge. It had a long duration of use and analysis of the physical remains may provide evidence of repair or modification over time that in turn can inform about social and technological attitudes.
<b>Criteria (g) Representativeness:</b>	The Tramway is representative of the kinds used across Parramatta in the later 19th and earlier 20th centuries.
<b>Statement of Significance</b>	
The Parramatta Tramway was the last steam tram to be operated in NSW and was a critical part of the public transport network of the late 19th and early 20th century. Old transportation infrastructure can be of high social and cultural importance to communities and have aesthetic and technological importance too. The Tramway has only limited research potential as its form and function are well understood. The Tramway is listed on the Parramatta LEP (Tram Alignment Item I6) as being of <b>local</b> significance and this assessment concurs with this.	

**Table 6-4: Assessment of significance within Camellia during phase 4**

<b>Phase 4: Industrialisation (1881 onwards)</b>	
<b>Criteria (a) Historical significance:</b>	The Goodyear factory has been seen as having “high” historic significance as physical evidence of a shift in national mindset from Britain to the wider world in this case the USA.
<b>Criteria (c) Aesthetic/Technical significance:</b>	The numerous industrial complexes established on the site all may have high technological significance. In particular the AKO was a developing industry throughout the later 19th century. The Goodyear Factory was the first of its kind in Australia and saw the importation of new technologies and processes. The railway line may have some technological significance.
<b>Criteria (e) Research potential:</b>	Industrial archaeology is an increasingly important field and the factories along the Parramatta River in Camellia have the potential to contain archaeological resources that could address many of the key research themes including change and continuity, production and consumption and understanding workplaces. Issues of class, status and identity, social control and paternalism can also potentially be addressed. Extensive archival recording of the some of the industrial structures in the area has already been undertaken (Cremin, Gibson, and North 1998). Given that the project impact is primarily along roads and rail lines, it is unlikely to encounter extensive deposits relating to factories hence the research potential is low.
<b>Criteria (f) Rarity:</b>	Both the AKO and Goodyear factories were amongst the earliest examples of their type in Australia and so can be considered rare.
<b>Criteria (g) Representativeness:</b>	Although both major companies were early progenitors of their industries, they fall within a wider pattern of late 19th and early 20th century factory development and can be considered as representative of the early phase of this. The railway line is

**Phase 4: Industrialisation (1881 onwards)**

likely to be highly representative of the kinds of rail used during the 19th century for industrial practices.

The industrial wharf along the banks of the river may be a good quality representative example of the kinds of wharves that once were commonplace along the riverbank.

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**Statement of Significance**

Evidence of industrialisation, including the AKO and Goodyear factories, can provide novel and important information on the development of industry in Australia. Both factories were major examples of their specific industries and have historical and technical significance. That said, the project site is unlikely to encounter evidence of factories and so has only low research potential. If evidence of Industrialisation is found it would be of **local** significance.

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### 6.1.3 HAMUs within Camellia

The following HAMUs have been identified in this suburb (see Figure 6-6):

- HAMU 01 – Industrial Railway north of Grand Avenue & 2 Grand Avenue
- HAMU 27 – Sandown Line.

HAMUs 02, 03 and 04 were assessed in the Historical Archaeological Assessment prepared for the EIS and were mapped along Grand Avenue and adjacent industrial properties. As part of the amended project, the light rail alignment has been relocated along the foreshore and these HAMUs would no longer be impacted.

Based on the analysis of potential and significance the following summary assessment is provided for each HAMU. Each HAMU has also been given a management rating that provides an indication of the appropriate mitigation measures. These are shown in Figure 6-10.

The area of the Parramatta River between Camellia and Rydalmere is assessed as MAMU 01 in Section 6.8.2.

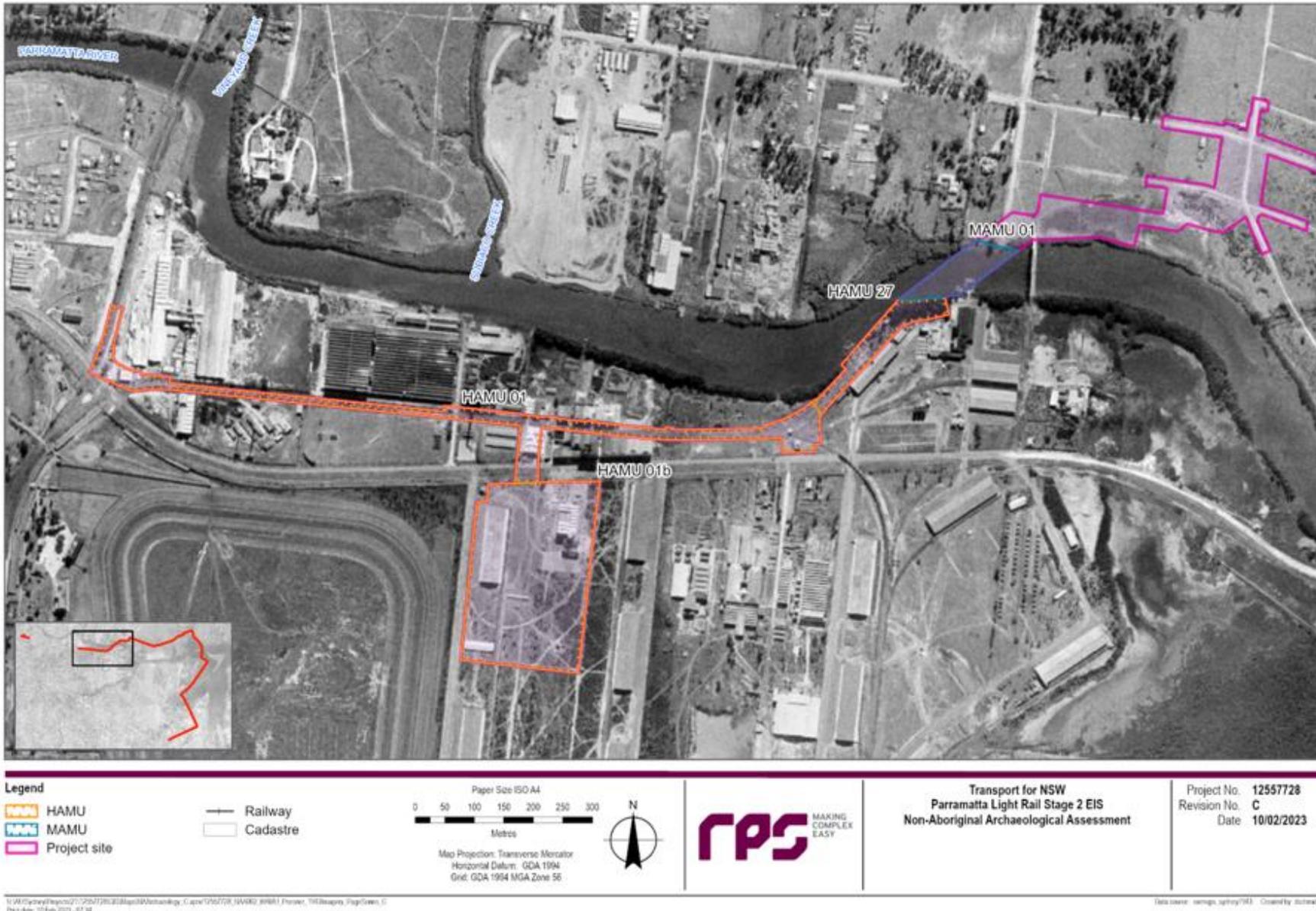


Figure 6-6: HAMUs located within Camellia on the 1943 aerial photograph showing development at that time

HAMU 01 & 01b	Industrial Railway north of Grand Avenue & 2 Grand Avenue		Camellia									
<b>Listings</b>	PHALMS 2967 (see Figure 6-5)											
<b>Description of site</b>	HAMU 01 is a 1.2-kilometre-long rectangular stretch of the Sandown Line on the northern side of Grand Avenue and also includes two a 40 metre strip between the railway line and the avenue east of Colquhoun Street, a 121 metre long stretch of the Parramatta Light Rail Stage 1 alignment (former T6 Carlingford Line) at its western end (Figure 6-7), 13A Grand Avenue, and a 38-metre-wide section of road between 13A and 4 Grand Avenue . HAMU 01b is a 325 x 200 metre rectangular area of land at 4 Grand Avenue (Figure 6-8).											
<b>Analysis of historic plans and aerials</b>	<p>The 1859 Reuss &amp; Browne plan shows a trackway that runs across the Elizabeth Farm Estate along the approximate alignment of Grand Avenue towards a structure labelled ‘Garden hut’. This track may be within the HAMU.</p> <p>The 1899 subdivision plan shows that the Sandown Line had been constructed by this time along its present alignment.</p> <p>Aerial photography in 1943 shows the tramline along Grand Avenue is still present. The structure at 11 Grand Avenue, is visible on the 1943 photograph but was recently (2020s) demolished as part of the Parramatta Light Rail Stage 1 works. The brick building currently used as a café in 21 Grand Avenue first appears on the 1955 aerial photo and is still standing.</p>											
<b>Phases of occupation &amp; nature of the resource</b>	<p><b>1 – Elizabeth Farm Estate (1793–1881)</b> Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p><b>4 – Industrialisation (1881 onwards)</b> Evidence relating to this phase in this HAMU could include: the construction of the railway line including the embankment, rails and associated mechanical components, bottles and other refuse items discarded during use, and objects used within the adjacent factories.</p>											
<b>Impact from current buildings</b>	<p>Most of the HAMU is covered with the extant railway line which is likely to have had a moderate impact resulting from the methods used in its construction. At the western end is a car park and based on previous work conducted in similar areas nearby, there may be around 600 millimetres of fill related to this. In the centre of the HAMU at 11 Grand Avenue was a large building that has recently been demolished. These would have had foundations that impacted the underlying resource. At the eastern end of the HAMU at 21 Grand Avenue there is a café with a small area of cleared land adjacent to it. The café building will have foundations that have caused an impact, but the adjacent land appears less developed meaning the impact may be less than elsewhere.</p>											
<b>Likelihood of research potential</b>	<p><b>1 – Elizabeth Farm Estate (1793–1881)</b> Later impacts are likely to have disturbed or damaged any evidence of the Estate so the likelihood of new data to address research is <b>low</b>.</p> <p><b>4 – Industrialisation (1881 onwards)</b> Evidence of this phase is extant, but the evidence is commonplace, and archaeological excavation is not the most appropriate way to examine this evidence. The likelihood of excavation to produce new data to assess research is <b>very low</b>.</p>											
<b>Archaeological potential</b>	<p>Early farming in this area is likely to have only left a transient mark on the landscape and subsequent activities including the construction of the railway line may have had an impact on any remaining evidence. The potential for evidence of the Elizabeth Farm Estate is <b>low</b>. The potential for evidence relating to the construction and use of the railway line is high however the evidence is unlikely to contribute to addressing research questions and so the archaeological potential is <b>low</b>. HAMU 01b was assessed as part of the Parramatta Light Rail Stage 1 EIS which found the stabling and maintenance facility as having no archaeological potential (Artefact 2017, GML 2019). That assessment is agreed upon. Works have commenced in this area as part of Parramatta Light Rail Stage 1 and no further assessment is required.</p>											
<b>Summary</b>	<table border="1"> <thead> <tr> <th>Phase</th> <th>Significance</th> <th>Potential</th> <th>MR</th> </tr> </thead> <tbody> <tr> <td>1 – Elizabeth Farm Estate (1793–1881)</td> <td>State</td> <td>Low</td> <td>1</td> </tr> </tbody> </table>	Phase	Significance	Potential	MR	1 – Elizabeth Farm Estate (1793–1881)	State	Low	1			
Phase	Significance	Potential	MR									
1 – Elizabeth Farm Estate (1793–1881)	State	Low	1									

**UPDATED HISTORICAL ARCHAEOLOGICAL ASSESSMENT**

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<b>(HAMU 01 only, HAMU 01b N/A)</b>	4 – Industrialisation (1881 onwards)	Local	Low	1
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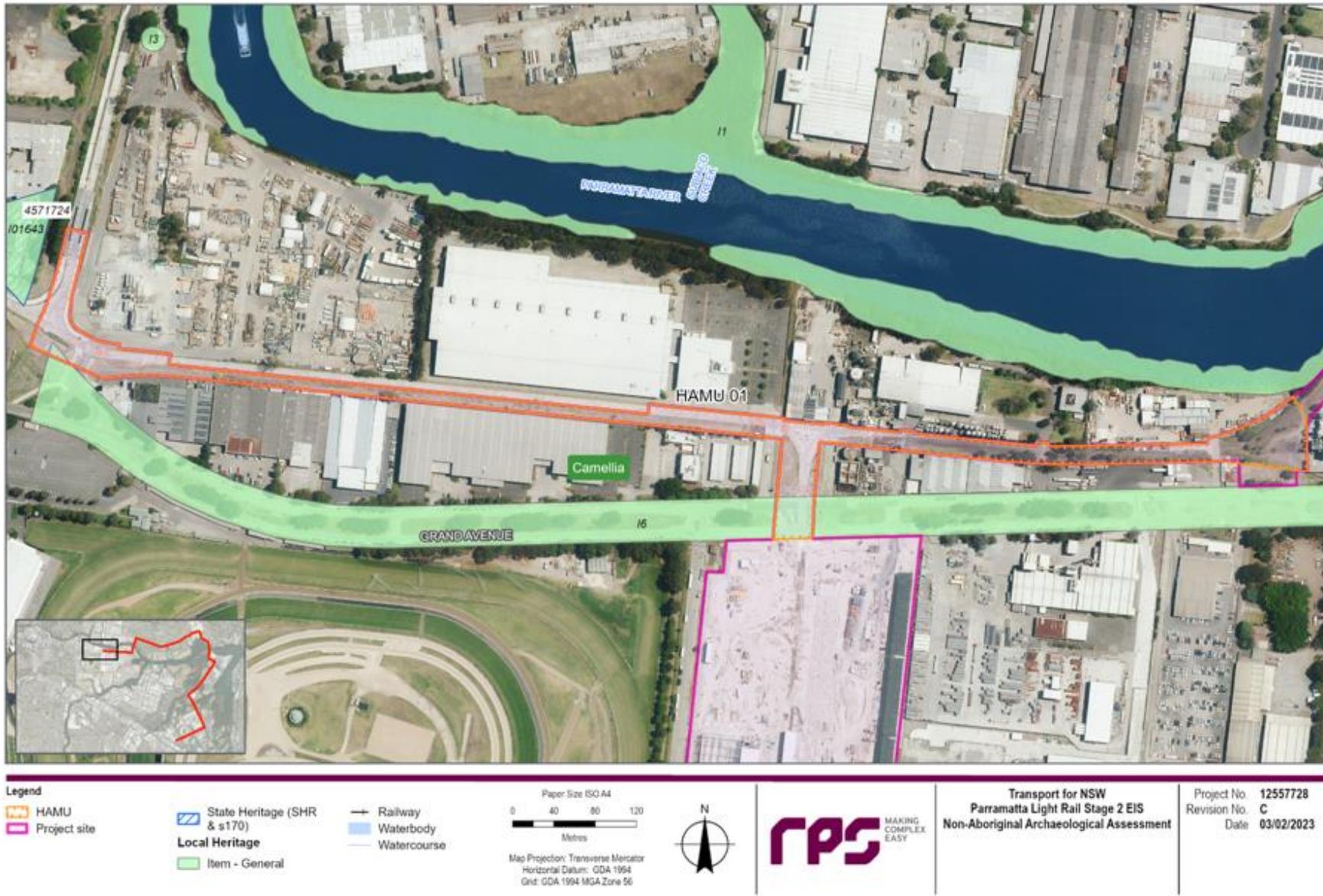


Figure 6-7: HAMU 01 showing location and nature of present environment, all adjacent heritage listed items area also shown

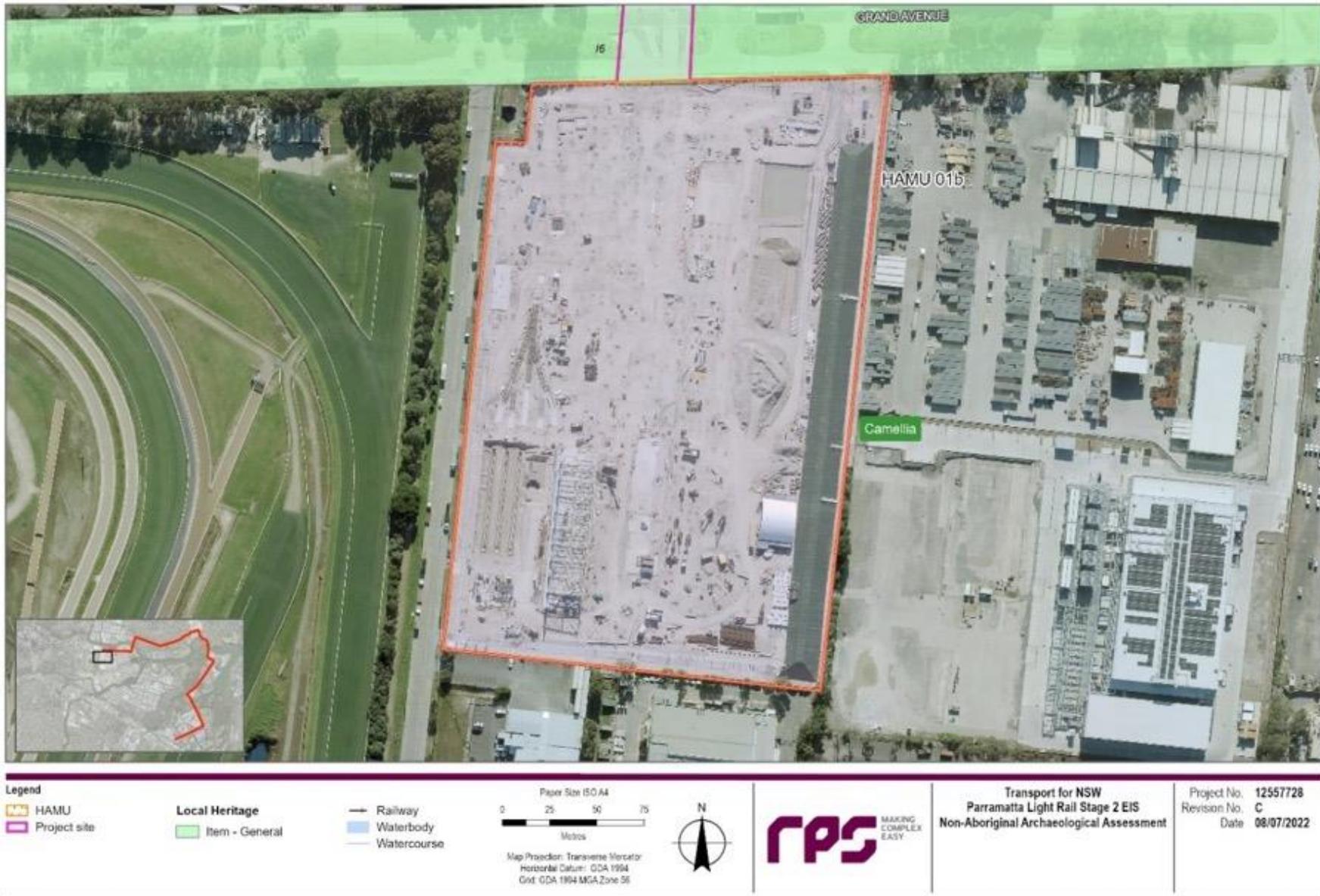


Figure 6-8: HAMU 01b showing location and nature of present environment, all adjacent heritage listed items area also shown

HAMU 27	Sandown Line	Camellia		
Listings	PHALMS 2967 (see Figure 6-5)			
Description of site	HAMU 27 is a 285-metre-long stretch of the Sandown Line that runs between the Parramatta River and industrial factories at 3 Thackeray Street. It also includes the riverbank west of the railway line. The rails, sleepers and ballast of the line are all extant.			
Analysis of historic plans and aerials	<p>The 1833 sketch of the river by Sir Thomas Livingstone Mitchell indicates there is a steep bank in this area which is named 'Red Bank'. This name is also ascribed to the area in the 1844 Brownrigg plan which also show that steps had been constructed in the area. The steps are not shown on the 1859 Reuss &amp; Browne plan, but a trackway does run through the area. The sketch plan of Rydalmere (Sheet 4 n.d. (post 1881)) shows the Sandown Line constructed with a platform on the landward side and a wharf on the river.</p> <p>A wharf is still present in the area in 1943 but by 1955 only pieces of it remain with a new wharf built to the north. By 1970 it appears that the pre1955 wharf has also been demolished and a further wharf erected northward of it. By 1986 there are no wharves extending into the river, but the bank is still developed.</p>			
Phases of occupation & nature of the resource	<p>1 – Elizabeth Farm Estate (1793–1881) Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils. The proximity of the riverbank means evidence of fishing, boating and other riverine activities may be present in addition to evidence of wharves, steps, piles, and bank shoring.</p> <p>4 – Industrialisation (1881 onwards) Evidence relating to this phase in this HAMU could include: the construction of the railway line including the embankment, rails and associated mechanical components, bottles and other refuse items discarded during use, and objects used within the adjacent factories.</p>			
Impact from current buildings	Most of the HAMU is covered with the extant railway line which is likely to have had a moderate impact resulting from the methods used in its construction. Extensive shoring has occurred along the riverbank including substantial deposits of graded stone.			
Likelihood of research potential	<p>1 – Elizabeth Farm Estate (1793–1881) Later impacts are likely to have disturbed or damaged any evidence of the Estate so the likelihood of new data to address research is <b>low</b>.</p> <p>4 – Industrialisation (1881 onwards) Evidence of this phase is extant, but the evidence is commonplace, and archaeological excavation is not the most appropriate way to examine this evidence. The likelihood of excavation to produce new data to assess research is <b>very low</b>.</p>			
Archaeological potential	Early farming in this area is likely to have only left a transient mark on the landscape and subsequent activities including the construction of the railway line may have had an impact on any remaining evidence. The potential for evidence of the Elizabeth Farm Estate is <b>low</b> . The potential for evidence relating to the construction and use of the railway line is <b>high</b> however the evidence is unlikely to contribute to addressing research questions and so the archaeological potential is <b>low</b> .			
Summary	Phase	Significance	Potential	MR
	1 – Elizabeth Farm Estate (1793–1881)	State	Low	1
	4 – Industrialisation (1881 onwards)	Local	Low	1



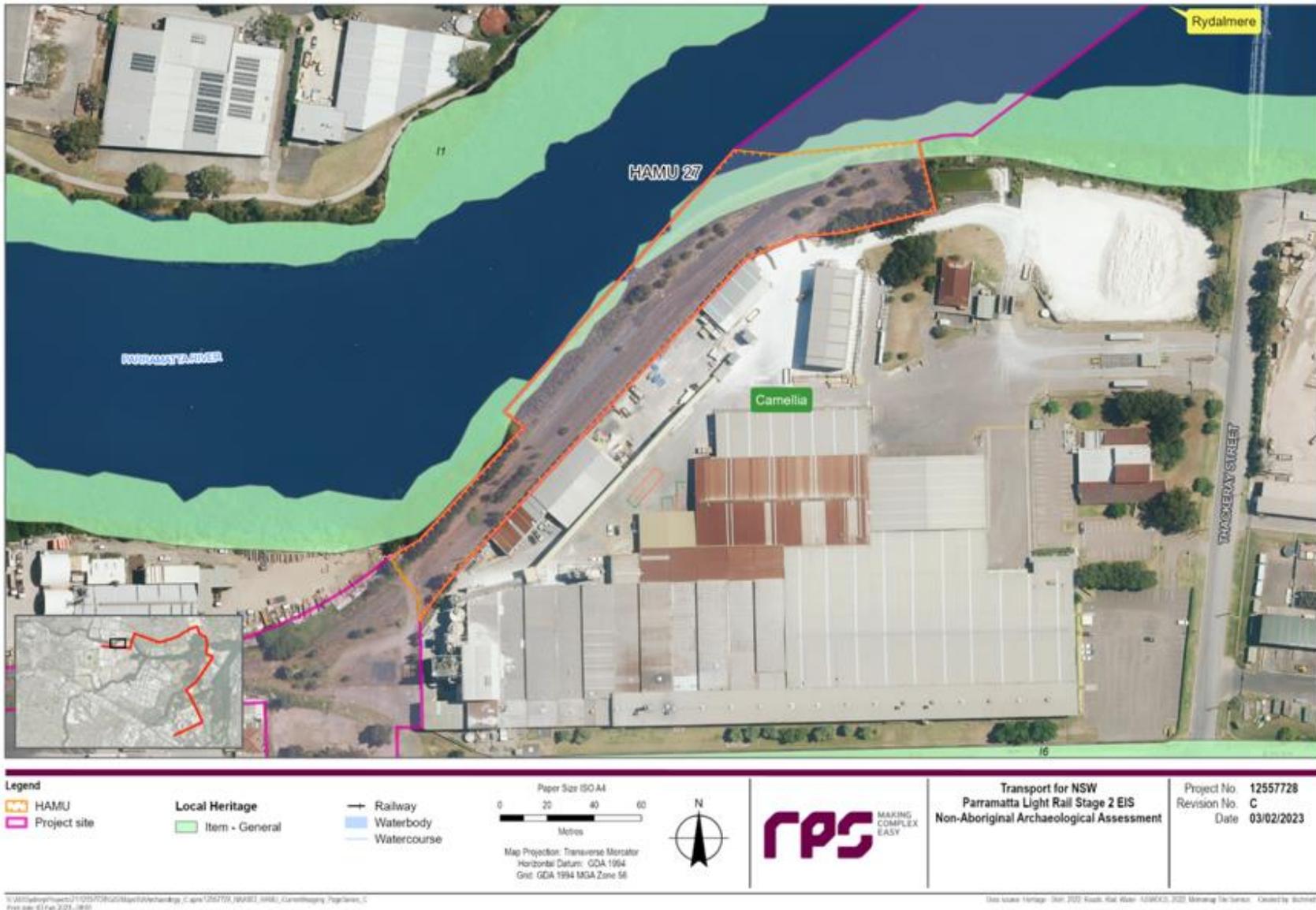


Figure 6-9: HAMU 27 showing location and nature of present environment, all adjacent heritage listed items area also shown

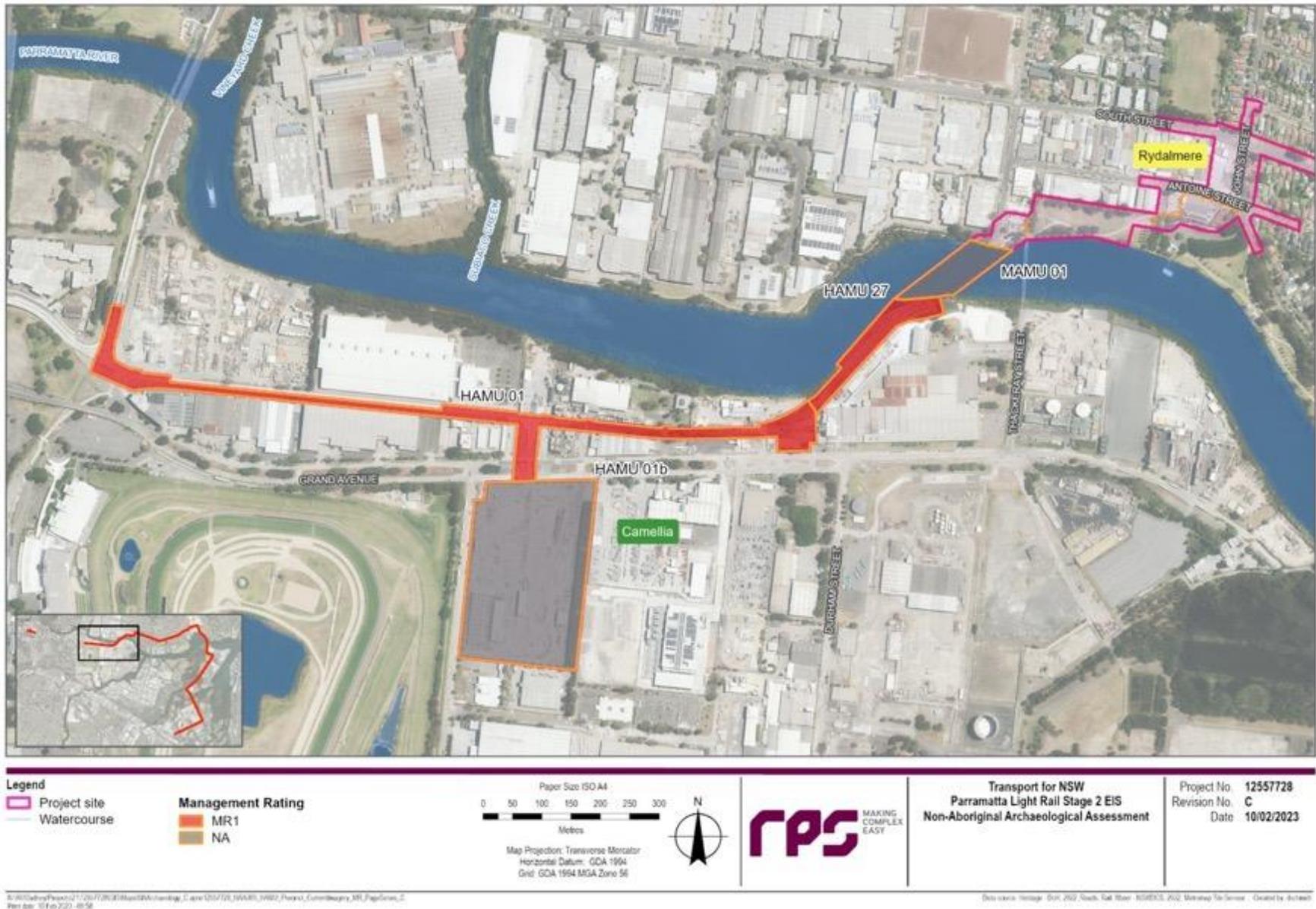


Figure 6-10: MRs for HAMUs in Camellia

## 6.2 Rydalmere

### 6.2.1 Description

The eastern part of the neighbourhood of Rydalmere consists predominantly of low-rise, detached residential housing, with a significant proportion of housing stock owned and managed by Land and Housing Corporation. The western part of the neighbourhood consists of a mixture of small- and medium-sized light industrial and commercial development, earmarked as an important industrial employment precinct by the Greater Sydney Commission.

The project site encompasses the bridge abutment east of Park Road before extending eastward across Eric Primrose Reserve towards Rydalmere Wharf, then travelling north along John Street (Figure 6-11, Figure 6-12). The alignment then continues along a transformed multimodal South Street (Figure 6-13), prior to crossing Silverwater Road on a new bridge structure that introduces connectivity between neighbourhoods currently disconnected by the arterial road corridor. The project site includes area for a construction compound and bridge construction activities at Eric Primrose Reserve and a compound at Broadoaks Park (Figure 6-14).

In Rydalmere, the project site is within one PHALMS management unit which has been taken into account in the following assessments of significance (Figure 6-15).

- 3009 – Part of the Vineyard Estate subdivision, Park Road, Antoine and Jean Streets.



**Figure 6-11: The western end of Eric Primrose Reserve, demonstrating the environment in the area.**



**Figure 6-12: Seawall and wetlands adjacent to Rydalmere Wharf demonstrating the environment in the area.**



**Figure 6-13: John Steet/South Street intersection, Rydalmere, which is typical of the suburban streetscape that covers much of the suburb.**



**Figure 6-14: Broadoaks Park, Rydalmere. This area has never been developed and has high archaeological potential.**

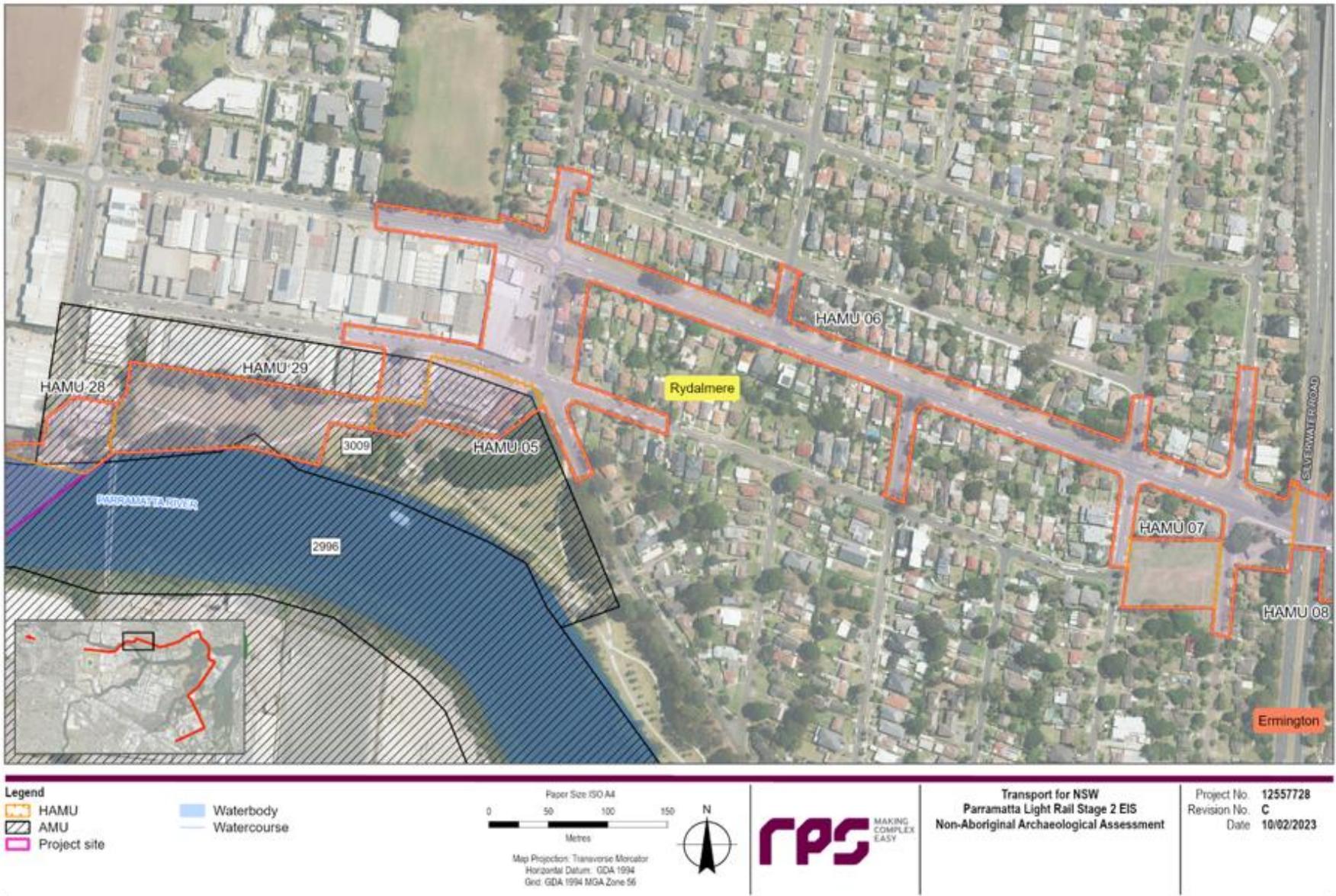


Figure 6-15: Relevant PHALMS units (AMUs) considered in this assessment in Rydalmere in relation to the HAMUs used in this assessment

## 6.2.2 Phases of occupation and significance within Rydalmere

Examination of the historical context and archaeological potential of Rydalmere indicate three phases of occupation within Rydalmere of which two may have a related archaeological resource with research potential of at least local significance. Each of these phases overlaps as change across the project site was not simultaneous and not all areas saw change or development related to all phases. The three phases are:

1. The Vineyard Estate (1791 – 1849) (Table 6-5)
2. Rural Subdivisions (1849 – 1945) (Table 6-6)
3. Post-war housing estate (1945 onwards) (Table 6-7).

Although not assessed as being significant at this stage, evidence of post-war housing is still discussed below as there is a likelihood that deposits, structures, and artefacts relating to this phase could be encountered during works. If these are substantially intact, the assessment of significance may change as per guidelines (Heritage Branch, 2009).

**Table 6-5: Assessment of significance within Rydalmere during phase 1**

<b>Phase 1: The Vineyard Estate (1791 – 1849)</b>	
<b>Criteria (a) Historical significance:</b>	Schaffer’s Vineyard Estate was an early attempt by a free settler to farm land along the Parramatta River. Specifically, the establishment of a vineyard at the farm is significant as one of the very first attempts to grow grapes in Australia. Waterhouse imported merino sheep to the colony which he presumably kept on the estate. Hannibal Macarthur expanded the estate and was a well-known member of a prominent colonial family.
<b>Criteria (b) Historical association significance:</b>	All three of the early owners of the Vineyard Estate were significant figures in the early colony. Phillip Schaffer was one of the first non-military free settlers in the colony and had pioneering farming success on the estate. Henry Waterhouse used the Estate to house the first merino sheep in the colony. Hannibal Macarthur was a politician and key figure in the foundation of the wool industry.
<b>Criteria (c) Aesthetic/Technical significance:</b>	There is no anticipated aesthetic significance. Any evidence of the farming practices undertaken would be technologically significant. This may be direct evidence such as tools and implements or indirect evidence such as plough marks and fence alignments.
<b>Criteria (e) Research potential:</b>	Any evidence of cultivation or pastoralism would have high research potential and could provide novel data for examination of early farming practices and colonial responses to a different environment. Food production was a key goal of the early colony and evidence of the types of foods produced may be critical in enhancing the understanding of the development of farming. This may include evidence of methods and techniques used as well as species not mentioned in the historical record. There is also the potential to examine soil chemistry to discuss nutrient levels which can provide indications of yields and evidence of manuring. Collectively this all can contribute to wider questions related to the development of the agricultural economy. Luxury goods, including tobacco and wine, whilst non-essential, were also key components of the economic systems of the early colony and their production is a critical but often overlooked aspect. The opportunity to examine the earliest viticulture in particular is potentially significant as it grew to be an important national industry.  Evidence of Shepherd’s Wharf such as its form, alterations to its form and the kinds of technology used, has the potential to provide novel data regarding riverine trade, a key component of the 18th and 19th century economies as well as the technology used in wharf construction.  This assessment covers a 10 kilometre corridor and includes some of the earliest cultivated land in Australia. This includes both successful and unsuccessful farms and areas that are regarded today as pioneering in their respective industries. Likewise it includes large Estates and smaller scale enterprises. The ability to undertake a largescale cross-site comparison of early farming along the Parramatta

**Phase 1: The Vineyard Estate (1791 – 1849)**

River is unprecedented and the research potential of each farm is enhanced by its ability to contribute to the greater whole.

**Criteria (f) Rarity:** Evidence of surviving early farming practices is rare archaeologically. Partially this stems from later development but also the transitory nature of the evidence with features such as plough lines being seasonally re-dug. Other sites in Parramatta (e.g. 3 Parramatta Square) show evidence of hoe marks and plough lines however these relate to smaller-scale enterprises.

The rarity of this site specifically also comes from the potential farming related deposits that may demonstrate the specific breadth of crops and plants grown, animals husbanded, and the technologies employed by Schaffer, Waterhouse and Hannibal Macarthur in the 18th and 19th century. This includes the approach taken to early viticulture which to date has largely only been examined through the historical record (Read 2015). This provides the possibility to examine three different approaches to farming across the first decades of the colony and the degree to which it was successful. It is also rare to have the possibility to examine numerous different early farming sites within the same project and to have the opportunity to undertake cross site comparison. Wharves that date from the first half of the 19th century are rare and any evidence of Shepherd’s Wharf could provide insightful evidence of both maritime technology and riverine economies.

**Statement of Significance**

The Vineyard Estate was the location of many early farming innovations including viticulture and sheep herding. Substantially intact archaeological evidence of multiple facets of early farming or viticulture would be of **State** significance. This could include archaeological features, geochemical data, animal and plant remains, and artefacts. Schaffer, Waterhouse, and Macarthur are all important figures in the early development of the colony and any evidence of their use of the land would also be of historical significance at the **State** level. The opportunity to archaeologically examine early farming is increasingly rare and this contributes to the sites **State** significance.

**Table 6-6: Assessment of significance within Rydalmere during phase 2**

**Phase 2: Rural Subdivisions (1849–1945)**

**Criteria** Evidence of occupation relating to this phase does not meet the threshold of significance for any of the established criteria.

**Statement of Significance**

Despite attempts to subdivide and sell the land in the late 19th century it appears the land within the project site remained semi-rural and no criteria of significance have been identified for this period.

**Table 6-7: Assessment of significance within Rydalmere during phase 3**

**Phase 3: Post-war housing estate (1945 onwards)**

**Criteria (a) Historical significance:** Following WW2, the need for housing for immigrant communities and returning soldiers created a boom period in house building with Rydalmere one of the suburbs that saw large residential growth. This growth was set against changing attitudes to architecture and occurred alongside shortages in traditional building materials leading to innovation

**Criteria (d) Social/Cultural significance:** Any evidence of the development of local post-war housing may be of importance to the present community of Rydalmere.

**Criteria (e) Research potential:** Evidence of post-war living conditions and the types of innovative and localised building methods and materials used may have research potential however this information is likely to be better sought through examinations of the extant structures and examination of historical records. Archaeological excavation is not likely to produce significant new data.

**Criteria (g) Representativeness:** Rydalmere is one of many post-war residential suburbs, as such any evidence of this period is likely to be highly representative of the period and type of site.

**Statement of Significance**

The social and cultural shifts that occurred in Australia after WW2 included changes in perceptions of housing and community, and evidence of this shift is of significance. Archaeological resources relating to this phase are unlikely to contribute to this significance though and are also unlikely to have any recognisable research potential. The archaeological resource therefore does not meet the threshold for local significance.

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### 6.2.3 HAMUs within Rydalmere

The following HAMUs have been identified in this suburb (see Figure 6-16):

- HAMU 28 – Park Road
- HAMU 29 – Western Eric Primrose Reserve
- HAMU 05 – Rydalmere Wharf and Park
- HAMU 06 – John Street, South Street, Antoine Street & Fallon Street
- HAMU 07 – Broadoaks Park.

Based on the analysis of potential and significance the following summary assessment is provided for each HAMU. Each HAMU has also been given a management rating that provides an indication of the appropriate mitigation measures. These are shown in Figure 6-22.

The area of Parramatta River between Camellia and Rydalmere is assessed as MAMU 01 in Section 6.8.2.

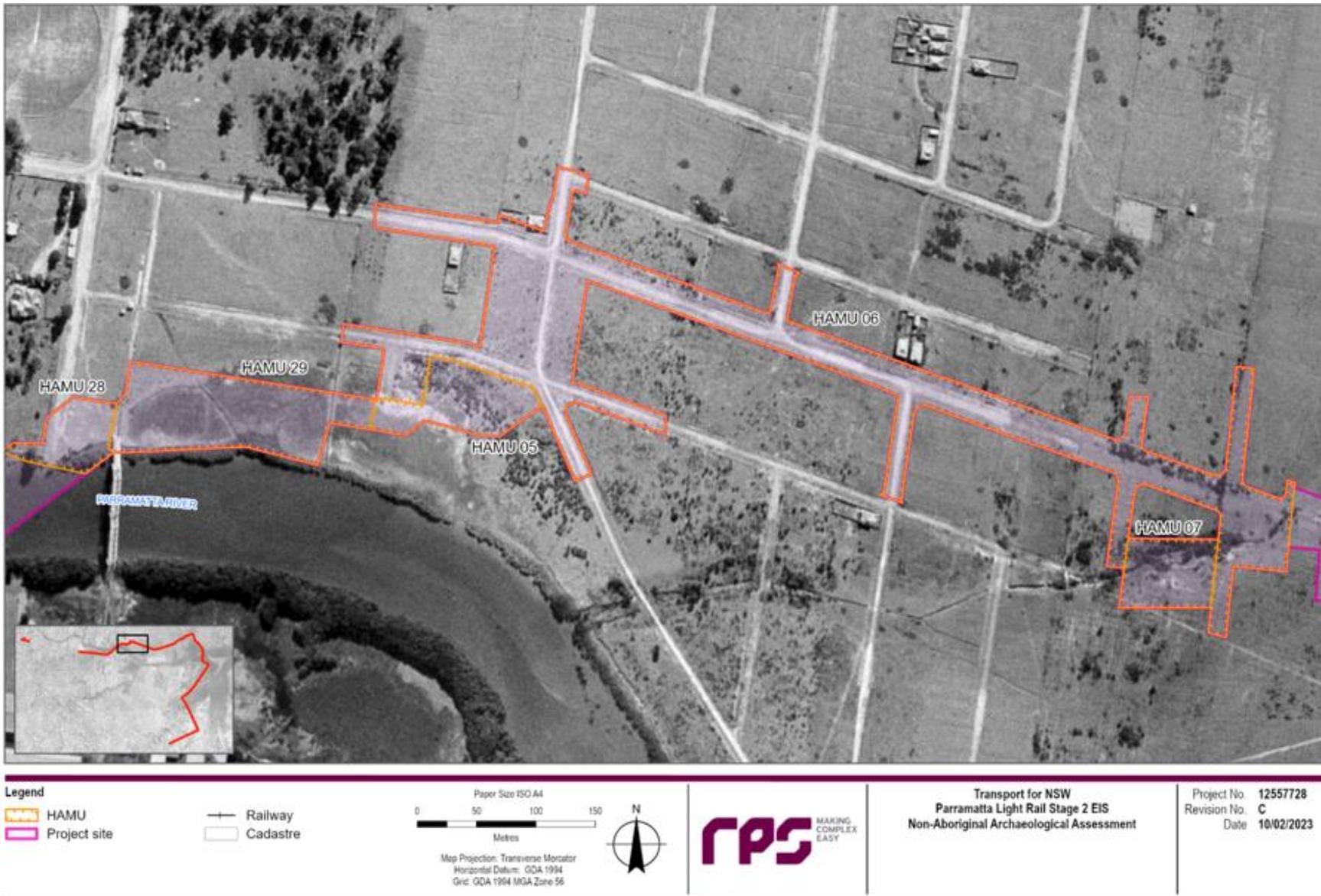


Figure 6-16: HAMUs and MAMU located within Rydalmere on the 1943 aerial photograph showing development at that time



HAMU 28	Park Road	Rydalmere		
Listings	PHALMS 3009 (see Figure 6-5)			
Description of site	HAMU 28 is an approximate 'L' shaped 60-metre-long, 100-metre wide, parcel of land on the north bank of the Parramatta River. It includes all of 3 Park Road, the southern terminus of Park Road and a section of the river foreshore west of Park Road.			
Analysis of historic plans and aerials	<p>The wharf first appears on the 1844 Brownrigg plan although no further development is shown and the 1890 Field of Mars Parish map shows Rydalmere wharf (Shepherds Wharf) at the end of Park Road (then named Wharf Road).</p> <p>The remnants of the wharf are visible on the 1943 aerial photograph. By 1855 a rectangular structure has been built in the north of the HAMU which is likely the extant factory building. The remnant wharf structure is visible in the 1971 aerial at which time a second structure had been built in the south of the HAMU. By 1986 the end of Park Road has been extended to its present extent appearing to encapsulate and bury any wharf structure. The southern structure was removed c.2012 to make way for the Parramatta Valley Cycleway.</p>			
Phases of occupation & nature of the resource	<p>One phases of occupation have been identified for HAMU 28</p> <p><b>1 –The Vineyard Estate (1791-1849)</b></p> <p>Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils on the northern side.</p> <p>The proximity of the riverbank means evidence of fishing, boating and other riverine activities may be present. Evidence of the original wharf structure is unlikely given large scale reclamation work that was undertaken to shore up the end of Park Road.</p>			
Impact from current buildings	The buildings on the eastern half of the HAMU are likely to have had a major impact on the archaeological resource. The northern (extant) building is especially likely to have had an impact as it is a well-constructed light industrial unit with probable extensive foundations. The construction of the cycleway and previous southern structure are also like to have had a substantial impact.			
Likelihood of research potential	<p><b>1 –The Vineyard Estate (1791-1849)</b></p> <p>The HAMU is on a peripheral part of the Vineyard Estate and has various later impacts. This is likely to have removed, and in some instances contaminated what transient resource was present in the first place. Some more intact pockets of archaeological evidence may survive in some locations. Given the disparate and small nature of the potential resource there is a <b>low</b> likelihood of research potential for this phase.</p>			
Archaeological potential	Early farming in this area is likely to have only left a transient mark on the landscape. This HAMU was primarily used as a road and wharf area and so it is unlikely any substantial farming took place there. Potential evidence of earlier road surfaces may remain below the present Park Road but the potential for evidence of wharf structures is considered highly unlikely as the extensive remodelling of the riverbank will have had a severe impact. It is therefore considered to have <b>low</b> potential for a resource related to The Vineyard Estate.			
Summary	Phase	Significance	Potential	MR
	1 –The Vineyard Estate (1791-1849)	State	Low	1

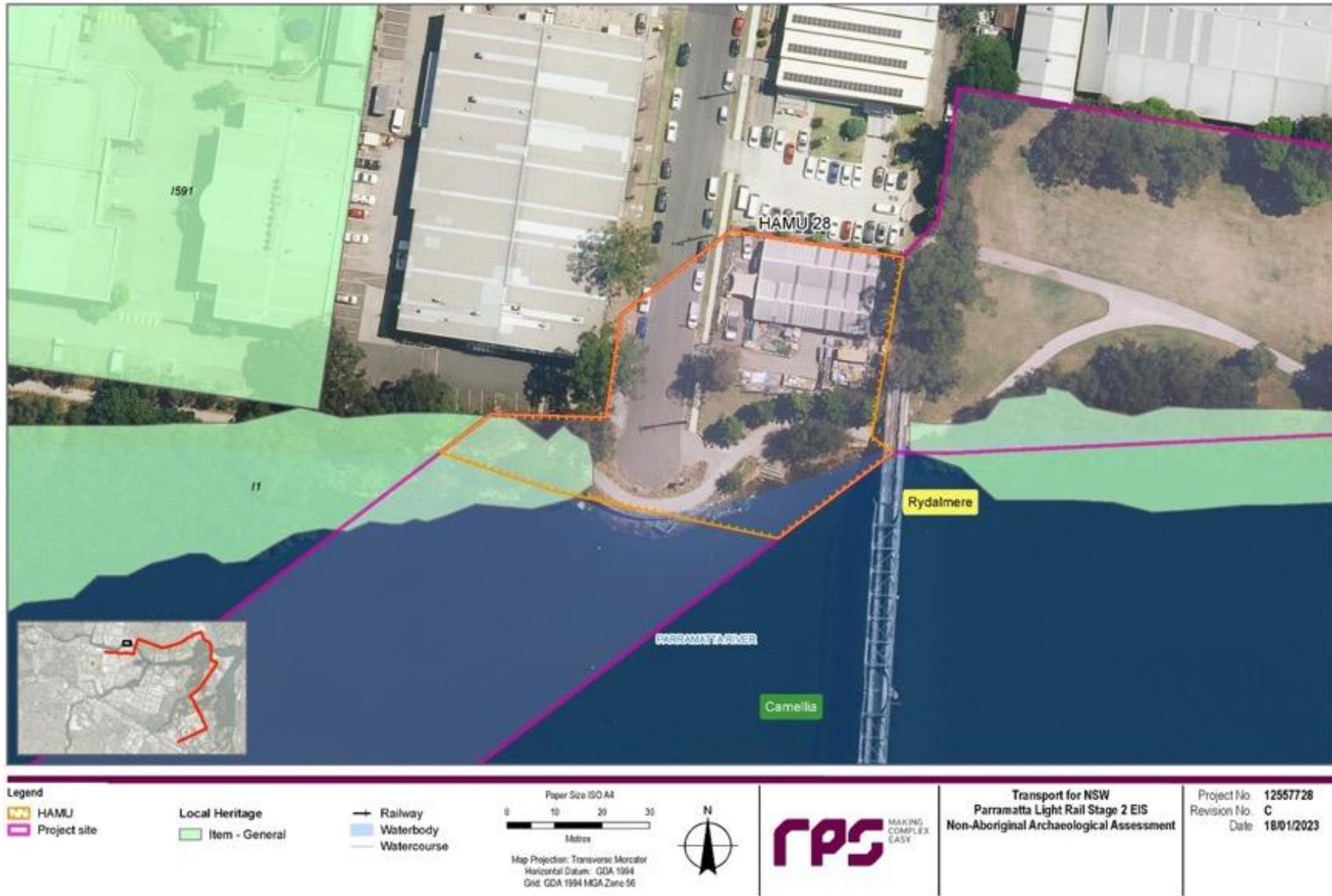


Figure 6-17: HAMU 28 showing location and nature of present environment, all adjacent heritage listed items area also shown

HAMU 29	Western Eric Primrose Reserve	Rydalmere		
Listings	PHALMS 3009 (see Figure 6-5)			
Description of site	HAMU 29 an approximately rectangular 215-metre-long, 75-metre wide area of parkland on the northern bank of the Parramatta River and includes the riverbank which is presently shored with a sandstone wall.			
Analysis of historic plans and aerials	<p>No relevant evidence of activity on historical plans has been found.</p> <p>The 1943 aerial shows two north-south paths or vehicle tracks running across the HAMU, one from the base of the footbridge, and the other from the shore around 180 metres to the east. The area remains undeveloped but is shown as being cleared and possibly levelled by 1971, and a retaining wall is present along the river by 1986.</p>			
Phases of occupation & nature of the resource	<p>Two phases of occupation have been identified for HAMU 05</p> <p><b>1 –The Vineyard Estate (1791-1849)</b>                      Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.                      The proximity of the riverbank means evidence of fishing, boating and other riverine activities may be present.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b>                      Evidence relating to this phase in this HAMU could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses.</p>			
Impact from current buildings	<p>Most of the HAMU is currently open parkland that has been landscaped to include a meandering east to west pathway and various trees including an orchard style arrangement at the eastern end. There is a small children’s playground in the northeast corner of the HAMU close to Jean Street.</p> <p>It is difficult to ascertain the impact of landscaping as it has the dual possibility of removing archaeological resources but also burying them which inadvertently aids in their preservation. The construction of the pathway, playground and drains are likely to have had only a small localised impact.</p>			
Likelihood of research potential	<p><b>1 –The Vineyard Estate (1791-1849)</b>                      The HAMU is in the core of the Vineyard Estate and there appears to have only been minimal later impacts. This presents the possibility of relatively intact archaeological resource relating to early farming and the Vineyard Estate. If this is the case then novel evidence, useful in addressing a variety of research questions may be recoverable from this HAMU. Based on the lack of impact and value of potential evidence there is <b>high</b> likelihood of research potential for this phase.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b>                      Given the breadth of historical data on post-war housing, archaeological resources dating to this phase are highly unlikely to contribute any novel data to addressing research questions, hence there is <b>very low</b> likelihood of research potential for this phase.</p>			
Archaeological potential	<p>Evidence of farming and viticulture would have left a very transient mark on the landscape which may be difficult to identify archaeologically. The lack of development within this HAMU does mean though that there is a reasonable chance that even a small resource may be present. Considering this the HAMU is assessed as having medium potential as a resource related to The Vineyard Estate.</p> <p>The potential for evidence relating to the construction development of post-war housing is considered low in this HAMU, and the evidence is highly unlikely to meet the threshold of local significance. A small number of structures identified on the 1950s aerial photograph in the south-west corner may relate to post-war housing.</p>			
Summary	Phase	Significance	Potential	MR
	1 –The Vineyard Estate (1791-1849)	State	Medium	2
	3 – Postwar housing estate (1945 onwards)	None	Low	N/A

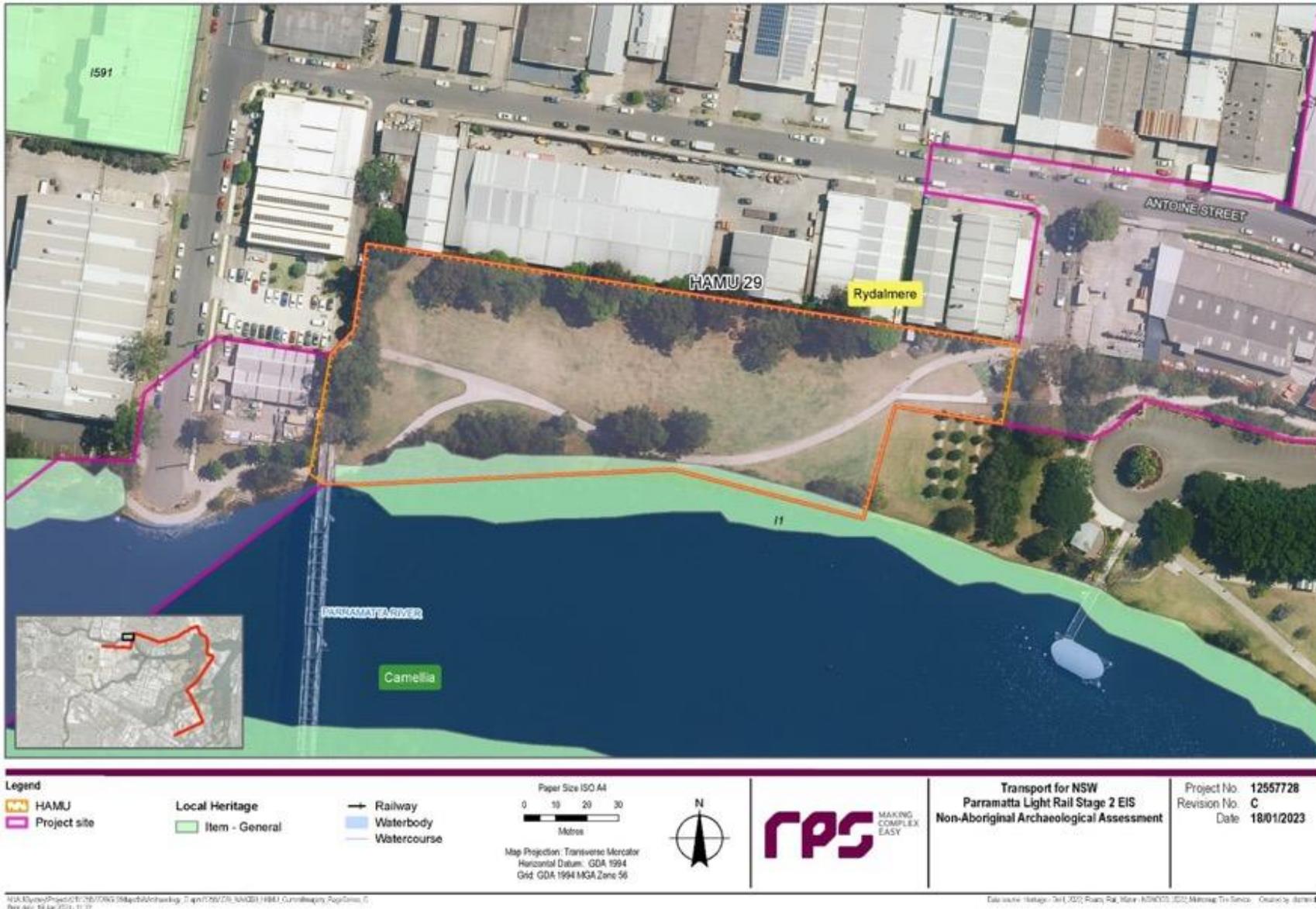


Figure 6-18: HAMU 29 showing location and nature of present environment, all adjacent heritage listed items area also shown

HAMU 05	Rydalmere Wharf and Park	Rydalmere		
<b>Listings</b>	PHALMS 3009 (Figure 6-5)			
<b>Description of site</b>	HAMU 05 is an irregularly shaped 140-metre-long, 65-metre-wide area of parkland on the northern side of the Rydalmere Wharf Carpark. It also includes 36 to 62 Antoine Street (Figure 6-19).			
<b>Analysis of historic plans and aerials</b>	<p>A sketch plan of Rydalmere (Sheet 4 n.d. (post 1881)) indicates that HAMU 05 is still undeveloped at this time, with it being labelled as 'salt swamp'.</p> <p>The 1943 aerial photograph shows no construction within the project site prior to this time. By 1955 a shed had been built at 62 Antoine Street, but this is smaller than the present building. Between 1965 and 1971 reclamation and shoring works had been undertaken along the riverbank to define it. By 1965 the large shed at 48 Antoine Street had been erected with the larger building at 62 Antoine Street being built between 1971 and 1986.</p>			
<b>Phases of occupation &amp; nature of the resource</b>	<p>Two phases of occupation have been identified for HAMU 05</p> <p><b>1 –The Vineyard Estate (1791-1849)</b> Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils. The proximity of the riverbank means evidence of fishing, boating and other riverine activities may be present.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b> Evidence relating to this phase in this HAMU could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses.</p>			
<b>Impact from current buildings</b>	Most of the HAMU is currently open parkland with a car park in the centre. Based on analysis of sites in the vicinity this may have had an impact to the top 600 millimetres of the archaeological resource. There are a few small buildings close to the riverbank at the south of the HAMU which likely have foundations that have also impacted the resource. Along Antoine Street more substantial construction has been undertaken with a large shed at 48 Antoine Street and smaller, but still substantial, building next to it at 62 Antoine Street. These buildings will have foundations that have likely impacted on the archaeological resource.			
<b>Likelihood of research potential</b>	<p><b>1 –The Vineyard Estate (1791-1849)</b> The HAMU is on a peripheral part of the Vineyard Estate and has various later impacts. This is likely to have removed, and in some instances contaminated what transient resource was present in the first place. Some more intact pockets of archaeological evidence may survive in some locations. Given the disparate and small nature of the potential resource there is a <b>low</b> likelihood of research potential for this phase.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b> Given the breadth of historical data on post-war housing, archaeological resources dating to this phase are highly unlikely to contribute any novel data to addressing research questions, hence there is <b>very low</b> likelihood of research potential for this phase.</p>			
<b>Archaeological potential</b>	<p>Early farming in this area is likely to have only left a transient mark on the landscape. This HAMU would have been of little use for farming as it is adjacent to the river and prone to flooding and erosion. A lack of evidence in the historical record cannot fully discount its use for farming however therefore it is considered to have <b>low</b> potential for a resource related to The Vineyard Estate.</p> <p>Although not assessed as being significant there is still the potential for a resource relating to the construction development of post-war housing but the likelihood of this is considered <b>low</b> in this HAMU. It is outside of any areas directly built upon and it appears largely unimproved until the 1960s by which time much of the construction in the area had been completed.</p>			
<b>Summary</b>	<b>Phase</b>	<b>Significance</b>	<b>Potential</b>	<b>MR</b>
	1 –The Vineyard Estate (1791-1849)	State	Low	1
	3 – Postwar housing estate (1945 onwards)	None	Low	N/A

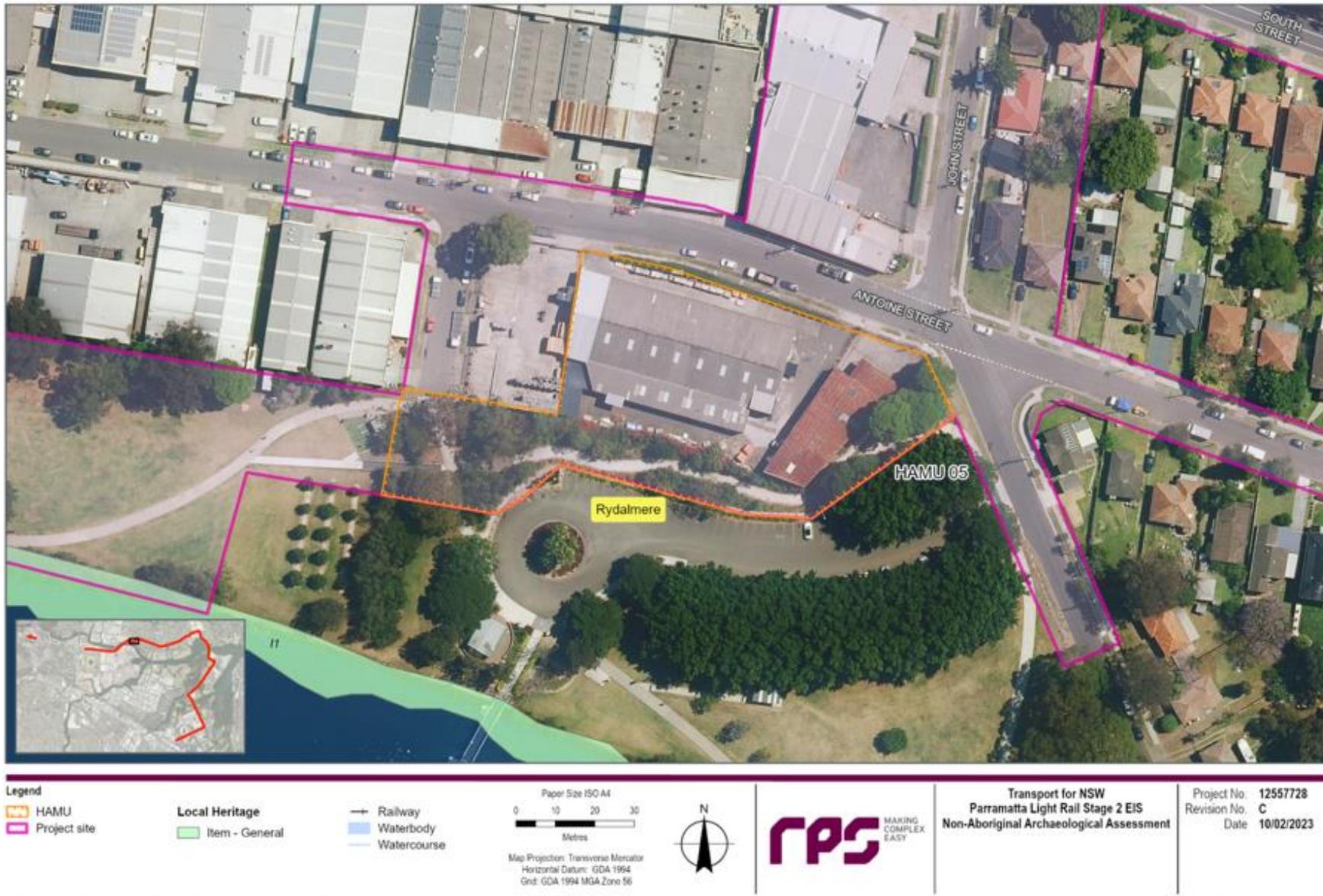


Figure 6-19: HAMU 05 showing location and nature of present environment

HAMU 06	John Street, South Street, Antoine Street & Fallon Street	Rydalmere		
<b>Listings</b>	None			
<b>Description of site</b>	HAMU 06 is a 750-metre-long area along South Street, a 170-metre-long area of John Street, a 220-metre-long stretch of Antoine Street and a 225-metre-long area of Fallon Street. It also includes the front portion of properties at 50 to 60 John Street, 47-49 Antoine Street, 98-100 South Street, and an area at 49 Fallon Street. Additionally, it includes small sections of the adjoining Jean Street, Patricia Street, Nowill Street, Dorothy Street, Primrose Avenue and Fallon Street (Figure 6-20).			
<b>Analysis of historic plans and aerials</b>	No historical plans that provide relevant detail to HAMU 06 have been located. The 1943 aerial photograph shows that the western half of South Street and John Street have been laid out by this time, but no construction has occurred within HAMU 06. By 1955 houses have been built along South Street, including at 50 to 60 John Street, although these are not the extant buildings which are constructed by 1965. Also, by this time the house at 49 Fallon Street has been built.			
<b>Phases of occupation &amp; nature of the resource</b>	<p><b>1 –The Vineyard Estate (1791-1849)</b> Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b> Evidence relating to this phase in this HAMU could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses.</p>			
<b>Impact from current buildings</b>	Most of the HAMU is currently suburban streets built during the post-war housing boom. These roads have been constructed with solid foundational road-bases and contain numerous services. 50 to 60 John Street has a series of large sheds that are likely to have foundations that have impacted the archaeological resource. Likewise, there is a house at 49 Fallon Street that had brick foundations.			
<b>Likelihood of research potential</b>	<p><b>1 –The Vineyard Estate (1791-1849)</b> Most of this HAMU has been subject to major 20th century impacts. This is likely to have removed, and in some instances contaminated what transient resource was present in the first place. Some more intact pockets of archaeological evidence may survive in some locations. Given the disparate and small nature of the potential resource there is a <b>low</b> likelihood of research potential for this phase.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b> Given the breadth of historical data on post-war housing, archaeological resources dating to this phase are highly unlikely to contribute any novel data to addressing research questions, hence there is <b>very low</b> likelihood of research potential for this phase.</p>			
<b>Archaeological potential</b>	Evidence of farming and viticulture would have left a very transient mark on the landscape and the construction of the present road would have had a major impact on any remaining evidence. It is therefore considered to have <b>low</b> potential for archaeological resource related to The Vineyard Estate. The potential for evidence relating to the construction development of post-war housing is also considered <b>low</b> in this HAMU as it is unlikely any evidence would be found within the roadway and those areas that away from the road. The area at 50 to 60 John Street was never used for housing and the area at 49 Fallon Street was developed until the 1960s. If archaeological deposits relating to this phase are found, they are unlikely to be significant.			
<b>Summary</b>	<b>Phase</b>	<b>Significance</b>	<b>Potential</b>	<b>MR</b>
	1 –The Vineyard Estate (1791-1849)	State	Low	1
	3 – Postwar housing estate (1945 onwards)	None	Low	N/A



Figure 6-20: HAMU 06 showing location and nature of present environment



HAMU 07	Broadoaks Park	Rydalmere		
<b>Listings</b>	None			
<b>Description of site</b>	HAMU 07 is an 83-metre-long, 55-metre-wide rectangular area between Primrose Avenue and Fallon Street currently in use as a public park (Figure 6-21).			
<b>Analysis of historic plans and aerials</b>	No historical plans that provide relevant detail to HAMU 07 have been located. The 1943 aerial shows that no construction has occurred within this HAMU by this time but does show a creek that runs through the HAMU from north-east to south-west. In 1955 there is a small cluster of irregularly laid out structures in the south-west corner of the HAMU. These buildings are cleared by 1965 and no other construction appears to have occurred within this HAMU.			
<b>Phases of occupation &amp; nature of the resource</b>	<p><b>1 –The Vineyard Estate (1791-1849)</b> Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b> Evidence relating to this phase in this HAMU could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses.</p>			
<b>Impact from current buildings</b>	There are no buildings currently within this HAMU.			
<b>Likelihood of research potential</b>	<p><b>1 –The Vineyard Estate (1791-1849)</b> This HAMU has remained undeveloped and so any archaeological resources relating to the Vineyard Estate may be fairly intact. These could provide novel data for examinations of a variety of research themes and be useful in addressing research questions. There is <b>high</b> likelihood of research potential for this phase.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b> Given the breadth of historical data on post-war housing, archaeological resources dating to this phase are highly unlikely to contribute any novel data to addressing research questions, hence there is <b>very low</b> likelihood of research potential for this phase.</p>			
<b>Archaeological potential</b>	<p>Evidence of farming and viticulture would have left a very transient mark on the landscape which may be difficult to identify archaeologically. The lack of development within this HAMU does mean though that there is a reasonable chance that even a small resource may be present. Considering this the HAMU is assessed as having <b>medium</b> potential as a resource related to The Vineyard Estate.</p> <p>The potential for evidence relating to the construction development of post-war housing is considered <b>low</b> in this HAMU, and the evidence is highly unlikely to meet the threshold of local significance. A small number of structures identified on the 1950s aerial photograph in the south-west corner may relate to post-war housing. Test excavation undertaken in 2022 identified a thin layer of 20th century building materials in the northwestern corner of the HAMU. This confirms the presence of an archaeological resource likely related to Phase 3. Possible evidence of landscape clearance, in the form of burnt out tree roots was found towards the centre of the HAMU. This may date from Phase 1 when the land was first cleared for farming, indicating that there is archaeological potential for evidence from the State significant phase of occupation at the site. A full summary of the test excavation results is in Section 8.3.</p>			
<b>Summary</b>	<b>Phase</b>	<b>Significance</b>	<b>Potential</b>	<b>MR</b>
	1 –The Vineyard Estate (1791-1849)	State	Medium	2
	3 – Post-war housing estate (1945 onwards)	None	Medium	N/A



Figure 6-21: HAMU 07 showing location and nature of present environment

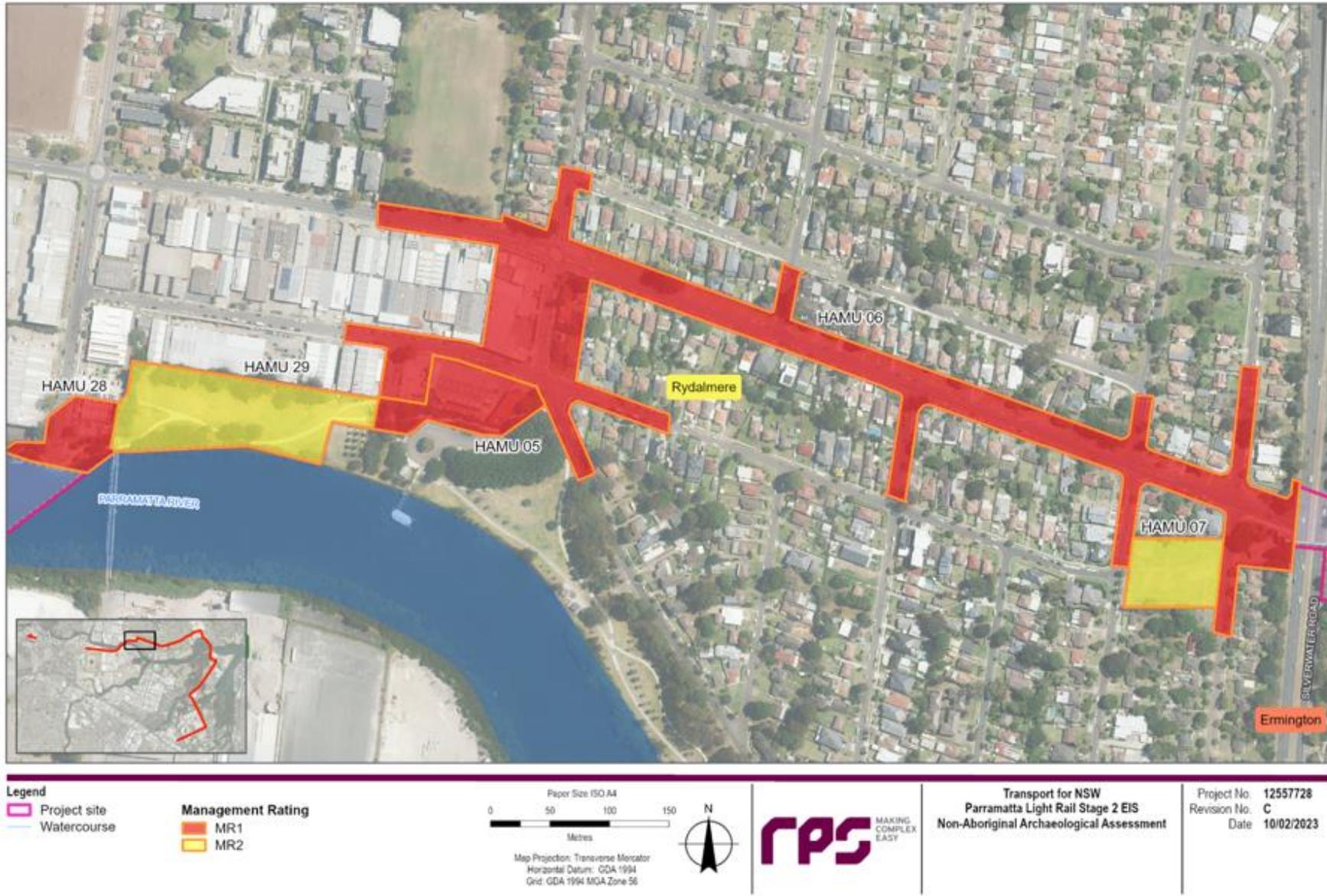


Figure 6-22: The MRs for HAMUs in Rydalmere

## 6.3 Ermington

### 6.3.1 Description

The neighbourhood of Ermington consists of predominantly of low-rise, detached residential housing, with a significant proportion of housing stock owned and managed by Land and Housing Corporation.

The project alignment lands within Ermington from the new bridge at Silverwater Road, before continuing through the utility easement at River Road and Hilder Road.

The alignment then runs through Ken Newman Park (Figure 6-23, Figure 6-24), providing an opportunity for the project to contribute to the place making potential of this neighbourhood park, before continuing on Boronia Street towards Melrose Park, transforming this street into a new multimodal neighbourhood spine (Figure 6-25, Figure 6-26).



Figure 6-23: Ken Newman Park, Ermington. The project site includes a large section of this park.



Figure 6-24: Ken Newman Park, Ermington. The park has never been developed and has archaeological potential.



Figure 6-25: Intersection of Boronia Street and Murdoch Street. An example of the typical suburban streetscape that covers much of the suburb.



Figure 6-26: Intersection of Atkins Road and Marguerette Street. An example of the typical suburban streetscape that covers much of the suburb.

### 6.3.2 Phases of occupation and significance within Ermington

Examination of the historical context of the project site within Ermington has identified three phases of occupation and use of the site of which two may have a related archaeological resource with research potential of at least local significance. Each of these phases overlaps substantially as change across the project site was not simultaneous. The three phases are:

1. Early Farming (1792–1871) (Table 6-8)
2. Swane Brothers Nursery (1919–1967) (Table 6-9)
3. Post-war housing estate (1945 onwards) (Table 6-10).

Although not assessed as being significant at this stage, evidence of post-war housing is still discussed below as there is a likelihood that deposits, structures, and artefacts relating to this phase could be encountered during works. If these are substantially intact, the assessment of significance may change as per guidelines (Heritage Branch, 2009).

**Table 6-8: Assessment of significance within Ermington during phase 1**

<b>Phase 1: Early Farming (1792–1871)</b>	
Criteria (a) Historical significance:	The earliest grants along the Parramatta River were to establish farms with various families establishing successful small farms in the area. This is part of the general clearance of land in the late 18th century as British ideals and concepts of ownership, control and food production became imposed on the Australian landscape.
Criteria (c) Aesthetic/Technical significance:	There is no anticipated aesthetic significance. Any evidence of the farming practices undertaken would be technologically significant. This may be direct evidence such as tools and implements or indirect evidence such as plough marks and fence alignments.
Criteria (e) Research potential	Any evidence of cultivation or pastoralism would have high research potential and could provide novel data for examinations of early farming practices and colonial responses to a different environment. Food production was a key goal of the early colony and evidence of the types of foods produced may be critical in enhancing the understanding of the development of farming. This may include evidence of methods and techniques used as well as species not mentioned in the historical record. There is also the potential to examine soil chemistry to discuss nutrient levels which can provide indications of yields and evidence of manuring. Collectively this all can contribute to wider questions related to the development of the agricultural economy. Unlike elsewhere in the project, the land here never incorporated into large Estates in the late 18th and early 19th centuries. This provides the chance to examine difference kinds of early farming and to examine the approaches taken by different types of people in the early colony (convict, military, emancipist, free settlers etc.) his assessment covers a 10 kilometre corridor and includes some of the earliest cultivated land in Australia. This includes both successful and unsuccessful farms and areas that are regarded today as pioneering in their respective industries. Likewise it includes large Estates and smaller scale enterprises. The ability to undertake a largescale cross-site comparison of early farming along the Parramatta River is unprecedented and the research potential of each farm is enhanced by its ability to contribute to the greater whole.
Criteria (f) Rarity:	Evidence of early farming practices is rare. Partially this stems from later development but also the transitory nature of the evidence with features such as plough lines being seasonally re-dug. Other sites in Parramatta (e.g. 3 Parramatta Square) show evidence of hoe marks and plough lines however these relate to smaller-scale enterprises. The rarity of the site also comes from the potential farming related deposits that may demonstrate the specific breadth of crops and plants grown, animals husbanded, and the technologies employed by different small farmers in the 18th and 19th century. This provides the possibility to examine different approaches to

**Phase 1: Early Farming (1792–1871)**

farming, and the degree to which it was successful. Unlike other large Estate farms, a different approach may have been taken on smaller grants. It is also rare to have the possibility to examine numerous different early farming sites within the same project and to have the opportunity to undertake cross site comparison.

Statement of Significance

Food production was one of the most important activities in the early colony and vital for its survival. It eventually grew to be a key component of the national economy and engrained in the national identity therefore substantially intact archaeological evidence of multiple facets of pioneering attempts at farming in this area would be of **State** significance. This could include archaeological features, geochemical data, animal and plant remains, and artefacts. The capability of the area to contribute novel data relating to smaller scale farming operations, as opposed to large scale estates, affirms this assessment, and may provide varied and unique evidence.

**Table 6-9: Assessment of significance within Ermington during phase 2**

**Phase 2: Swane Brothers Nursery (1919–1967)**

Criteria (a) Historical significance:	The Swane Brothers Nursery was known as an innovative horticultural business in the 1920s that helped to pioneer and popularise new technologies including the use of motor vehicles, motorised rotary hoes and the technique of ‘growing-on’ plants in large containers.
Criteria (c) Aesthetic/Technical significance:	As a business known for implementing new technologies, any evidence of the methods used in the nursery would have significance. This may include implements and tools as well as more substantial features such as greenhouses.
Criteria (e) Research potential	The research potential of archaeological resources related to the Swane Brothers Nursery is low as there is unlikely to be much evidence remaining. The nursery sites itself has been heavily developed and it is likely much of the growing occurred in pots and other above ground features that may not have left a mark archaeologically. That said, if the ground was utilised for growing and there is at least some degree of preservation the archaeological resource may have the potential to contain physical evidence of the types of techniques and methods used in the nursery and archaeobotanical evidence including seeds, blubs and pollens that could inform of the types of plants grown. Even if the ground was not used for growing there is the possibility that micro-botanical evidence may be present as it may move around an area. As with other luxury goods, flowers can be useful in examining complex economic systems. Evidence of the technologies used at the nursery could also have research potential
Criteria (f) Rarity:	Flower nurseries cannot be considered as rare themselves. That said, few have been investigated archaeologically and so the possibility to excavate and record a 20th century nursery could be considered rare. Knowledge of nursery practices including techniques and ranges of plants can be gained from historical sources such as trade catalogues. This data is always intrinsically hampered by bias however and archaeological data that may provide detail on non-listed plants, experimental growing methods, and the general social and economic wealth of the nursery. Noting that they high level of disturbance makes the likelihood of this kind of archaeological data being present, very low.

Statement of Significance

Archaeological evidence of the innovations in new technologies and approaches utilised would have a degree of research potential and technological significance which contribute to the significance of the site. Given the poor condition of the site though, it is highly unlikely that much evidence remains. That said, the Swane Brothers Nursery was a successful and innovative business in the local area that operated throughout a period of economic instability and is of **local** significance.

**Table 6-10: Assessment of significance within Ermington during phase 3**

**Phase 3: Post-war housing estate (1945 onwards)**

<b>Criteria (a) Historical significance:</b>	Following WW2, the need for housing for immigrant communities and returning soldiers created a boom period in house building with Ermington one of the suburbs that saw large residential growth. This growth was set against changing attitudes to architecture and occurred alongside shortages in traditional building materials leading to innovation
<b>Criteria (d) Social/Cultural significance:</b>	Any evidence of the development of local post-war housing may be of importance to the present community of Ermington.
<b>Criteria (e) Research potential:</b>	Evidence of post-war living conditions and the types of innovative and localised building methods and materials used may have research potential however this information is likely to be better sought through examinations of the extant structures and examination of historical records. Archaeological excavation is not likely to produce significant new data.
<b>Criteria (g) Representativeness:</b>	Ermington is one of many post-war residential suburbs, as such any evidence of this period is likely to be highly representative of the period and type of site.
<b>Statement of Significance</b>	
The social and cultural shifts that occurred in Australia after WW2 included changes in perceptions of housing and community and evidence of this shift is of significance. Archaeological resources relating to this phase area unlikely to contribute to this significance though and are also unlikely to have any recognisable research potential. The archaeological resource therefore does not meet the threshold for local significance.	

### 6.3.3 HAMUs within Ermington

The following HAMUs have been identified in this suburb (see Figure 6-27):

- HAMU 08 – South Street & River Road
- HAMU 09 – Corridor between River Road & Hilder Road
- HAMU 10 – Tristram Street, Hilder Road & Heysen Avenue
- HAMU 11 – Ken Newman Park
- HAMU 12 – Boronia Street & surrounds
- HAMU 13 – Atkins Road, Hughes Avenue, & Hope Street block.

Based on the analysis of potential and significance the following summary assessment is provided for each HAMU. Each HAMU has also been given a management rating that provides an indication of the appropriate mitigation measures. These are shown in Figure 6-34.

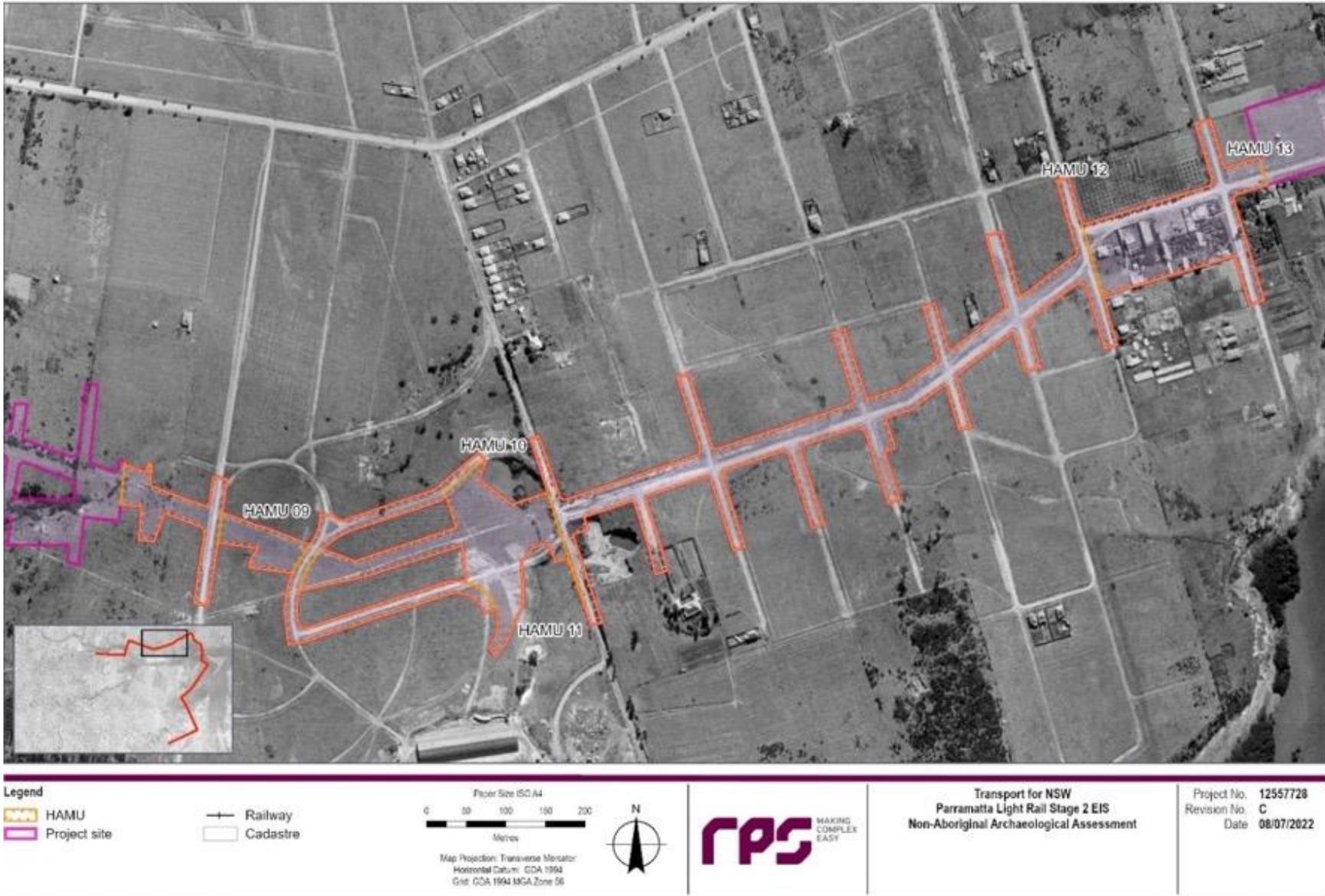


Figure 6-27: HAMUs located within Ermington on the 1943 aerial photograph showing development at that time



HAMU 08	South Street & River Road	Ermington		
Listings	None			
Description of site	HAMU 08 is at the intersection between South Street and River Road. It consists of a 100-metre-long, 113-metre-wide area along South Street, a 159-metre-long section of River Road and a small portion of the adjacent Silverwater Road. It also includes 172 South Street (Figure 6-28).			
Analysis of historic plans and aerials	No historical plans that provide relevant detail to HAMU 08 have been located. The 1943 aerial shows no construction within the project site prior to this time. By 1955 River Road is in place but appears to be a dirt track at this time. By 1965 the current road alignment is complete with construction along it, including at 172 South Street.			
Phases of occupation & nature of the resource	<p>1 – Early Farming (1792–1871) Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>3 – Post-war housing estate (1945 onwards) Evidence relating to this phase in this HAMU could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses.</p>			
Impact from current buildings	Most of the HAMU is currently suburban streets built during the post-war house boom. These roads have been constructed with solid foundational road-bases and contain numerous services. There is a house at 172 South Street that has likely had an impact.			
Likelihood of research potential	<p><b>1 –Early Farming (1792-1871)</b> The HAMU is on land that was used for farming during the first decades of the colony. It was not part of a large estate and historical records indicated that farming was only partially successful here. There have been extensive later impacts that have likely contaminated or destroyed much of the archaeological resource although it may survive better in pockets especially in gardens of modern houses and along grass verges adjacent to roads. Given the disparate and small nature of the potential resource there is a <b>low</b> likelihood of research potential for this phase.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b> Given the breadth of historical data on post-war housing, archaeological resources dating to this phase are highly unlikely to contribute any novel data to addressing research questions, hence there is <b>very low</b> likelihood of research potential for this phase.</p>			
Archaeological potential	<p>Early farming in this area is likely to have only left a transient mark on the landscape and subsequent activities including the roadway is likely to have removed any remaining evidence, hence the potential for evidence for early farming is <b>low</b> in this HAMU.</p> <p>The potential for evidence relating to the construction development of post-war housing is considered <b>low</b> in this HAMU as it is largely a roadway and the only construction occurred later. Evidence of post-war housing is not assessed as meeting the threshold for local significance.</p>			
Summary	Phase	Significance	Potential	MR
	1 – Early Farming (1792–1871)	State	Low	1
	3 – Post-war housing estate (1945 onwards)	None	Low	N/A



Figure 6-28: HAMU 08 showing location and nature of present environment

HAMU 09	Corridor between River Road & Hilder Road	Ermington		
Listings	None			
Description of site	HAMU 09 is a rectangular shaped 120-metre-long, 35-metre-wide area of grassland between River Road and Hilder Road and includes 35 River Road, and 30 and 32 Hilder Road (Figure 6-29).			
Analysis of historical plans and aerials	No historical plans that provide relevant detail to HAMU 09 have been located. The 1943 aerial photograph shows no construction within the project site prior to this time. By 1955 the corridor is still cleared with houses at 35 River Road and 30 and 32 Hilder Road prior to 1965. The house at 30 Hilder Road was demolished and replaced by the present sheds in the 21st century.			
Phases of occupation & nature of the resource	<p>1 – Early Farming (1792–1871) Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>3 – Post-war housing estate (1945 onwards) Evidence relating to this phase in the HAMU could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses.</p>			
Impact from current buildings	Most of the HAMU is currently open grassland however substantial Sydney Water watermains run through this corridor which have likely had a large impact. There are two rectangular buildings on 32 Hilder Road which likely have foundations that would have had an impact.			
Likelihood of research potential	<p><b>1 –Early Farming (1792-1871)</b> The HAMU is on land that was used for farming during the first decades of the colony. It was not part of a large estate and historical records indicated that farming was only partially successful here. There have been extensive later impacts that have likely contaminated or destroyed much of the archaeological resource although it may survive better in pockets especially in gardens of modern houses and along grass verges adjacent to roads. Given the disparate and small nature of the potential resource there is a <b>low</b> likelihood of research potential for this phase.</p> <p><b>3 – Post-war housing estate (1945) onwards</b> Given the breadth of historical data on post-war housing, archaeological resources dating to this phase are highly unlikely to contribute any novel data to addressing research questions, hence there is <b>very low</b> likelihood of research potential for this phase.</p>			
Archaeological potential	<p>Early farming in this area is likely to have only left a transient mark on the landscape and subsequent activities, including the watermains, are likely to have removed much of any remaining evidence, hence the potential for evidence for early farming is <b>low</b> in this HAMU.</p> <p>The potential for evidence relating to the construction development of post-war housing is considered <b>low</b> in this HAMU as no structures were built in the area and the construction of the watermains likely disturbed what evidence may have been present. Evidence of post-war housing is not assessed as meeting the threshold for local significance.</p>			
Summary	Phase	Significance	Potential	MR
	1 – Early Farming (1792–1871)	State	Low	1
	3 – Post-war housing estate (1945 onwards)	None	Low	N/A



Figure 6-29: HAMU 09 showing location and nature of present environment

HAMU 10	Tristram Street, Hilder Road & Heysen Avenue	Ermington		
Listings	None			
Description of site	HAMU 10 is a curved rectangular shaped 260-metres-long and 30-metres-wide along Tristram Street from 32 Tristram Street to 16 Tristram Street (Figure 6-30).			
Analysis of historical plans and aerials	No historical plans that provide relevant detail to HAMU 10 have been located. The 1943 aerial shows that Tristram Street had been laid out and constructed by this time.			
Phases of occupation & nature of the resource	<p>1 – Early Farming (1792–1871) Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>3 – Post-war housing estate (1945 onwards) Evidence relating to this phase in this HAMU could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses.</p>			
Impact from current buildings	Most of the HAMU is currently a suburban street built during the post-war house boom. This road may have been constructed with solid foundational road-bases and may contain numerous services.			
Likelihood of research potential	<p><b>1 –Early Farming (1792-1871)</b> The HAMU is on land that was used for farming during the first decades of the colony. It was not part of a large estate and historical records indicated that farming was only partially successful here. There have been extensive later impacts that have likely contaminated or destroyed much of the archaeological resource although it may survive better in pockets especially in gardens of modern houses and along grass verges adjacent to roads. Given the disparate and small nature of the potential resource there is a <b>low</b> likelihood of research potential for this phase.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b> Given the breadth of historical data on post-war housing, archaeological resources dating to this phase are highly unlikely to contribute any novel data to addressing research questions, hence there is <b>very low</b> likelihood of research potential for this phase.</p>			
Archaeological potential	<p>Early farming in this area is likely to have only left a transient mark on the landscape and subsequent activities including the roadway is likely to have removed much of the remaining evidence, hence the potential for evidence for early farming is <b>low</b> in this HAMU.</p> <p>The potential for evidence relating to the construction development of post-war housing is considered low in this HAMU as it is largely a roadway and the only construction occurred later. Evidence of post-war housing is not assessed as meeting the threshold for local significance however.</p>			
Summary	Phase	Significance	Potential	MR
	1 – Early Farming (1792–1871)	State	Low	1
	3 – Post-war housing estate (1945 onwards)	None	Low	N/A

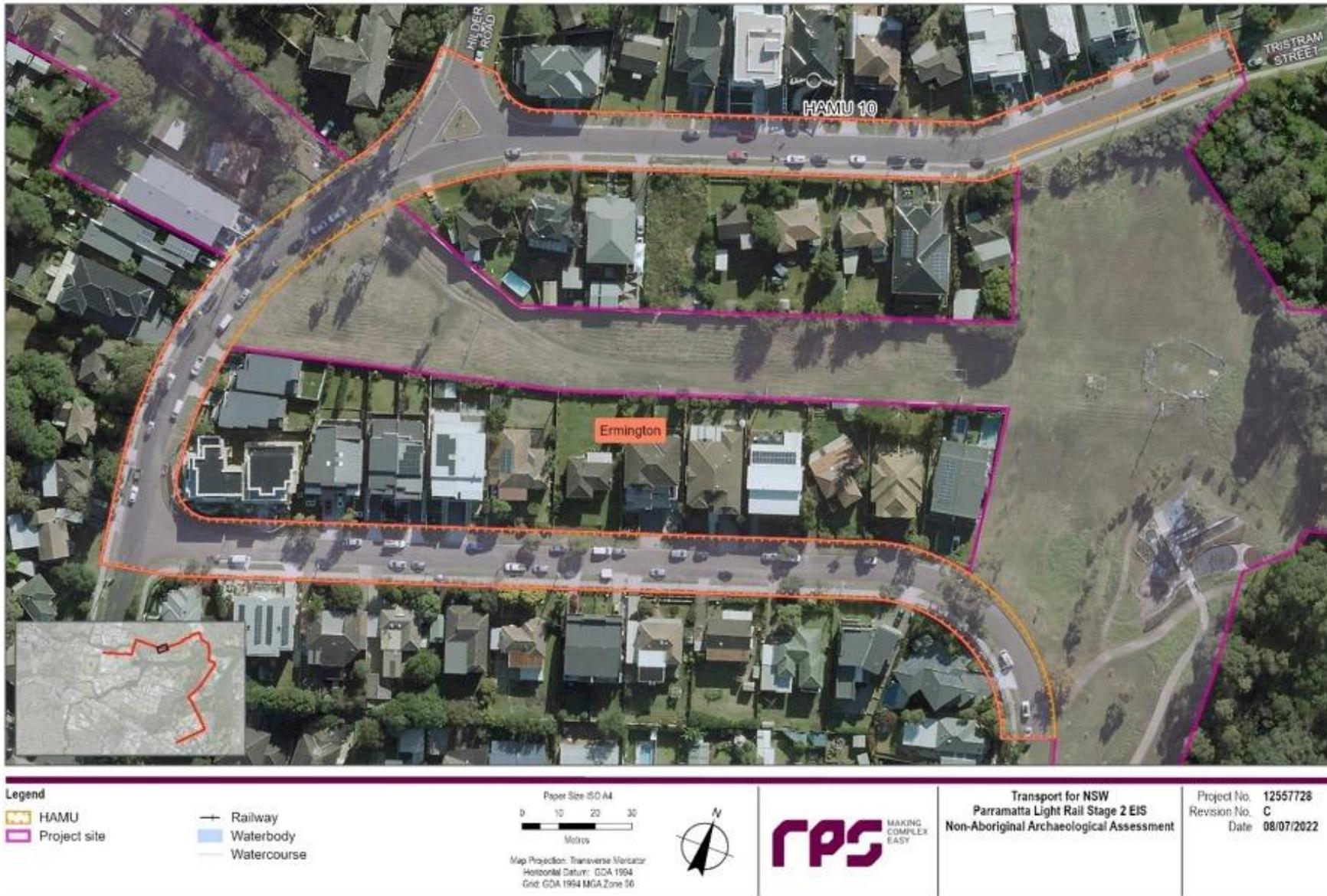


Figure 6-30: HAMU 10 showing location and nature of present environment

HAMU 11	Ken Newman Park	Ermington		
Listings	None			
Description of site	HAMU 11 is an irregular cross shape in the centre of Ken Newman Park, a public park in the southwest of Ermington. At its largest extent it is around 340 metres east to west, and 230 metres north to south (Figure 6-31).			
Analysis of historic plans and aerials	No historical plans that provide relevant detail to HAMU 11 have been located. The 1943 aerial photograph shows minimal activity within this HAMU by that time. The alignment of the current Heysen Avenue runs through the park at this time, but this has been removed by 1955. No construction appears to have occurred after this date.			
Phases of occupation & nature of the resource	<p>1 – Early Farming (1792–1871) Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>3 – Post-war housing estate (1945 onwards) Evidence relating to this phase in this HAMU could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses.</p>			
Impact from current buildings	Most of the HAMU is currently open grassland however substantial Sydney Water watermains run through the corridor and part of the park which has likely had a large impact. Small structures such as playground equipment area likely to have only minimal foundations.			
Likelihood of research potential	<p><b>1 –Early Farming (1792-1871)</b> The HAMU is on land that was used for farming during the first decades of the colony. It was not part of a large estate and historical records indicated that farming was only partially successful in the area. Only minimal later activity has had an impact here suggesting that if a farming related resource formed it may be relatively intact. If so, there is <b>medium</b> likelihood of an archaeological resource that has research potential as features, artefacts and ecofacts may all be preserved. Its research potential in part relies on its ability to provide comparative data from a smaller farm to the larger estates. The study and analysis of the archaeological evidence can provide novel and unique data for addressed research questions.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b> Given the breadth of historical data on post-war housing, archaeological resources dating to this phase are highly unlikely to contribute any novel data to addressing research questions, hence there is <b>very low</b> likelihood of research potential for this phase.</p>			
Archaeological potential	<p>Early farming in this area is likely to have only left a transient mark on the landscape and subsequent activities including the Sydney Water mains is likely to have removed almost all remaining evidence along the central part of the site. The areas north and south of this service corridor appear to have been little altered however, hence they have <b>medium</b> potential.</p> <p>The potential for evidence relating to the construction development of post-war housing is assessed as <b>low</b> in this HAMU. No houses were constructed within this HAMU although there is some possibility parts may have been used as a storage or set down area in a formal or informal way. Archaeological resources relating to this phase do not meet the threshold for local significance.</p>			
Summary	Phase	Significance	Potential	MR
	1 – Early Farming (1792–1871)	State	Medium	2
	3 – Post-war housing estate (1945 onwards)	None	Low	N/A



Figure 6-31: HAMU 11 showing location and nature of present environment



HAMU 12	Boronia Street & Surrounds	Ermington		
Listings	None			
Description of site	HAMU 12 is a rectangular shaped 746-metre-long, 30-metre-wide along area along Boronia Street from the intersection with Spurway Street to the intersection with Atkins Road. It also includes approximately 200-metre-long sections of the adjoining Honor Street, Trumble Avenue, Boyle Street, Murdoch Street, Spofforth Street and Trumpet Street. Additionally, it includes part of 31 Broadoaks Street and 40 Boronia Street (Figure 6-32).			
Analysis of historic plans and aerials	No historical plans that provide relevant detail to HAMU 12 have been located. The 1943 aerial photograph shows that Boronia Street has been laid out on its current alignment by this time.			
Phases of occupation & nature of the resource	<p>1 – Early Farming (1792–1871) Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>3 – Post-war housing estate (1945 onwards) Evidence relating to this phase in this HAMU could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses.</p>			
Impact from current buildings	Most of the HAMU is currently suburban streets built during the post-war house boom. These roads all may have been constructed with solid foundational road-bases and may contain numerous services. There is a large easement along the northern side of Boronia Street that is undeveloped.			
Likelihood of research potential	<p><b>1 –Early Farming (1792-1871)</b> The HAMU is on land that was used for farming during the first decades of the colony. It was not part of a large estate and historical records indicated that farming was only partially successful here. There have been extensive later impacts that have likely contaminated or destroyed much of the archaeological resource although it may survive better in pockets especially in gardens of modern houses and along grass verges adjacent to roads. Given the disparate and small nature of the potential resource there is a <b>low</b> likelihood of research potential for this phase.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b> Given the breadth of historical data on post-war housing, archaeological resources dating to this phase are highly unlikely to contribute any novel data to addressing research questions, hence there is <b>very low</b> likelihood of research potential for this phase.</p>			
Archaeological potential	Early farming in this area is likely to have only left a transient mark on the landscape and the subsequent construction of Boronia Street has likely to have removed most of the remaining evidence, however some pockets may survive in grass verges and gardens hence the potential for evidence for Early Farming is <b>low</b> in this HAMU. The potential for evidence relating to the construction development of post-war housing is considered <b>low</b> in this HAMU as it is a roadway. Archaeological resources from this phase do not meet the threshold for local significance.			
Summary	Phase	Significance	Potential	MR
	1 – Early Farming (1792–1871)	State	Low	1
	3 – Post-war housing estate (1945 onwards)	None	Low	N/A



Figure 6-32: HAMU 12 showing location and nature of the present environment

HAMU 13	Atkins Road, Hughes Avenue, & Hope Street block	Ermington		
Listings	Parramatta LEP 2011 Item I64 (Figure 3-4)			
Description of site	HAMU 13 is a rectangular shaped 210-metre-long, 60-metre-wide along area along the southern side of Hope Street between Atkins Road and Hughes Avenue. It also includes 230-metre-long sections of Hope Street and Hughes Avenue (Figure 6-33).			
Analysis of historic plans and aerials	No historical plans that provide relevant detail to HAMU 13 have been located. The 1943 aerial photograph shows that the Swane Brothers Nursery is clearly established by this time with their buildings occupying the whole of this HAMU. This includes the listed property Willowmere, 64 Hughes Avenue.			
Phases of occupation & nature of the resource	<p>1 – Early Farming (1792–1871) Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>2 – Swane Brothers Nursery (1919–1967) Evidence relating to this phase in this HAMU could include structures including shops, workshops potting sheds, greenhouses, storage sheds and other related buildings, garden features such as beds, tree boles, and ridge/furrow alignments, channels, gullies and ditches, and fencelines and postholes. The Swane family home (Willowmere) is still present on the site.</p> <p>3 – Post-war housing estate (1945 onwards) Evidence relating to this phase in this HAMU could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses.</p>			
Impact from current buildings	The HAMU currently has numerous large buildings across it including sheds and houses. All of which likely have foundations that will have impacted the archaeological resource. The areas that are not built upon are largely covered with asphalt.			
Likelihood of research potential	<p><b>1 –Early Farming (1792-1871)</b> There is unlikely to be research potential relating to this phase as later buildings have likely removed all relevant archaeological resource.</p> <p><b>2 – Swane Brothers Nursery (1919-1967)</b> Evidence of the use of the site during this phase would have research potential if evidence of the technology of the nursery was present. It is unlikely that historical records contain detail on the internal workings of the nursery including use of space and the specific technologies used. Building archaeology and archival recording could be utilised.</p> <p><b>3 – Post-war housing estate (1945 onwards)</b> Given the breadth of historical data on post-war housing, archaeological resources dating to this phase are highly unlikely to contribute any novel data to addressing research questions, hence there is <b>very low</b> likelihood of research potential for this phase.</p>			
Archaeological potential	<p>Early farming in this area is likely to have only left a transient mark on the landscape and the subsequent construction of numerous buildings across the block has likely removed all remaining evidence, hence the potential for evidence for Early Farming is <b>nil</b> in this HAMU.</p> <p>The area of the Swane Brothers Nursery has been continual occupied and modified since it was built. The house, Willowmere, and its garden area are at least partially intact. Continual alteration has likely involved numerous instances of ground modification, hence there is only <b>low</b> potential for an archaeological resource that relates to this period.</p> <p>The potential for evidence relating to the construction development of post-war housing is <b>nil</b> in this HAMU as it was occupied before the commencement of this period and has not been modified for housing.</p>			
Summary	Phase	Significance	Potential	MR
	1 – Early farming (1792–1871)	State	Nil	N/A
	2 – Swane Brothers Nursery (1919–1967)	Local	Low	1
	3 – Post-war housing estate (1945 onwards)	None	Nil	N/A



Legend

- HAMU
- Project area
- Ermington
- Melrose Park

- Local Heritage**
- Item - General

- Railway
- Waterbody
- Watercourse

Paper Size ISO A4  
 0 10 20 30  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



Transport for NSW  
 Parramatta Light Rail Stage 2 EIS  
 Non-Aboriginal Archaeological Assessment

Project No. 12557728  
 Revision No. C  
 Date: 31/05/2022

**HAMU 13 in  
 Ermington**

T:\2022\Projects\PR141576\05\0514\99600\Archaeology\_Cover  
 Rev: 4 of 11 (14/05/2022) - 0.0

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Figure 6-33: HAMU 13 showing location and nature of present environment, all adjacent heritage listed items area also shown

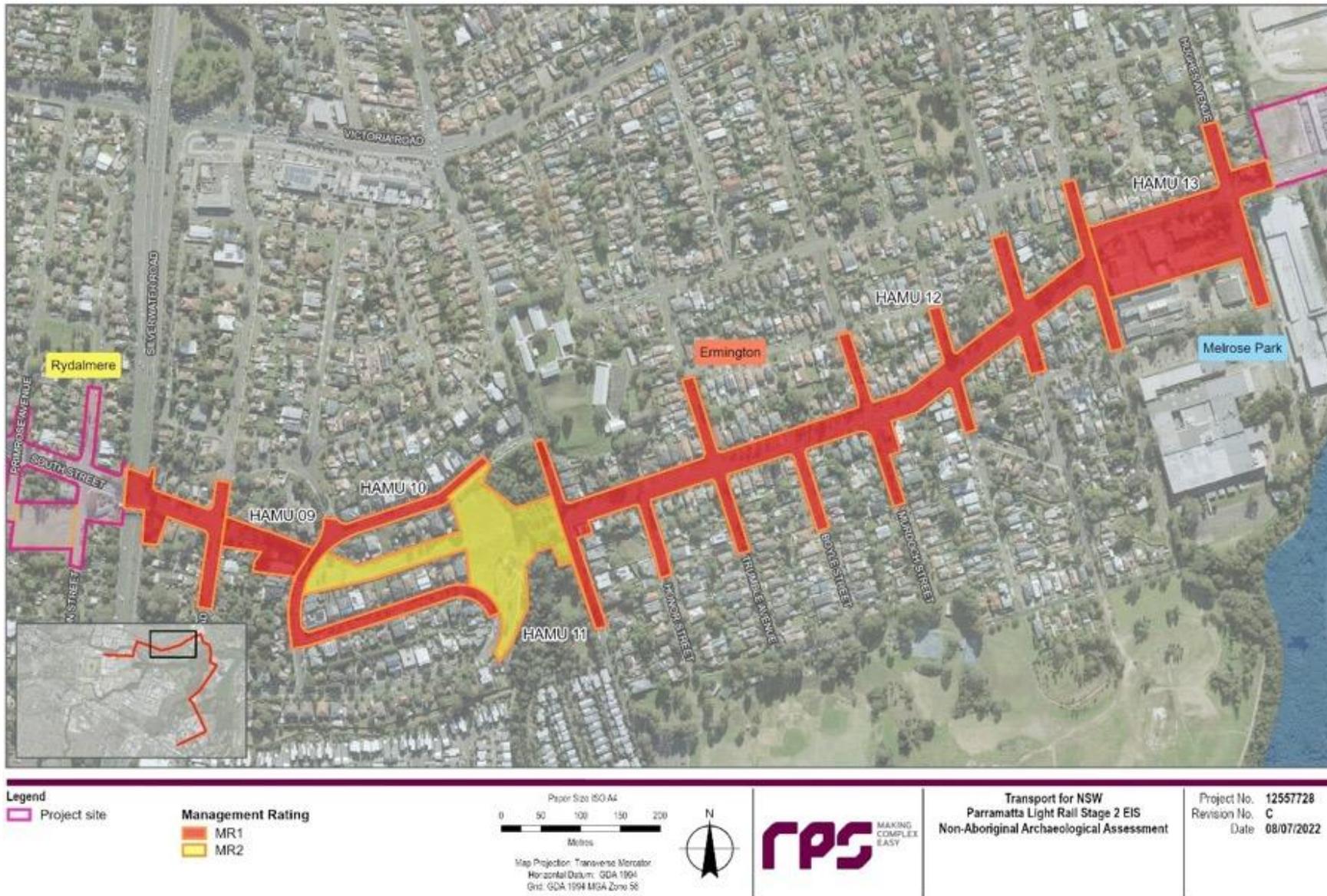


Figure 6-34: The MRs for the HAMUs in Ermington

## 6.4 Melrose Park

### 6.4.1 Description

The existing industrial lands of Melrose Park will undergo significant renewal in the future, with the delivery of a new town centre and surrounding high density residential community of approximately 10,000 new dwellings.

The project provides an opportunity to fully integrate the light rail alignment and its stops with adjoining future development to ensure the urban design aspirations of both the project and adjoining planning proposals are achieved.

Seamlessly integrating the light rail into the town centre's streetscape would create an alignment of continuous public domain, connecting active, thriving places, activating cross streets and catalysing town centre development that responds to the place making potential of light rail. The alignment runs past Melrose Park Public School (Figure 6-35), along Waratah Street (Figure 6-36), then crosses the Parramatta River close to the Ermington Boat Ramp (Figure 6-38, Figure 6-38).



**Figure 6-35: Open grassy areas close to Ermington Boat Ramp, Melrose Park.**



**Figure 6-36: Waratah Street, Melrose Park. This part of the project site has light industrial use at present.**



**Figure 6-37: Mangroves adjacent to Ermington Boat Ramp, Melrose Park demonstrating the environment in the area.**



**Figure 6-38: Wharf remnants adjacent to Ermington Boat Ramp, Melrose Park demonstrating the environment in the area.**

Remnants of Ermington Wharf, located in the suburb of Melrose Park, consist of stone footings and structural timbers. It is not clear what period the footings date to. However, historical records indicate Ermington Wharf became a stone wharf around 1879 (Keuiters, 2012: 5) and it is likely visible remnants date to this period. There is also potential for earlier wharf structures from the 1820s onwards to be present subsurface.

Three former horizontal timber parts of Ermington Wharf lie within a fenced protection zone. Three vertical timber pylons protrude to a height of one metre. These horizontal and vertical timbers are the remnant superstructure of the former wharf. Also present are the footings of a former stone wall. Although partially displaced, the larger dry laid sandstone blocks of the remnant walls mark a rectangular area.

The rectangular arrangement would have extended beyond the fenced protection zone. Within the fenced area, remains of the wharf indicate that the stone part of the wharf was rectangular in plan with a shore width of at least 20 metres while extending some 20 metres into the river.

The fenced preservation area around Ermington Wharf appears to have been demarcated in the early 1990s when the Ermington Boat Ramp was upgraded to include a pontoon (see Figure 6-38 and Figure 6-39).

The area of the blocks and the large timber beams suggest that Ermington Wharf was large, which is supported by photographic evidence. The wharf would have extended southwards into the deeper river waters - though this component would have been timber.



Figure 6-39: Ermington Boat Ramp site in 1986 (prior to expansion of boat ramp and pontoon). (Source: Department of Lands)



**Figure 6-40: Ermington Boat Ramp with new pontoon in 1991, showing location of fenced preservation area, which has now been created (Source: Department of Lands)**

In the area of bushland to the north of Ermington Boat Ramp, the remains of a large stone subsurface structure, likely a well or cistern is visible. Although no clear date can be assigned to the structure at this stage, it is likely to be 19th century based on its location and construction methods. This structure was largely full of water and overgrown with small trees when inspected in 2022 (Figure 6-41). It had been recently cleared and fenced (Figure 6-42).



**Figure 6-41: The large stone well or cistern on inspection in 2022 at which time the fence was partially damaged, and the well, full of water**





**Figure 6-42: The large stone well or cistern at the time of the erection of the fence, photo provided by Transport for New South Wales**

## 6.4.2 Phases of occupation and significance within Melrose Park

Examination of the historical context and archaeological potential of the three HAMUs in Melrose Park indicate three phases of occupation, of which two may have a related archaeological resource with research potential of at least local significance. Each of these phases overlaps as change across the project site was not simultaneous and not all areas saw change or development related to all phases. The three phases are:

1. Early Farming and Edmund Lockyer (1792–1827) (Table 6-11)
2. Ermington Wharf (1820s–1945) (Table 6-12)
3. Subdivision, growth, and post-war housing (1840s–1945, and post 1945) (Table 6-13).

Although not assessed as being significant at this stage, evidence of post-war housing is still discussed below as there is a likelihood that deposits, structures, and artefacts relating to this phase could be encountered during works. If these are substantially intact, the assessment of significance may change as per guidelines (Heritage Branch, 2009).

**Table 6-11: Assessment of significance within Melrose Park during phase 1**

**Phase 1: Early Farming and Edmund Lockyer (1792 – 1827)**

<b>Criteria (a) Historical significance:</b>	The earliest grants along the Parramatta River were to establish farms with various families establishing successful small farms in the area. This is part of the general clearance of land in the late 18th century as British ideals and concepts of ownership, control and food production became imposed on the Australian landscape.
<b>Criteria (b) Historical association significance</b>	Edmund Lockyer is a significant figure in the history of Australia having led the expedition that formally annexed Western Australia. Within NSW he was a prominent estate owner who commissioned the construction of Ermington House which gave the adjacent suburb its name. Although this house, his main residence, is outside of the project site, a cottage on his land was constructed within the project site. Lockyer held various colonial positions including Serjeant-at-Arms and Usher of the Black Rod to the NSW Legislative Council and police magistrate at Parramatta.
<b>Criteria (c) Aesthetic/Technical significance</b>	Any evidence of the farming practices undertaken would be technologically significant. This may be direct evidence such as tools and implements or indirect evidence such as plough marks and fence alignments.
<b>Criteria (e) Research potential:</b>	Any evidence of cultivation or pastoralism would have high research potential and could provide novel data for examination of early farming practices and colonial responses to a different environment. Food production was a key goal of the early colony and evidence of the types of foods produced may be critical in enhancing the understanding of the development of farming. This may include evidence of methods and techniques used as well as species not mentioned in the historical record. There is also the potential to examine soil chemistry to discuss nutrient levels which can provide indications of yields and evidence of manuring. Collectively this all can contribute to wider questions related to the development of the agricultural economy. This assessment covers a 10 kilometre corridor and includes some of the earliest cultivated land in Australia. This includes both successful and unsuccessful farms and areas that are regarded today as pioneering in their respective industries. Likewise it includes large Estates and smaller scale enterprises. The ability to undertake a largescale cross-site comparison of early farming along the Parramatta River is unprecedented and the research potential of each farm is enhanced by its ability to contribute to the greater whole.
<b>Criteria (f) Rarity:</b>	Evidence of surviving early farming practices is rare archaeologically. Partially this stems from later development but also the transitory nature of the evidence with features such as plough lines being seasonally re-dug. The rarity of the site also comes from the potential farming related deposits that demonstrate the specific breadth of crops and plants grown and animals husbanded by Lockyer and other smaller scale farmers in the 18th and 19th century, and the degree to which it was successful.

**Statement of Significance**

As an important historical figure, any evidence directly related to Lockyer’s use of the land would be **State** significant. Food production was one of the most important activities in the early colony and vital for its survival. It eventually grew to be a key component of the national economy and engrained in the national identity therefore substantially intact archaeological evidence of multiple facets of pioneering attempts at farming in this area would be of **State** significance. This could include archaeological features, geochemical data, animal and plant remains, and artefacts. The capability of the area to contribute novel data relating to smaller scale farming operations, as opposed to large scale estates, affirms this assessment, and may provide varied and unique evidence. The capability of the area to contribute novel data relating to smaller scale farming operations, as opposed to large scale estates, affirms this assessment, and may provide varied and unique evidence enhancing the research potential.

**Table 6-12: Assessment of significance of Ermington Wharf during phase 2**

**Phase 2: Ermington Wharf (c. 1820s–c. 1930)**

<b>Criteria (a) Historical significance</b>	Ermington Wharf is of considerable historical significance for its association with the early years of Ryde's settlement. It was important in facilitating communications and transporting people and goods (timber, food, quarried rock). As a place for the docking of riverboats, this site played an important role in the development of the colonial economy through transportation of timber, a key resource, to the Government Stores in Sydney and later the distribution of local farm produce to the Sydney markets. Visible and submerged remains of the wharf and many other wharves in the area are historically significant for their role in the establishment, development and importance of early river transport between Sydney and Parramatta and of the river itself as a major transport route. The wharf is a key indication of the growth of the area that included roads, farms, dwellings and other development in the immediate area.
<b>Criteria (b) Historical association significance</b>	The wharf is also associated with the Parramatta River's development history as a former transport route. The SHI Form for Ermington Wharf on the Ryde LEP notes the site may have historical significance for its possible association with convicts from 1817. However, this connection has not been conclusively established.
<b>Criteria (c) Aesthetic/ Technical significance</b>	The wharf, as it is visible at low tide, has been fenced defining an area/site considered to be important for its preservation and display value. It is a prominent visual feature along the Parramatta River at Ermington.
<b>Criteria (e) Research potential</b>	The wharf site has potential to contribute to an understanding of traditional wharf construction techniques from the 19th century and provide evidence of technological change in wharf construction from the 1820s through to the early 21st century. The site may provide data on the construction of 19th century stone wharves and wooden jetties. Subsurface remains, in the area of the proposed works, if present, would contribute to this knowledge of historical/maritime structures. Within the fenced protection zone, the remnant c.1870s wharf and its site represents major tangible evidence of the previous importance of the Parramatta River as the Colony's major thoroughfare. Potential artefacts may exist in the river deposits which may allow a relative date of use of the area as a landing area for river boats to be inferred. In the surrounding area structures, including Mr Eyre's cottage, have the potential to provide new and unique data about the lives of early farmers. The presence of a well/cistern in the vicinity indicates high likelihood of remnants of these structures being present. This leads to the possibility of examining domestic spaces which can provide a wealth of data for a wide variety of research questions.
<b>Criteria (f) Rarity</b>	Ermington Wharf at Wharf Road was one of the earliest wharves along the Parramatta River dating to circa 1830, and possibly earlier to 1817.
<b>Criteria (g) Representative</b>	Ermington Wharf is one of a collection of at least eight early stone and timber wharves along the Parramatta River. It is associated with nearby wharves including two wharf sites within 200 metres of the subject site (unnamed and Lockyers) and west), the Spurway Street wharves also in Ermington, the Bowden Street wharf at Meadowbank, the Belmore Street Wharf in Ryde, and additional wharves at Gladesville and Newington. It is part of a representative sample of different wharf types constructed to meet the needs of the Parramatta River Ferry and cargo service during the nineteenth and early twentieth centuries.
<b>Integrity</b>	Stone and timber components of the wharf have been partially displaced by erosion and wave action. However, generally, remains in this area survive intact and in situ from the late 1870s.

**Statement of Significance**

The Ermington Wharf was a representative example of the kind of infrastructure that facilitated the development of the Parramatta River as an economic conduit along which the settlements at Sydney and Parramatta could grow. It has high research potential and can address themes relating to the formation of the early economy of the colony, convict activities, commerce, and communications. The visible wharf

**Phase 2: Ermington Wharf (c. 1820s–c. 1930)**

features likely date to the 1870s and are of **local** significance as by this time wharves were commonplace. Any evidence of the c.1820s wharf would be of **State** significance as evidence from this period is much rarer and has higher research potential. Evidence of the development of the surrounding area, which could include agricultural and domestic features, would be of **local** significance as it would provide interesting and useful information about life in the 19th century in the area after the colony has become more established.

**Table 6-13: Assessment of significance within Melrose Park during phase 3**

**Phase 3: Subdivision, growth, and post-war housing (1840s–1945, and post-1945)**

<b>Criteria (a) Historical significance:</b>	Following WW2, the need for housing for immigrant communities and returning soldiers created a boom period in house building within Melrose Park one of the suburbs that saw large residential growth. This growth was set against changing attitudes to architecture and occurred alongside shortages in traditional building materials leading to innovation.
<b>Criteria (d) Social/Cultural significance</b>	Any evidence of the development of local post-war housing may be of importance to the present community of Melrose Park.
<b>Criteria (e) Research potential:</b>	Evidence of post-war living conditions and the types of innovative and localised building methods and materials used may have research potential however this information is likely to be better sought through examinations of the extant structures and examination of historical records. Archaeologically excavation is not likely to produce significant new data.
<b>Criteria (g) Representativeness:</b>	Melrose Park is one of many post-war residential suburbs, as such any evidence of this period is likely to be highly representative of the period and type of site.
<b>Statement of Significance</b>	
The social and cultural shifts that occurred in Australia after WW2 included changes in perceptions of housing and community and evidence of this shift is of significance. Archaeological resources relating to this phase area unlikely to contribute to this significance though and are also unlikely to have any recognisable research potential. The archaeological resource therefore does not meet the threshold for local significance.	

**6.4.3 HAMUs within Melrose Park**

The following HAMUs have been identified in this suburb (see Figure 6-43):

- HAMU 14 – Hope & Waratah Street
- HAMU 15 – Ermington Wharf & Archer Park.

HAMU 16 was assessed in the Historical Archaeological Assessment prepared for the EIS and was mapped east of Wharf and Koonadan Reserve. As part of the amended project, the light rail alignment has been relocated further west to avoid direct impacts to residential properties in this area, and this HAMU would no longer be impacted. The dimensions of HAMU 15 have been revised to align to the amended project site boundary.

Based on the analysis of potential and significance the following summary assessment is provided for each HAMU. Each HAMU has also been given a management rating that provides an indication of the appropriate mitigation measures. These are shown in Figure 6-46.

The area of Parramatta River between Camellia and Rydalmere is discussed as MAMU 02 in Section 6.8.2.

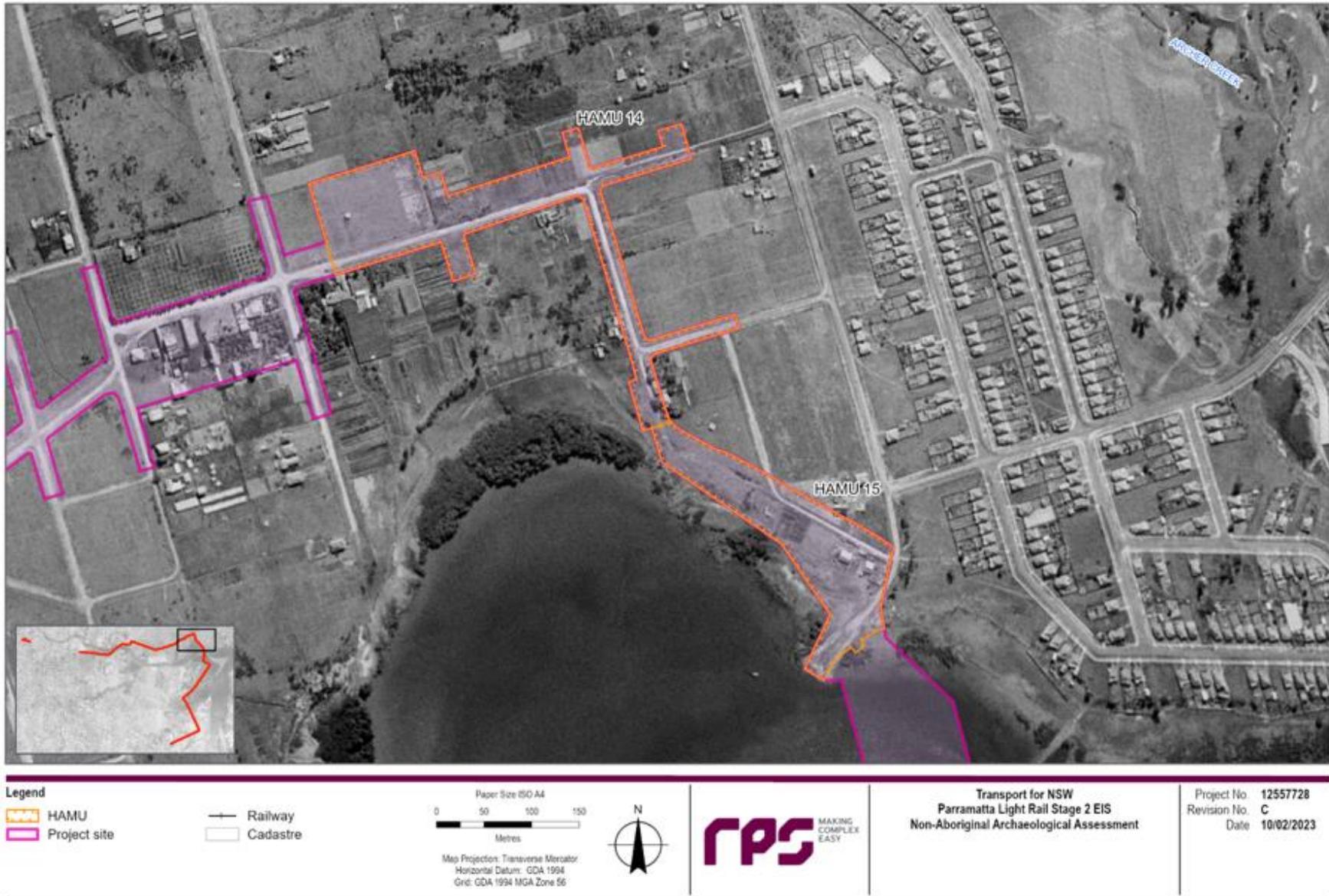


Figure 6-43: HAMUs located within the Melrose Park on the 1943 aerial photograph showing development at that time

HAMU 14	Hope & Waratah Street	Melrose Park		
<b>Listings</b>	None			
<b>Description of site</b>	HAMU 14 is a 'L' shaped area along 334 metres of Hope Street, 250 metres of Waratah Street and 100 metres of Mary Street. It also includes 77 and 75 Hughes Avenue, 9 Waratah Street, part of 10 Waratah Street, 19 to 31 Hope Street and part of 33 Hope Street (Figure 6-44).			
<b>Analysis of historic plans and aerials</b>	<p>An 1841 subdivision plan (Manuscript map of subdivision of the village of Ermington &amp; Plan of the village of Ermington on the Parramatta River: to be sold by auction by Mr. Blackman, on 23 April – 1841) shows the alignment of Hope Street and Waratah Street within this HAMU but with different names. This indicates these streets may have been constructed by this date.</p> <p>The 1943 aerial photograph shows no construction within this HAMU but crop marks indicate it is being farmed. The 1955 aerial photograph shows the houses at 77 and 75 Hughes Avenue had been built by this time. By 1965, a large shed had been erected on 33 Hope Street partially within this HAMU with sheds also within 31 Hope Street. By 1971, much of the current, or recent construction had been undertaken.</p>			
<b>Phases of occupation &amp; nature of the resource</b>	<p><b>3 – Subdivision, and growth, and post-war housing (1840s–1945, and post-1945)</b></p> <p>Evidence relating to this phase in the HAMU could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses.</p>			
<b>Impact from current buildings</b>	<p>Most of the HAMU is currently suburban streets built during the post-war housing boom. These roads have been constructed with solid foundational road-bases and contain numerous services. 77 and 75 Hughes Avenue both have houses with foundations on them. The area along the front of 31 Hope Street is built upon in a variety of different steps and platforms. The impact of these is unclear. 33 Hope Street appears to have been recently demolished.</p>			
<b>Likelihood of research potential</b>	<p><b>3 – Subdivision, and growth, and post-war housing (1840s–1945, and post-1945)</b></p> <p>Given the lack of development in the 19th century, and the breadth of historical data on post-war housing, archaeological resources dating to this phase are highly unlikely to contribute any novel data to addressing research questions, hence there is <b>very low</b> likelihood of research potential for this phase.</p>			
<b>Archaeological potential</b>	<p>The potential for evidence relating to subdivision, growth and post-war housing in this HAMU is assessed as being <b>low</b> as most of this unit is roadway with impacts from buildings having likely removed the resource in the area north of Hope Street. Some evidence may remain around the houses on Hughes Street. Evidence from this phase is not assessed as meeting the threshold for local significance.</p>			
<b>Summary</b>	<b>Phase</b>	<b>Significance</b>	<b>Potential</b>	<b>MR</b>
	3 – Subdivision, growth and post-war housing (1840s–1945, and post-1945)	None	Low	N/A



HAMU 15	Ermington Wharf & Archer Park	Melrose Park
Listings	Parramatta LEP 2011 Item 182, Ryde LEP 2014 Item 165 (Figure 3-5).	
Description of site	HAMU 15 is an irregular rectangular area of foreshore along the north bank of the Parramatta River, 295-metres-long, 75-metres-wide. The physical remains of Ermington Wharf are located immediately to the east of the HAMU (Figure 6-45).	
Analysis of historic plans and aerials	<p>The 1841 subdivision plan (Figure 4-29) shows multiple buildings and other features within the project site at this time. It shows a wharf at the northern end of this HAMU (unnamed wharf). To the south-east of the northern wharf, in the centre of the HAMU, is a large rectangular paddock which has a smaller enclosure and barn on its north-west side. South-west of this paddock, along the river shoreline is a small square structure. To the south-east of the paddock are two buildings identified on the plans as Mr Eyre’s Cottages. They are immediately adjacent to Pennant Hills Wharf (Ermington Wharf). A hut is shown on the wharf itself at this time.</p> <p>One 1858 subdivision plan shows some relevant detail. Specifically, that Eyre’s Cottage is still present at this time and that the northern wharf is also still in existence (Plan of Land Ermington, Property of Mrs Bobart - Pennant Hills St, Mary St, Wharf St, Henry St, 1858).</p> <p>The 1943 aerial photograph shows that little construction has occurred within the project site by this time, Along the foreshore, a rectangular shed has been built in the approximate centre of this HAMU. The Ermington Wharf is shown clearly at this time. and appears to be an earthen rampway rather than a structural feature. Between 1971 and 1986 major changes occurred along the foreshore within the project site. All previous buildings had been levelled and a car park built in the land north of Ermington Wharf. A new artificial peninsular for a high voltage transmission tower had been built at the northern end of the foreshore. The area around Ermington Wharf has been modified including the construction of the extant Ermington Boat Ramp.</p>	
Phases of occupation & nature of the resource	<p><b>1 – Early Farming and Edmund Lockyer (1792–1827)</b> Evidence relating to this phase in this HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p><b>2 – Ermington Wharf (c.1820s–c. 1930)</b> Evidence relating to this phase in this HAMU could include wharf structures, associated huts, sheds and other buildings including a hut on the wharf. Other potential evidence includes objects used in the construction, maintenance, and operation of the wharf. Evidence in this phase also includes the development of the surrounding area. There is the possibility of structural evidence being present including farming related structures such as barns and paddocks and other structures including Mr Eyre’s cottage. The extant well/cistern is known evidence and likely dates from this phase.</p> <p><b>3 – Subdivision, and growth, and post-war housing (1840s–1945, and post-1945)</b> Evidence relating to this phase in this HAMU could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses.</p>	
Impact from current buildings	<p>Impact from current buildings in this HAMU is minimal. There is a car park in the south of the unit however this appears to be of relatively shallow construction. There is also a toilet block however this is small and would have only had a minimal impact on any underlying archaeological resource.</p> <p>The presence of an intact well/cistern further indicates that the impact to the area has been minimal.</p>	
Likelihood of research potential	<p><b>1 –Early Farming and Edmund Lockyer (1792-1827)</b> The HAMU is outside of Lockyer’s Estate but may have been used by Samuel Marsden for early farming. The location, adjacent to the river, would have been ideal for this purpose and farming was undertaken in nearby areas. Later farming from the 1820s onwards has likely removed any trace of this earlier phase though, meaning the research potential is <b>low</b>.</p> <p><b>2 – Ermington Wharf (c.1820s–c. 1930)</b> Physical remains of the c.1870s wharf remain <i>in situ</i> and there is likely to be further relics, potentially relating to the c.1820s wharf in the surrounding area. This provides</p>	



HAMU 15	Ermington Wharf & Archer Park	Melrose Park																
	<p>a <b>high</b> likelihood for research potential as excavation is likely to produce new and unique data about both wharves and possibly about related economic and social systems. Evidence of the 1820s wharf would have <b>very high</b> research potential, as would evidence of domestic dwelling in the vicinity. There is also <b>high</b> research potential for the development of the immediate area during this phase including Mr Eyre’s Cottage and surrounding farm to the northwest of the Wharf.</p> <p><b>3 – Subdivision, and growth, and post-war housing (1840s–1945, and post-1945)</b></p> <p>Given the lack of development in the 19th century, and the breadth of historical data on post-war housing, archaeological resources dating to this phase are highly unlikely to contribute any novel data to addressing research questions, hence there is <b>very low</b> likelihood of research potential for this phase.</p>																	
Archaeological potential	<p>The potential for evidence relating to early farming in this HAMU is assessed as being <b>low</b>. No specific indication of farming prior to the 1840s has been located for this area and farming during the 1840s onwards is likely to have impacted the earlier potential resource.</p> <p>There is <b>high</b> potential from the Ermington Wharf Phase relating to the wharf itself and the surrounding landscape. Evidence of c.1870s wharf structures are still visible in the current banks of the river, indicating there is likely to be high preservation here. This indicates there is <b>high</b> potential for aspects of the earlier wharf structure to remain. Historical evidence clearly shows that the area along the foreshore has been used for farming during this phase. The later impacts from the car park area likely to only be minimal hence the archaeological resource is likely intact. The presence of the well or cistern indicates that later land use only had a minimal impact on the archaeological resource. This collectively indicates <b>high</b> potential for evidence of farming in the area, as well as related domestic occupation, during this phase.</p> <p>The potential for a resource relating to subdivision and growth is also considered <b>low</b>. No direct evidence of this phase has been located although informal structures were erected along the foreshore during the 20th century, and these may relate to this phase of occupation. At present it is not anticipated that archaeological resources related to this phase will meet the threshold for local significance.</p>																	
Summary	<table border="1"> <thead> <tr> <th>Phase</th> <th>Significance</th> <th>Potential</th> <th>MR</th> </tr> </thead> <tbody> <tr> <td>1 – Early Farming and Edmund Lockyer (1792–1827)</td> <td>State</td> <td>Low</td> <td>1</td> </tr> <tr> <td>2 – Ermington Wharf (c.1820s–c1930)</td> <td>State/Local</td> <td>High</td> <td>3</td> </tr> <tr> <td>3 – Subdivision, and growth, and post-war housing (1840s–1945, and post-1945)</td> <td>None</td> <td>Low</td> <td>N/A</td> </tr> </tbody> </table>		Phase	Significance	Potential	MR	1 – Early Farming and Edmund Lockyer (1792–1827)	State	Low	1	2 – Ermington Wharf (c.1820s–c1930)	State/Local	High	3	3 – Subdivision, and growth, and post-war housing (1840s–1945, and post-1945)	None	Low	N/A
Phase	Significance	Potential	MR															
1 – Early Farming and Edmund Lockyer (1792–1827)	State	Low	1															
2 – Ermington Wharf (c.1820s–c1930)	State/Local	High	3															
3 – Subdivision, and growth, and post-war housing (1840s–1945, and post-1945)	None	Low	N/A															



Figure 6-45: HAMU 15 showing location and nature of present environment, all adjacent heritage listed items area also shown

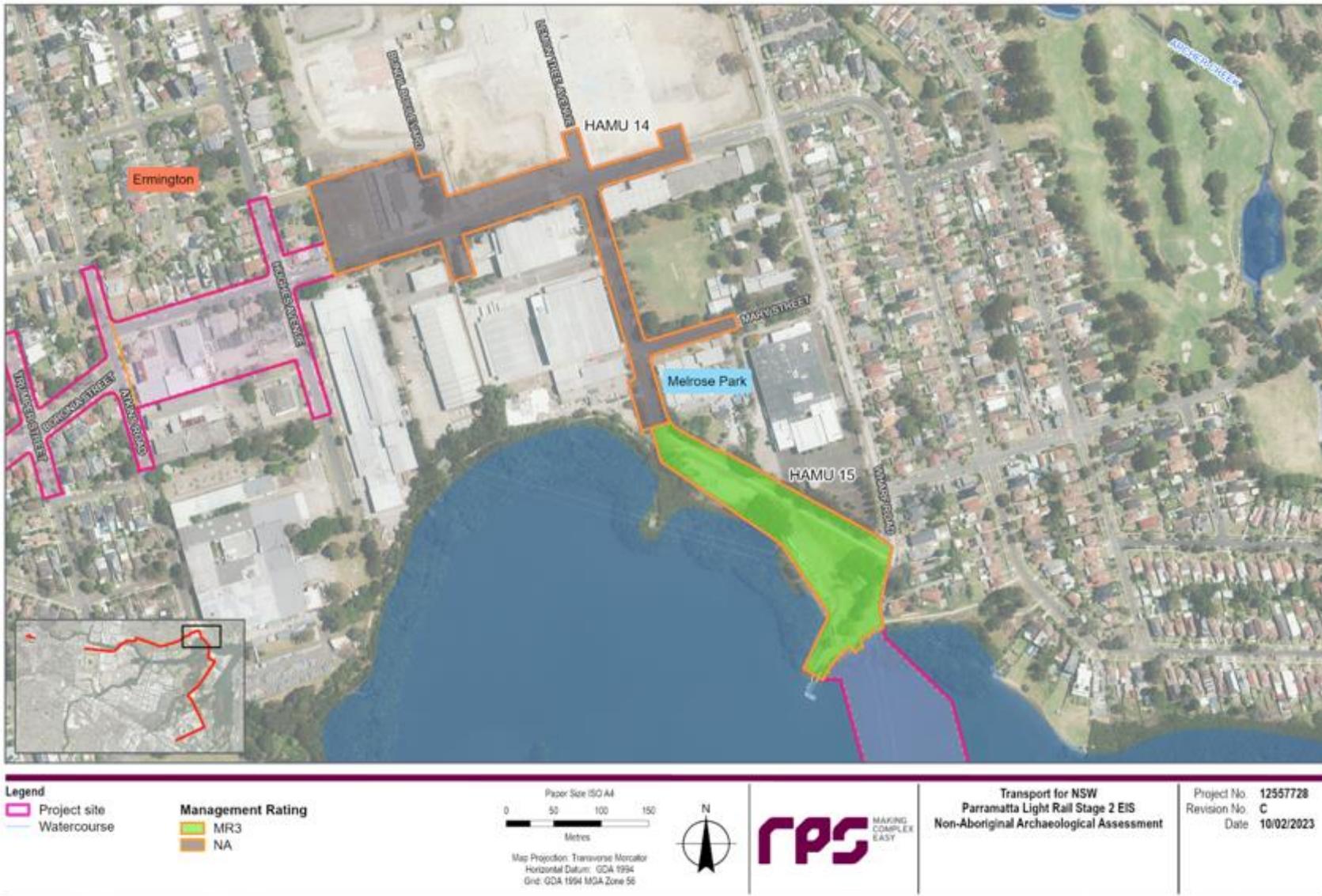


Figure 6-46: The MRs for the HAMUs in Melrose Park

## 6.5 Wentworth Point

### 6.5.1 Description

While much of Wentworth Point is located on land initially reclaimed for industrial uses, ongoing development continues the evolution of the peninsula's character from industrial lands to high density, predominantly residential development.

The suburb incorporates the Millennium Parklands and Parramatta River foreshore. Future development at the northern end of the peninsula will continue to change the Parramatta River's foreshore landscape.

Hill Road currently provides the primary access to Wentworth Point and is a motor vehicle-dominated environment with poor pedestrian and cycle amenity. The project would introduce public and active transport connectivity to extensive local residents and visitors to the significant recreation parklands on the peninsula (Figure 6-47, Figure 6-48, Figure 6-49, Figure 6-50).



Figure 6-47: The river foreshore in Wentworth Point demonstrating the environment in the area



Figure 6-48: Wentworth Point demonstrating the environment in the area



Figure 6-49: A streetscape in Wentworth Point demonstrating the environment in the area



Figure 6-50: A park in Wentworth Point demonstrating the environment in the area

## 6.5.2 Phases of occupation and significance within Wentworth Point

Examination of the historical context of the project site within Wentworth Point has identified two phases of occupation. Analysis of the historic record indicates that neither phase of occupation is likely to have generated a significant historical archaeological resource which requires management. The two phases are:

1. The Flats (1793–1949) (Table 6-14)
2. Industrialisation (1949–2013) (Table 6-15).

**Table 6-14: Assessment of significance within Wentworth Point during phase 1**

### Phase 1: The Flats (1793–1949)

**Statement of Significance**

The land at Wentworth Point was granted to various individuals in the 1790s however the dense, wet environment prohibited any occupation or development of the land prior to the dredging of Homebush Bay in the 1940s. Hence no criteria of significance have been identified for this period.

**Table 6-15: Assessment of significance within Wentworth Point during phase 2**

### Industrialisation (1949–2013)

**Statement of Significance**

It is not anticipated that any parts of the project site in Wentworth Point meet the threshold for significance under any of the criteria.

## 6.5.3 HAMU within Wentworth Point

One HAMU has been identified in this suburb (see Figure 6-51):

- HAMU 17 – Hill Road.

None of the project site within HAMU 17 has any archaeological potential for deposits that would meet the threshold of significance. As this HAMU has no significance it has an N/A management rating. This is shown in Figure 6-53.

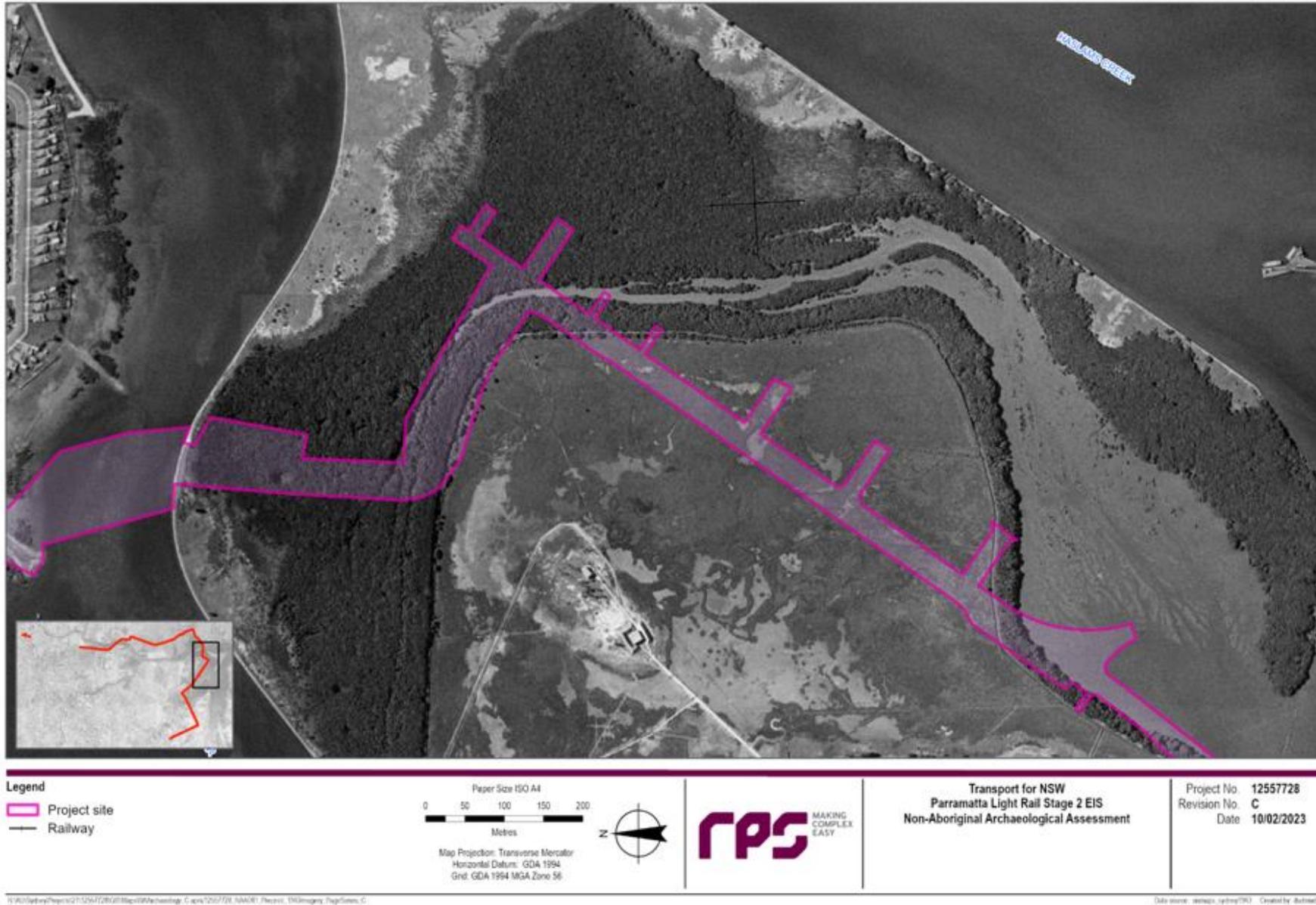


Figure 6-51: HAMUs located within the Wentworth Point on the 1943 aerial photograph showing development at that time

HAMU 17	Hill Road	Wentworth Point		
Listings	None			
Description of site	HAMU 17 is 990-metre-long rectangular stretch of Hill Road from Park Street North to Bennelong Parkway. It includes small sections of the adjoining Burroway Road, Park Street North, Footbridge Boulevard, Verona Drive, Nuvolari Place Baywater Drive and Bennelong Parkway. The area also includes an approximate 15-metre-wide strip of land adjacent to Hill Road to the north-west and a small car park at the southern end of Hill Road within this HAMU (Figure 6-52).			
Analysis of historic plans and aerials	<p>Early historic plans (e.g. the 1859 Reuss &amp; Browne plan) show Wentworth Point as a marshy foreshore with no reclamation.</p> <p>The 1943 aerial photograph shows that aside from a small hut at the north-eastern end of Wentworth Point, no development had occurred. The shoreline is shown as being formalised by this date.</p> <p>By 1971, however the area has become largely industrialised. Some of the factories built by this time, such as Ralph Symonds plywood factory, may be of significance but fall outside of the project site.</p>			
Phases of occupation & nature of the resource	<p>1 – The Flats (1793–1949) It does not appear that the land was occupied at this time and so no accurate assessment of the types of evidence present can be made.</p> <p>2 – Industrialisation (1949–2013) Evidence relating to this phase in this HAMU could include unidentified structural elements, discarded mechanical components, bottles and other refuse items, and objects used within the adjacent factories.</p>			
Impact from current buildings	Most of the HAMU is currently suburban streets built in the late 20th century. These roads have been constructed with solid foundational road-bases and contain numerous services.			
Likelihood of research potential	There is <b>nil</b> likelihood of research potential in this HAMU for either phase as neither has an archaeological resource.			
Archaeological potential	There is <b>nil</b> potential for evidence relating to The Flats as the land was not occupied or used in a way that would leave an archaeological resource and <b>Nil</b> evidence relating to industrialisation as this all occurred to the south-east of the road and so external to this HAMU.			
Summary	Phase	Significance	Potential	MR
	1 – The Flats 1793-1949	None	Nil	N/A
	2 – Industrialisation 1949-2013	None	Nil	N/A



Figure 6-52: HAMU 17 showing listings location and nature of present environment, all adjacent heritage listed items area also shown





Figure 6-53: The MRs for HAMU 17 in Wentworth Point

## 6.6 Sydney Olympic Park and Carter Street precinct

### 6.6.1 Description

The broad avenues of Sydney Olympic Park reflect its built heritage and Olympic legacy. The Sydney Olympic Park Central Precinct will undergo significant change in line with the new Sydney Olympic Park Master Plan, becoming a major centre within the GOP area.

The tree-lined boulevards of Dawn Fraser Avenue and Australia Avenue will play an increasingly pivotal role in active and public transport connectivity to and through the suburb (Figure 6-54, Figure 6-55).

The project alignment adjoins recreational facilities of the Brickpit, Wentworth Common and Haslams Creek riparian corridor (Figure 6-56, Figure 6-57).



Figure 6-54: A streetscape in Sydney Olympic Park demonstrating the environment in the area



Figure 6-55: A streetscape in Sydney Olympic Park demonstrating the environment in the area



Figure 6-56: Parkland in Sydney Olympic Park demonstrating the environment in the area



Figure 6-57: Parkland in Sydney Olympic Park demonstrating the environment in the area

## 6.6.2 Phases of occupation and significance within Sydney Olympic Park and Carter Street precinct

Examination of the historical context of the project site within Sydney Olympic Park and the Carter Street precinct, Lidcombe, has identified four phases of occupation and use of the site that may have a related archaeological resource with research potential of at least local significance. Phase 2 is subdivided as each occurred concurrently on different parts of the site. Each of these phases overlaps as change across the project site was not simultaneous. The four phases are:

1. Early farming (1794–1810) (Table 6-16)
2. Estates
  - a. Newington Estate (1807–1907) (Table 6-17)
  - b. Homebush Estate (1794–1870) (Table 6-18)
3. Subdivisions (1870–1910) (Table 6-19)
4. State works (1907–1991) (Table 6-20).

**Table 6-16: Assessment of significance within Sydney Olympic Park and Carter Street precinct during phase 1**  
**Phase 1: Early Farming (1794–1810)**

Criteria (a) Historical significance:	The earliest grants in this area were to establish farms, with various families establishing successful small farms in the area. This is part of the general clearance of land in the late 18th century as British ideals and concepts of ownership, control and food production became imposed on the Australian landscape. This includes the successful estate ran by Thomas Laycock.
Criteria (c) Aesthetic/Technical significance:	There is no anticipated aesthetic significance. Any evidence of the farming practices undertaken would be technologically significant. This may be direct evidence such as tools and implements or indirect evidence such as plough marks and fence alignments.
Criteria (e) Research potential:	Any evidence of cultivation or pastoralism would have high research potential and could provide novel data for examination of early farming practices and colonial responses to a different environment. Food production was a key goal of the early colony and evidence of the types of foods produced may be critical in enhancing the understanding of the development of farming. This may include evidence of methods and techniques used as well as species not mentioned in the historical record. There is also the potential to examine soil chemistry to discuss nutrient levels which can provide indications of yields and evidence of manuring. Collectively this all can contribute to wider questions related to the development of the agricultural economy. Horses were a key resource in the colony until the 20th century as transportation, for farming, for exploration and entertainment. Evidence of horse studs can include the skeletal remains of horses themselves, and horse furniture such as horseshoes. The analysis of which can provide data to examine dietary, social, and economic questions. This assessment covers a 10 kilometre corridor and includes some of the earliest cultivated land in Australia. This includes both successful and unsuccessful farms and areas that are regarded today as pioneering in their respective industries. The ability to undertake a largescale cross-site comparison of early farming along the Parramatta River is unprecedented and the research potential of each farm is enhanced by its ability to contribute to the greater whole. Given the known historical development of the area though, with the State works and reshaping for the Olympic Park there is likely to have been a high level of disturbance which is likely to have negatively impacted the any archaeological resource and reduced its research potential.
Criteria (f) Rarity:	Evidence of surviving early farming practices is rare archaeologically. Partially this stems from later development but also the transitory nature of the evidence with features such as plough lines being seasonally re-dug. It is not anticipated that any structural elements of the main farm buildings from this phase would be

located within the project site. That said, the possibility for smaller outbuildings or huts does exist. The rarity of the site also comes from the potential farming related deposits that demonstrate the specific breadth of crops and plants grown and animals husbanded by Laycock in the 18th and 19th century, and the degree to which it was successful.

Statement of Significance

Food production was one of the most important activities in the early colony and vital for its survival. It eventually grew to be a key component of the national economy and engrained in the national identity therefore substantially intact archaeological evidence of multiple facets of pioneering attempts at farming in this area would be of **State** significance. This could include archaeological features, geochemical data, animal and plant remains, and artefacts. The capability of the area to contribute novel data relating to smaller scale farming operations, as opposed to large scale estates, affirms this assessment, and may provide varied and unique evidence.

**Table 6-17: Assessment of significance within Sydney Olympic Park and Carter Street precinct during phase 2a.**

**Phase 2a: Newington Estate (1807–1907)**

Criteria (a) Historical significance:	The Newington Estate of John Blaxland, grew to become a multi-faceted complex with a variety of industries represented including a tweed mill, lime kiln, flour mill and salt works. Each of these industries were examples of pioneering industrial development.
Criteria (b) Historical association significance:	John Blaxland was a significant figure in the early colony. He was one of the first overtly economic migrants who came to NSW to engage in private enterprise to exploit the resources available for profit. He played a significant role in the Rum Rebellion, was a major landowner and regularly agitated for constitutional and legal rights.
Criteria (c) Aesthetic/Technical significance:	There is no anticipated aesthetic significance. Blaxland established numerous different industries across his estate. Any evidence of the technology used in any of these would be significant. This includes the salt works, tweed mill, lime kiln and flour mill. Any evidence of the farming practices undertaken would be technologically significant. This may be direct evidence such as tools and implements or indirect evidence such as plough marks and fence alignments.
Criteria (d) Social/Cultural significance:	There are numerous historical and environmental sites around Sydney Olympic Park which retain the Newington name. Any further evidence of the early estate could add significant new social and cultural value to the people who already frequent these sites.
Criteria (e) Research potential:	Any evidence of cultivation or pastoralism would have high research potential and could provide novel data for examinations of early farming practices and colonial responses to a different environment. Food production was a key goal of the early colony and evidence of the types of foods produced may be critical in enhancing the understanding of the development of farming. Luxury goods, including tobacco and wine, whilst non-essential, were also key components of the economic systems of the early colony and their production is a critical but often overlooked aspect. The wide variety of industries established on the site by Blaxland mean research potential exists for numerous different industries. It is unlikely that any evidence of the structures erected on the Estate are found with the present project site however the expansive nature of the site may facilitate research into the use of space on a wide scale. This assessment covers a 10 kilometre corridor and includes some of the earliest cultivated land in Australia. This includes both successful and unsuccessful farms and areas that are regarded today as pioneering in their respective industries. The ability to undertake a largescale cross-site comparison of early farming along the Parramatta River is unprecedented and the research potential of each farm is enhanced by its ability to contribute to the greater whole.

Statement of Significance

Food production was one of the most important activities in the early colony and vital for its survival. It eventually grew to be a key component of the national economy and engrained in the national identity.

**Phase 2a: Newington Estate (1807–1907)**

Blaxland’s Newington Estate represents one of the first private, economically driven exploitations of the landscape. Evidence of Blaxland’s Newington Estate would be of **State** significance.

**Table 6-18: Assessment of significance within Sydney Olympic Park and Carter Street precinct during phase 2b**

**Phase 2b: Homebush Estate (1794–1870)**

Criteria (a) Historical significance:	Thomas Laycock was one of the more successful early farmers in the colony focusing on animal husbandry instead of growing crops. D’Arcy Wentworth’s Homebush Estate played a key role in the foundation and development of horse racing in the colony.
Criteria (b) Historical association significance:	D’Arcy Wentworth was a prominent figure in the early history of NSW serving in numerous public roles including as chief police magistrate in Sydney and amassing extensive landholdings. He was a founder of the Bank of NSW.
Criteria (c) Aesthetic/Technical significance:	There is no anticipated aesthetic significance. Any evidence of the farming practices undertaken would be technologically significant. This may be direct evidence such as tools and implements or indirect evidence such as plough marks and fence alignments. The use of the site for an early horse stud may provide information on the types of technology employed in that industry.
Criteria (d) Social/Cultural significance:	Horse racing and the associated industries remain popular in Australia. Evidence of the origins of this may have social or cultural significance to people interested in such things.
Criteria(e) Research potential:	Any evidence of cultivation or pastoralism would have high research potential and could provide novel data for examination of early farming practices and colonial responses to a different environment. Food production was a key goal of the early colony and evidence of the types of foods produced may be critical in enhancing the understanding of the development of farming. This may include evidence of methods and techniques used as well as species not mentioned in the historical record. There is also the potential to examine soil chemistry to discuss nutrient levels which can provide indications of yields and evidence of manuring. Collectively this all can contribute to wider questions related to the development of the agricultural economy. Luxury goods, including tobacco and wine, whilst non-essential, were also key components of the economic systems of the early colony and their production is a critical but often overlooked aspect. Horses were a key resource in the colony until the 20th century as transportation, for farming, for exploration and entertainment. Evidence of horse studs can include the skeletal remains of horses themselves, and horse furniture such as horseshoes. The analysis of which can provide data to examine dietary, social, and economic questions. This assessment covers a 10 kilometre corridor and includes some of the earliest cultivated land in Australia. This includes both successful and unsuccessful farms and areas that are regarded today as pioneering in their respective industries. Likewise it includes large Estates and smaller scale enterprises. The ability to undertake a largescale cross-site comparison of early farming along the Parramatta River is unprecedented and the research potential of each farm is enhanced by its ability to contribute to the greater whole Given the known historical development of the area though, with the State works and reshaping for the Olympic Park there is likely to have been a high level of disturbance which is likely to have negatively impacted the any archaeological resource and reduced its research potential.

**Statement of Significance**

The Homebush Estate was the site of the first horse stud in Australia and remained in the Wentworth family into the early 20th century. Substantial and intact evidence related to horse stud activity would be **locally** significant. D’Arcy Wentworth was an important figure in the early history of the colony and any direct evidence of his involvement in the Estate would be of **State** significance. Food production was one of the most important activities in the early colony and vital for its survival. It eventually grew to be a key component of the national economy and engrained in the national identity. If substantial and intact evidence of early farming was found it would be of **State** significance.

**Table 6-19: Assessment of significance within Sydney Olympic Park and Carter Street precinct during phase 3**

**Phase 3: Subdivisions (1870–1910)**

**Criteria** Evidence of occupation relating to this phase does not meet the threshold of significance for any of the established criteria.

**Statement of Significance**

The Newington and Homebush Estates were subdivided and offered for sale multiple times during the later 19th and early 20th centuries however the sales were largely unsuccessful. It is not anticipated that any significant archaeological resource relating to this period would be present within the project site.

**Table 6-20: Assessment of significance within Sydney Olympic Park and Carter Street precinct during phase 4**

**Phase 4: State works (1907–1991)**

**Criteria (a) Historical significance:** The State Brickworks and State Abattoir were both components of state-controlled industry in the early 20th century. The brickworks were established to break the price-fixing monopoly of private companies and throughout the 20th century tell a story of a consistent battle between the state and private industry. The abattoir was a major employer in NSW and prior to decentralisation of that industry.

**Criteria (b) Historical association significance:** The administrative buildings of the abattoir are recognised as being the works of Walter Liberty Vernon, Government Architect with gardens by Joseph Maiden, Government Botanist.

**Criteria (c) Aesthetic/Technical significance:** Evidence of the equipment, technology, and manufacturing processes of either the brickworks or abattoir would be significant.

**Criteria (d) Social/Cultural significance:** The remnants of both industrial complexes, namely the administrative buildings of the abattoir and ‘brickpit’ of the brickworks both form integral parts of the present landscape and have strong associations with the 2000 Sydney Olympics. They have strong cultural significance to the population of NSW.

**Criteria (e) Research potential:** Due to the extensive remodelling of the site for the construction of Olympic infrastructure it is highly unlikely that any evidence of either state works will remain within the project site. Evidence that may remain is likely limited to the base of building footings and low density artefact scatters. Extensive recording was undertaken prior to demolition which limits the capability of archaeological excavation to provide novel data.

**Criteria (f) Rarity:** At its peak in the 1920s the State Abattoir was amongst the largest in the world and the remaining buildings are rare as intact components of this. Brickworks are commonly found, and remains of brickworks are often preserved as heritage items with at least 17 sites on the State Heritage Inventory. Therefore, they are not considered rare, although it is noted that government run brickworks were less common.

**Statement of Significance**

The State Abattoir and State Brickworks were both large employers and examples of state-controlled industries of the early to mid-20th century. They played an important role of the lives of local people and were partly designed by a prominent architect. Any evidence of them that provides novel data may be of **local** significance if it was substantial intact. This may include machinery, infrastructure, buildings and artefacts.

**6.6.3 HAMUs within Sydney Olympic Park and the Carter Street precinct**

The following HAMUs have been identified in these locations (see Figure 6-58 and Figure 6-59):

- HAMU 18 – East of Newington Nature Reserve
- HAMU 19 – Hill Road, including compound & Holker Busway north of Haslams Creek
- HAMU 20 – Car park P5b
- HAMU 22 – Holker Busway south of Haslams Creek & Australia Avenue

- HAMU 23 – Car Park P6
- HAMU 24 – Dawn Fraser Avenue, Murry Rose Avenue, & Uhrig Road
- HAMU 25 – Compounds along Edwin Flack Avenue.

HAMU 21 was initially an area adjacent to Kronos Hill that was being considered for a construction compound, but is longer part of the project site. This number has not been reassigned so there is no HAMU 21.

Based on the analysis of potential and significance the following summary assessment is provided for each HAMU. Each HAMU has also been given a management rating that provides an indication of the appropriate mitigation measures. These are shown in Figure 6-67 and Figure 6-68.

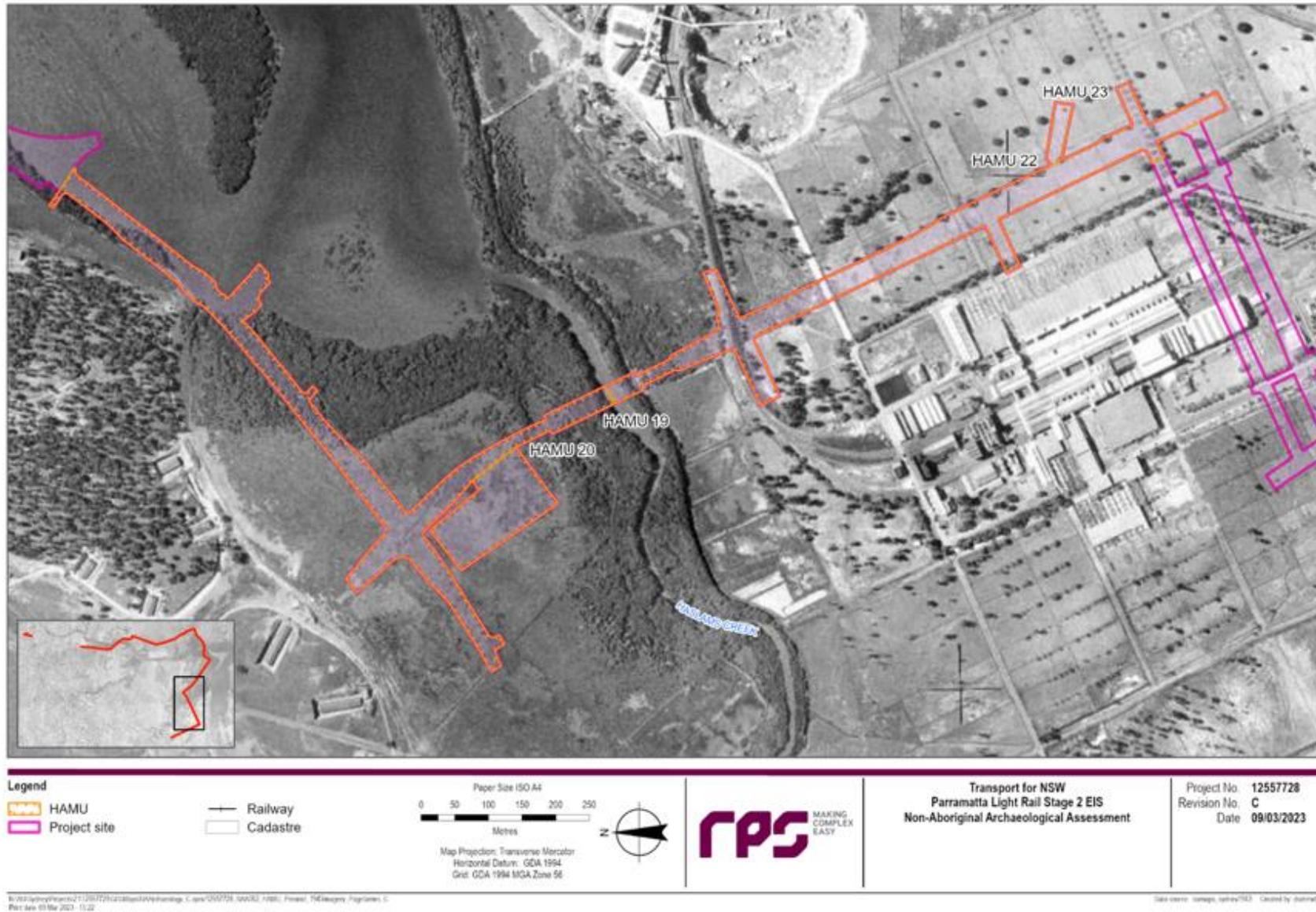


Figure 6-58: HAMUs located within the north of Sydney Olympic Park on the 1943 aerial photograph showing development at that time



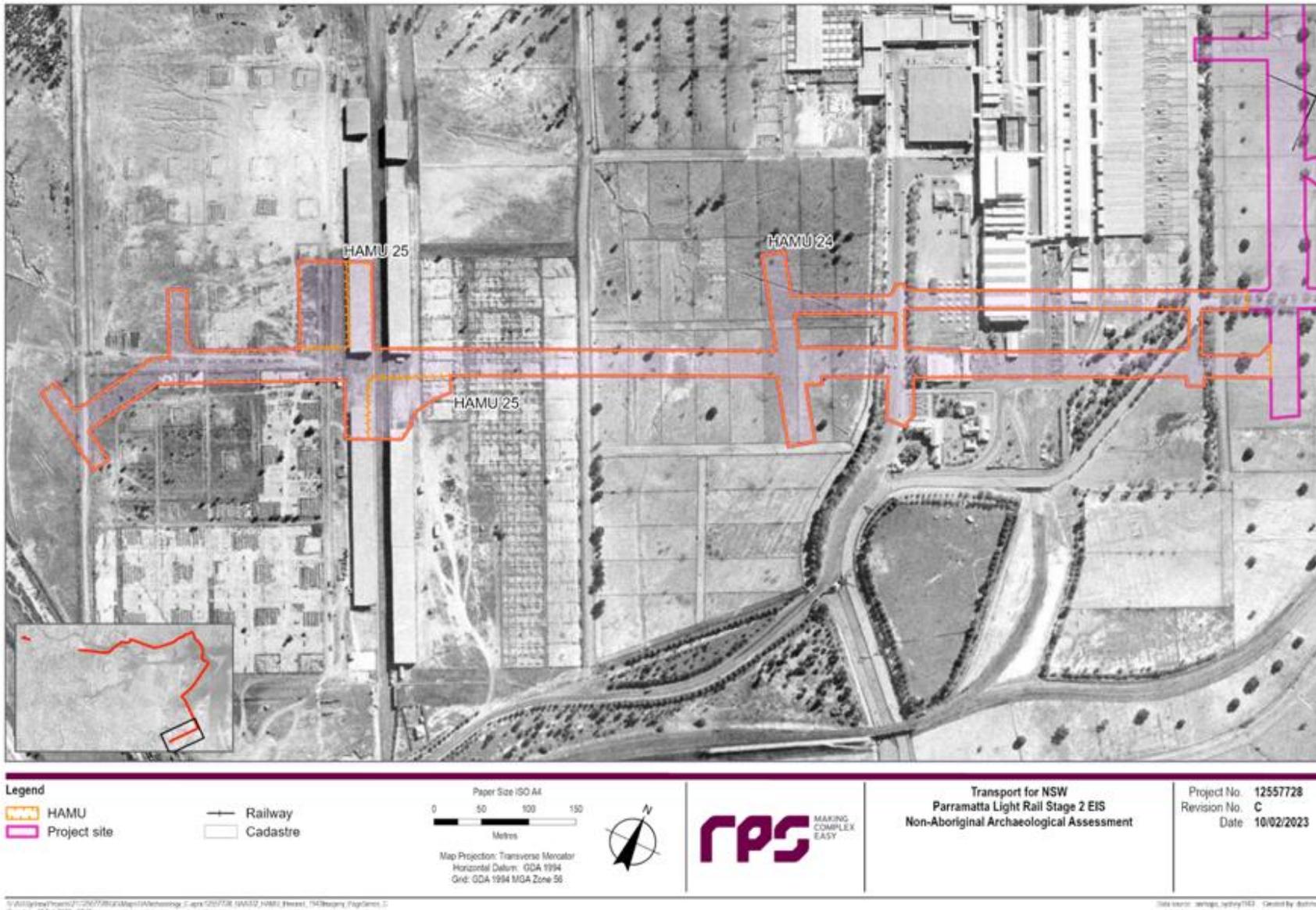


Figure 6-59: HAMUs located within the south of Sydney Olympic Park and Carter Street precinct on the 1943 aerial photograph showing development at that time

HAMU 18	East of Newington Nature Reserve	Sydney Olympic Park		
Listings	None			
Description of site	HAMU 18 is an 'L' shaped area that runs parallel to the Louise Sauvage Pathway on the eastern side for 336m before turning eastward for 260 metres terminating at the intersection of Hill Road and Footbridge Boulevard (Figure 6-60).			
Analysis of historic plans and aerials	<p>Early historic plans (e.g. the 1859 Reuss &amp; Browne plan) show this area as a marshy foreshore with no reclamation.</p> <p>The 1943 aerial photograph shows that no development had occurred. By 1965 industrial machinery, possibly for quarrying is present on the site which is still present in 1971 but by 1986 the site had been levelled with a few large sheds constructed which were still present into the 1990s.</p>			
Phases of occupation & nature of the resource	<p>1 – Early Farming (1794–1810) It does not appear that the land was occupied at this time so no accurate assessment of the types of evidence related to this phase can be made.</p> <p>2a – Newington Estate (1807–1907) It does not appear that the land was occupied at this time so no accurate assessment of the types of evidence related to this phase can be made.</p>			
Impact from current buildings	The west of the HAMU is undeveloped so there are no impacts from current buildings. The eastern part is a construction site, and it is unclear what impact this is having on any potential archaeological resource.			
Likelihood of research potential	There is no likelihood of research potential for either phase in this HAMU as there is no relevant archaeological resource.			
Archaeological potential	There is <b>nil</b> potential for evidence relating to Early Farming as the land was not occupied or used in a way that would leave an archaeological resource and <b>nil</b> evidence relating to the Newington Estate as the land was not occupied until after the Estate was sold in 1907.			
Summary	Phase	Significance	Potential	MR
	1 – Early Farming (1794–1810)	None	Nil	N/A
	2a – Newington Estate (1807–1907)	None	Nil	N/A



HAMU 19	Hill Road, compound & Holker Busway north of Haslams Creek		Sydney Olympic Park	
Listings	None			
Description of site	HAMU 19 is a one-kilometre-long rectangular stretch of Hill Road south-west of Bennelong Parkway to the south-western end of Car Park P5. It also includes two small compounds attached to Hill Road and a 500-metre-long rectangular stretch of Holker Street/Busway where it intersects with Hill Road (Figure 6-61).			
Analysis of historic plans and aerials	<p>The 1859 Reuss and Browne Plan indicates that land north of Haslams Creek including HAMU 19 and 21 was all undeveloped and largely marsh land. The 1943 aerial photograph shows that the land is undeveloped and likely still marsh. By 1971, some reclamation and formalisation of Haslams Creek appears to have occurred. The modern landscape is dominated by construction undertaken for the Olympics in the 1990s.</p>			
Phases of occupation & nature of the resource	<p>1 – Early Farming (1794–1810) It does not appear that the land was occupied at this time so no accurate assessment of the types of evidence related to this phase can be made.</p> <p>2a – Newington Estate (1807–1907) It does not appear that the land was occupied at this time so no accurate assessment of the types of evidence related to this phase can be made.</p>			
Impact from current buildings	Most of this HAMU is currently suburban streets built in the late 20th century. These roads all have been constructed with solid foundational road-bases and contain numerous services - all of which will have left an impact. The compounds associated with HAMU 19 are grassland so there is no impact from current buildings.			
Likelihood of research potential	It is highly unlikely that the archaeological resource in this HAMU will have any research potential as it was not occupied during any significant phase in the past.			
Archaeological potential	There is <b>nil</b> potential for evidence relating to Early Farming and <b>nil</b> potential for evidence relating to the Newington Estate as it is unlikely the land would have been useable until well into the 20th century. That said, associated activities such as fishing and hunting may have been taken place and this may have left a small archaeological resource however this is unlikely to meet the threshold of local significance.			
Summary	Phase	Significance	Potential	MR
	1 – Early Farming (1794–1810)	State	Nil	N/A
	2a – Newington Estate (1807–1907)	local	Nil	N/A

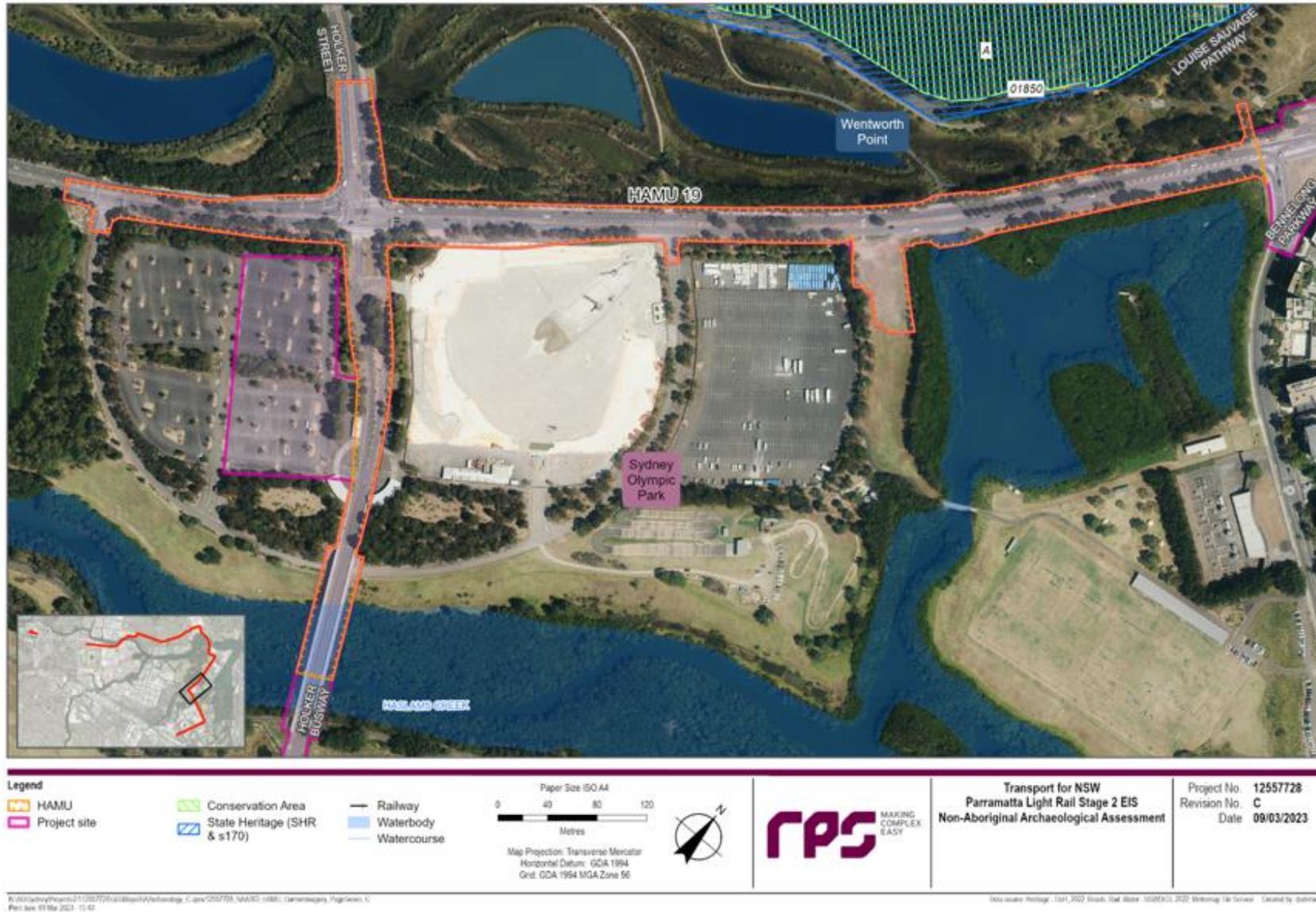


Figure 6-61: HAMU 19 showing location and nature of present environment, all adjacent heritage listed items area also shown

HAMU 20	Car Park P5b	Sydney Olympic Park		
Listings	None			
Description of site	HAMU 20 consists of a 175-metre-long, 100-metre-wide area within a car park south-west of Holker Busway (Car Park P5b) (Figure 6-62).			
Analysis of historic plans and aerals	The 1859 Reuss and Browne Plan indicates that land north of Haslams Creek including HAMU 19 and 21 was all undeveloped and largely marsh land. The 1943 aerial photograph shows that the land is undeveloped and likely still marsh. By 1971, some reclamation and formalisation of Haslams Creek appears to have occurred. The modern landscape is dominated by construction undertaken for the Olympics in the 1990s.			
Phases of occupation & nature of the resource	<p>1 – Early Farming (1794–1810) It does not appear that the land was occupied at this time so no accurate assessment of the types of evidence related to this phase can be made.</p> <p>2a – Newington Estate (1807–1907) It does not appear that the land was occupied at this time so no accurate assessment of the types of evidence related to this phase can be made.</p>			
Impact from current buildings	Both areas of this HAMU are currently parts of car parks built in the late 20th century. These car parks may have been constructed with solid foundational road-bases and may contain numerous services, all of which will have left an impact.			
Likelihood of research potential	It is highly unlikely that the archaeological resource in this HAMU will have any research potential as it was not occupied during any significant phase in the past.			
Archaeological potential	There is nil potential for evidence relating to Early Farming and nil potential for evidence relating to the Newington Estate as it is unlikely the land would have been useable until well into the 20th century. That said, associated activities such as fishing and hunting may have been taken place and this may have left a small archaeological resource. These are unlikely to meet the threshold of local significance.			
Summary	Phase	Significance	Potential	MR
	1 – Early Farming (1794–1810)	State	Nil	N/A
	2a – Newington Estate (1807–1907)	local	Nil	N/A

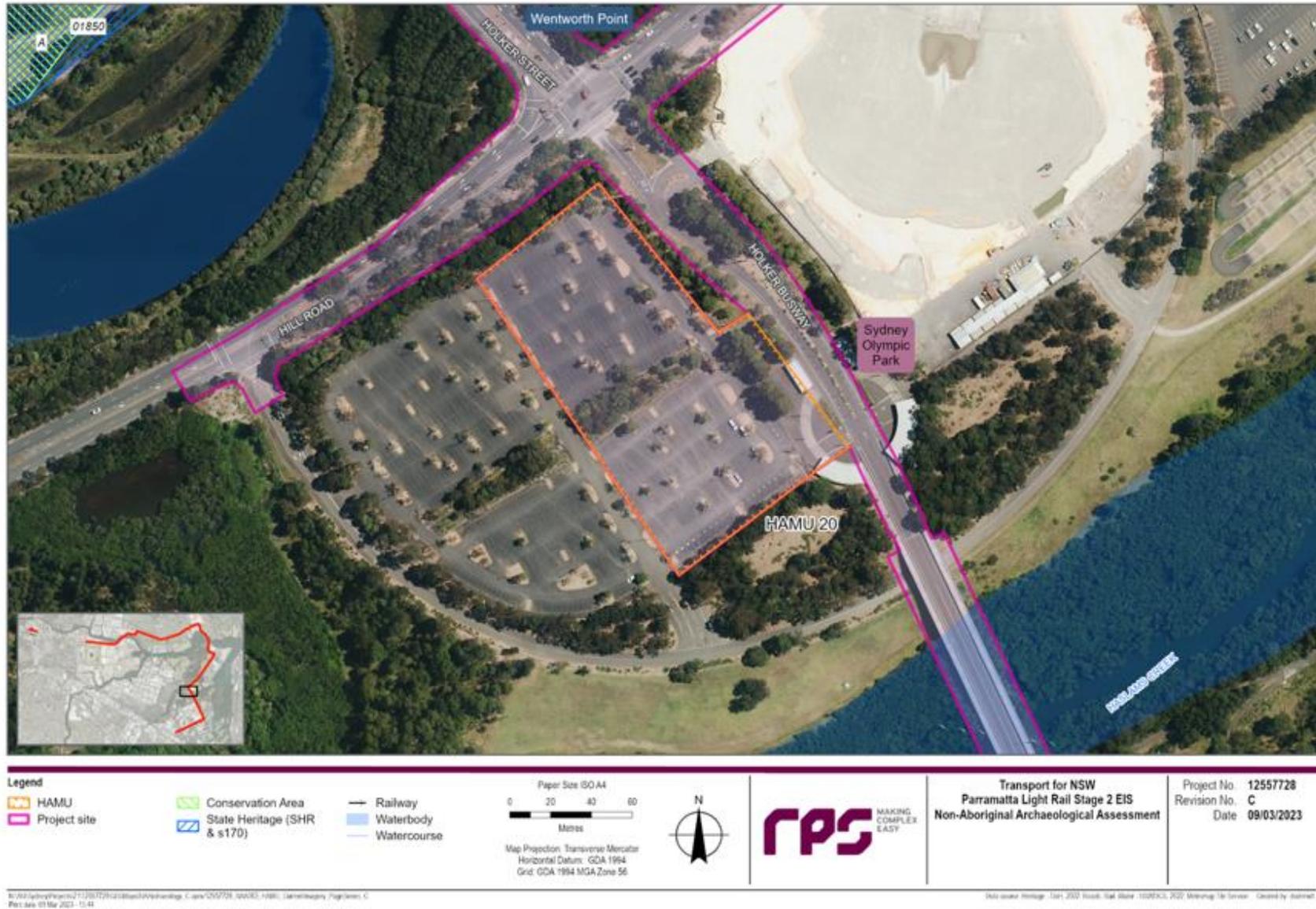


Figure 6-62: HAMU 20 showing location and nature of present environment

HAMU 22	Holker Busway south of Haslams Creek & Australia Avenue	Sydney Olympic Park		
Listings	None			
Description of site	HAMU 22 is a 173-metre-long section of the Holker Busway and short area of the adjoining Marjorie Jackson Parkway, and a 750-metre-long section of Australia Avenue and a short area of the adjoining Murray Rose Avenue (Figure 6-63).			
Analysis of historic plans and aerials	The 1859 Reuss and Browne Plan indicates that land south of Haslams Creek including HAMU 22 was all undeveloped and largely marsh land. The 1943 aerial photograph shows that the area of HAMU 22 is a series of fields related to the State Abattoir. The modern landscape is dominated by structures built as part of the Sydney 2000 Olympics.			
Phases of Occupation & Nature of the resource	<p>1 – Early Farming (1794–1810) Evidence relating to this phase in the HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>2b – Homebush Estate (1794–1870) Evidence relating to this phase in the HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen, and other macrofossils.</p> <p>4 – State works (1907–1991) Evidence relating to this phase in the HAMU could include structures of various sizes and built largely from brick and stone, machinery of various kinds, related infrastructure including light rail, drains, tanks etc. rubbish pits, and general artefact scatters.</p>			
Impact from current buildings	Most of this HAMU is currently suburban streets built in the late 20th century. These roads all may have been constructed with solid foundational road-bases and may contain numerous service, all of which will have left an impact.			
Likelihood of research potential	There is unlikely to be any research potential for any phase in this HAMU.			
Archaeological Potential	There is <b>nil</b> potential for evidence relating to Early Farming and <b>nil</b> potential for evidence relating to the Newington Estate. The land is unlikely to have been farmed and would have been towards the margins of the creek. If any farming did occur the resource was likely to have been transient and subsequent impacts are likely to have removed much. It is unlikely the land would have been useable until well into the 20th century. There is <b>nil</b> potential for evidence relate to the state abattoir as although this HAMU was clearly part of it, a combination of a small initial resource and major reconfiguration in the 1990s has likely removed much in this area.			
Summary	Phase	Significance	Potential	MR
	1 – Early Farming (1794–1810)	State	Nil	N/A
	2b – Homebush Estate (1807–1907)	local	Nil	N/A
	4 – State works (1907–1991)	local	Nil	N/A



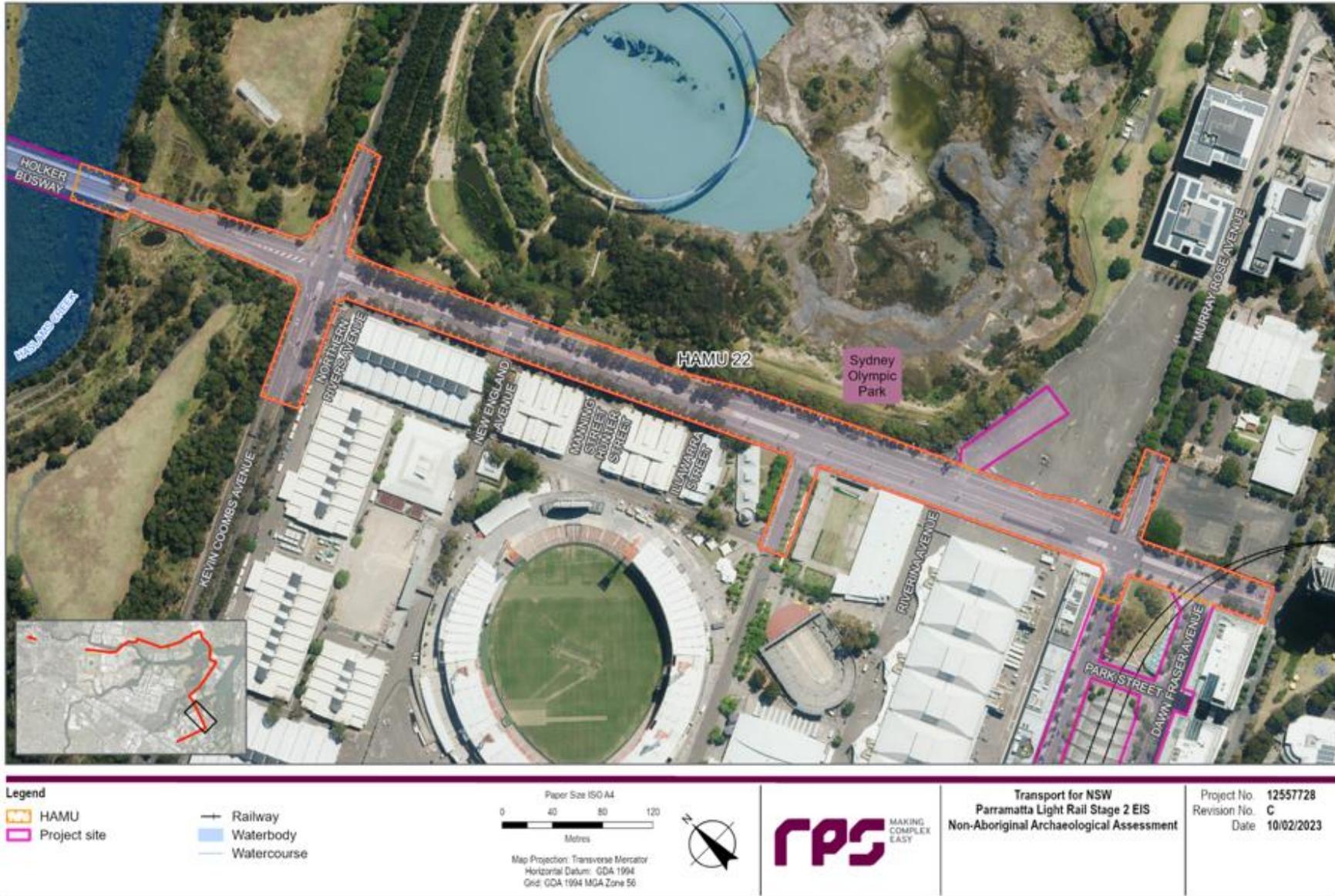


Figure 6-63: HAMU 22 showing location and nature of present environment

HAMU 23	Car Park P6	Sydney Olympic Park		
Listings	None.			
Description of site	HAMU 23 is an 88 metre long, 25-metre-wide area of a car park (Car Park P6) north of the intersection of Australia Avenue and Murray Rose Avenue (Figure 6-64).			
Analysis of historic plans and aerials	<p>The 1859 Reuss and Browne Plan indicates that land south of Haslams Creek including HAMU 23 was all undeveloped and largely marsh land.</p> <p>The 1943 aerial photograph shows that the area HAMU 23 is a series of fields related to the State Abattoir.</p>			
Phases of occupation & nature of the resource	<p>1 – Early Farming (1794–1810) Evidence relating to this phase in the HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>2b – Homebush Estate (1794–1870) Evidence relating to this phase in the HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>4 – State works (1907–1991) Evidence relating to this phase in the HAMU could include structures of various sizes and built largely from brick and stone, machinery of various kinds, related infrastructure including light rail, drains, tanks etc. rubbish pits, and general artefact scatters.</p>			
Impact from current buildings	This HAMU is currently part of car parks built in the late 20th century. These car parks may have been constructed with solid foundational road-bases and may contain numerous services which would have impacted on any potential archaeological resource.			
Likelihood of research potential	It is unlikely that any archaeological resource with research potential is within this HAMU.			
Archaeological potential	There is <b>nil</b> potential for evidence relating to Early Farming and <b>nil</b> potential for evidence relating to the Newington Estate. The land may have been farmed but it would have been towards the margins of the creek, and it is unlikely the land would have been useable until well into the 20th century. If any farming did occur the resource was likely to have been transient and subsequent impacts are likely to have had a severe impact. There is <b>nil</b> potential for evidence relate to the State Abattoir as although this HAMU was clearly part of it, a combination of a small initial resource and major reconfiguration in the 1990s has likely removed any archaeological evidence.			
Summary	Phase	Significance	Potential	MR
	1 – Early Farming (1794–1810)	State	Nil	N/A
	2b – Homebush Estate (1807–1907)	local	Nil	N/A
	4 – State works (1907–1991)	local	Nil	N/A



Figure 6-64: HAMU 23 showing location and nature of present environment

HAMU 24	Dawn Fraser Avenue, Murray Rose Avenue, & Uhrig Road		Sydney Olympic Park	
Listings	None.			
Description of site	HAMU 24 is a one-kilometre-long stretch of Dawn Fraser Avenue from Australia Avenue in the east to Carter Street in the west. It also includes sections of Olympic Boulevard, Park Street and Showground Road, a 500-metre-long section of Murray Rose Avenue, a 300-metre-long section of Uhrig Road west of Edwin Flack Avenue, a 180-metre-long section of Edwin Flack Avenue and a 100-metre-long section of Carter Street (Figure 6-65).			
Analysis of historic plans and aerials	<p>The 1859 Reuss and Browne Plan indicates that land immediately south of Haslams Creek was all undeveloped and largely marsh land. The area including this HAMU is on the periphery between the marked scrubland along the creek to the west and the more formalised paddocks of the estate to the east.</p> <p>The 1943 aerial photograph shows that the area of this HAMU is within the State Abattoir complex. The existing Sydney Trains network railway line runs down the alignment of Edwin Flack Avenue separating Uhrig Road from Dawn Fraser Avenue. A series of buildings and several small paddocks are present on either side of the railway line partially within this HAMU. By the 1970s the area around Murray Rose Avenue had been built over with a large shed and this basic configuration remained until the decommissioning of the abattoir in the late 1990s.</p>			
Phases of occupation & nature of the resource	<p>1 – Early Farming (1794–1810) Evidence relating to this phase in the HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>2b – Homebush Estate (1794–1870) Evidence relating to this phase in the HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>4 – State works (1907–1991) Evidence relating to this phase in the HAMU could include structures of various sizes and built largely from brick and stone, machinery of various kinds, related infrastructure including light rail, drains, tanks etc. rubbish pits, and general artefact scatters.</p>			
Impact from current buildings	Most of this HAMU is currently suburban streets built in the late 20th century. These roads all have been constructed with solid foundational road-bases and contain numerous services, all of which will have left an impact on any subsurface archaeological resource.			
Likelihood of research potential	It is unlikely that any archaeological resource with research potential is encountered within this HAMU.			
Archaeological potential	There is <b>nil</b> potential for evidence relating to Early Farming and <b>nil</b> potential for evidence relating to the Newington Estate. The land is likely to have been farmed however later impacts, first from the creation of the State Abattoir, and then the construction of the Olympic Park, have likely severely impacted any potential resource. There is <b>nil</b> potential for evidence related to the State Abattoir. Although this HAMU was clearly part of the abattoir and surrounds the remaining standing part of it, a combination of a small initial resource and major reconfiguration in the 1990s has likely removed much of the potential resource.			
Summary	Phase	Significance	Potential	MR
	1 – Early Farming (1794–1810)	State	Nil	N/A
	2b – Homebush Estate (1807–1907)	local	Nil	N/A
	4 – State works (1907-1991)	local	Nil	N/A



HAMU 25	Compounds along Edwin Flack Avenue	Sydney Olympic Park		
Listings	None.			
Description of site	HAMU 25 consists of two areas consisting of a 90-metre by 50-metre rectangular area within a modern car park north of the intersection of Dawn Fraser Avenue and Edwin Flack Avenue, and a rectangular 80-metre by 70-metre area on the opposite corner of the same junction within urban parkland surrounding the Sydney Olympic Park athletics centre (Figure 6-66).			
Analysis of historic plans and aerials	<p>The 1859 Reuss and Browne Plan indicates that land immediately south of Haslams Creek was all undeveloped and largely marsh land. The area including HAMU 25 is on the periphery between the marked scrubland along the creek to west and the more formalised paddocks of the estate to the east.</p> <p>The 1943 aerial photograph shows that the area of this HAMU is within the State Abattoir complex with the two areas being located either side of the railway line that ran down Edwin Flack Avenue. By the 1970s this HAMU appears to be outdoor storage areas. The area around it was landscaped between 1991 and 1994.</p>			
Phases of occupation & nature of the resource	<p>1 – Early Farming (1794–1810) Evidence relating to this phase in the HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>2b – Homebush Estate (1794–1870) Evidence relating to this phase in the HAMU could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.</p> <p>4 – State works (1907–1991) Evidence relating to this phase in the HAMU could include structures of various sizes and built largely from brick and stone, machinery of various kinds, related infrastructure including light rail, drains, tanks etc. rubbish pits, and general artefact scatters.</p>			
Impact from current buildings	One area of this HAMU is currently part of a car park built in the late 20th century. This car park has been constructed with solid foundational road-base and may contain services, all of which will have left an impact. The other part of the HAMU is within an urban park, the construction of which is likely to have had a slightly lesser impact however as part of the overall development it is likely to be highly disturbed.			
Likelihood of research potential	It is unlikely that any archaeological resource with research potential is encountered within this HAMU.			
Archaeological potential	There is <b>nil</b> potential for evidence relating to Early Farming and <b>nil</b> potential for evidence relating to the Newington Estate. The land is likely to have been farmed however later impacts, first from the creation of the State Abattoir, and then the construction of the Olympic Park has likely severely impacted any potential resource. There is <b>nil</b> potential for evidence relate to the State Abattoir. Although this HAMU was clearly part of the abattoir, a combination of a small initial resource and major reconfiguration in the 1990s has likely removed much of the potential resource.			
Summary	Phase	Significance	Potential	MR
	1 – Early Farming (1794–1810)	State	Nil	N/A
	2b – Homebush Estate (1807–1907)	local	Nil	N/A
	4 – State works (1907–1991)	local	Nil	N/A



**Legend**

- HAMU
- Project site
- Railway
- Waterbody
- Watercourse

Paper Size ISO A4  
 0 10 20 30  
 Metres



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



Transport for NSW  
 Parramatta Light Rail Stage 2 EIS  
 Non-Aboriginal Archaeological Assessment

Project No. 12557728  
 Revision No. C  
 Date 10/02/2023

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 Period: 10 Feb 2023 - 02:10

Data source: Heritage (1st 2022 Road, Rail Water 100000, 2022 Mapping file server) Created by: drcost

**Figure 6-66: HAMU 25 showing location and nature of present environment**

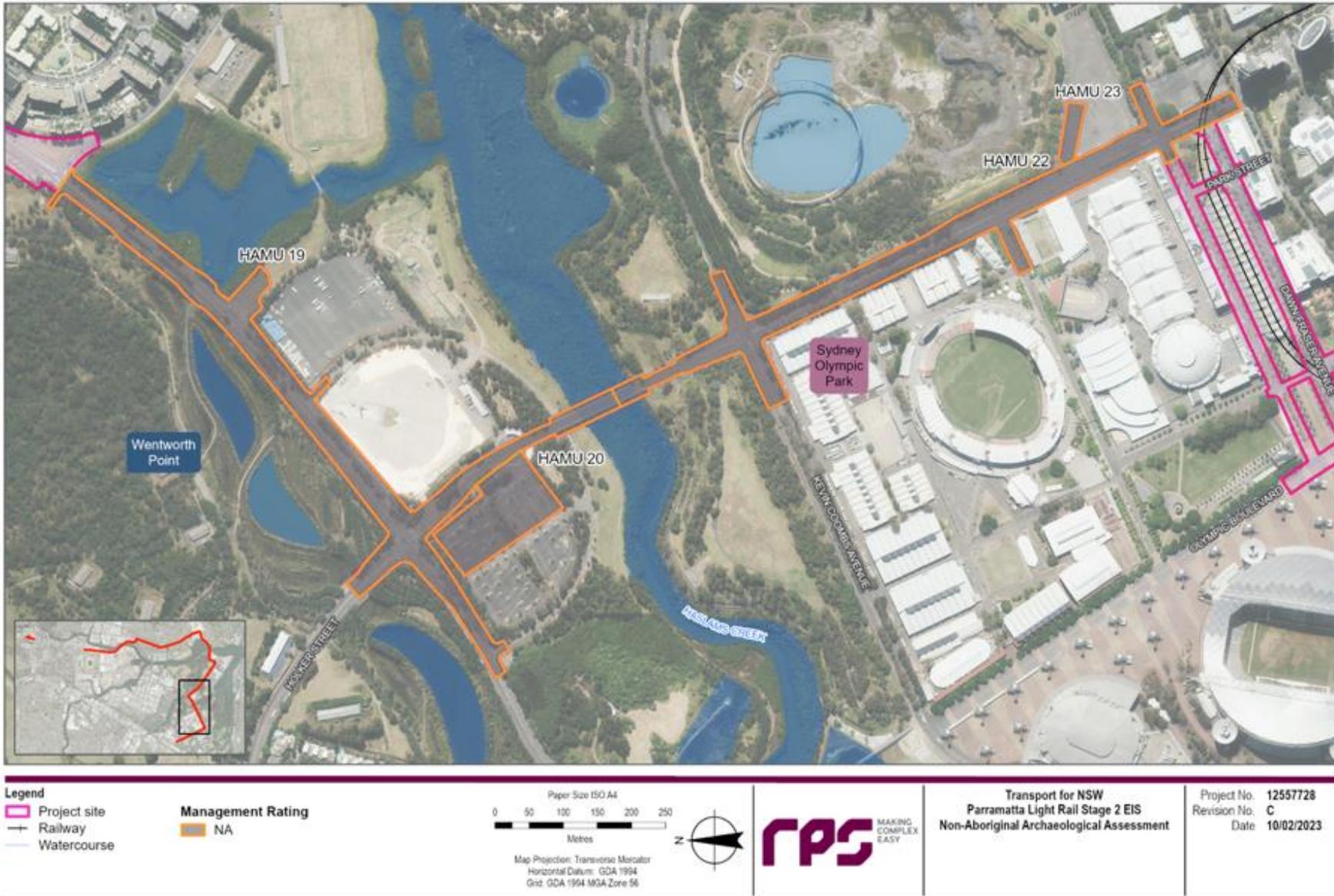


Figure 6-67: The MRs for the HAMUs in the north of Sydney Olympic Park



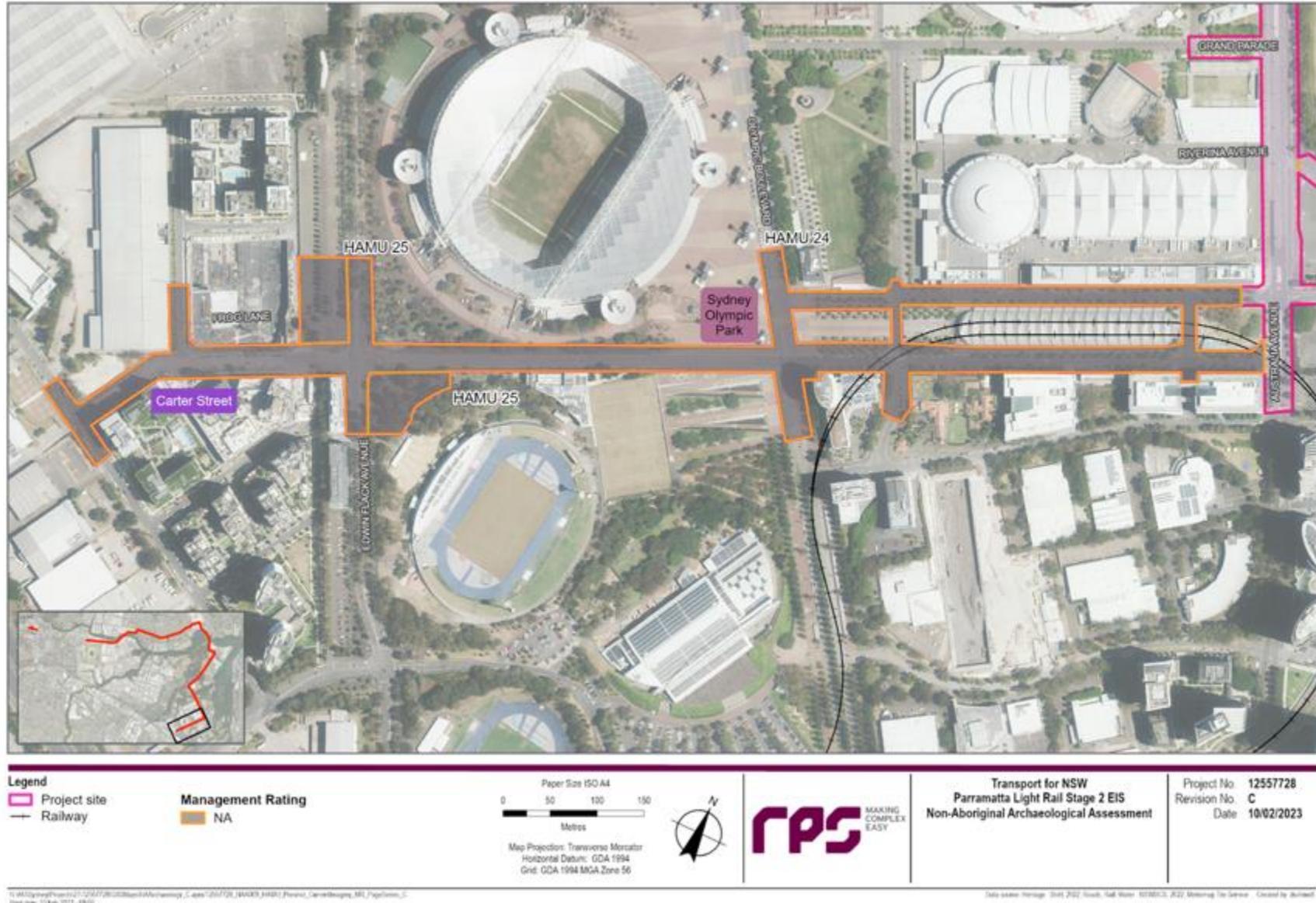


Figure 6-68: The MRs for the HAMUs in the south of Sydney Olympic Park and Carter Street precinct

## 6.7 Parramatta CBD

### 6.7.1 Description

This project site includes a small area in the Parramatta CBD along Macquarie Street (Figure 6-69). This consists of a 175-metre-long section of Macquarie Street from 45 Macquarie Street to the intersection with Church Street. It also includes a 95-metre-long section of Marsden Street from 130-144 Marsden Street, and a 10-metre-long section of Church Street north of Macquarie Street. For the purposes of this report, this area is referred to as HAMU 26.

This area was assessed in 2017 and reassessed in 2019 as part of Parramatta Light Rail Stage 1. In the Parramatta Light Rail Stage 1 Archaeological Assessment and Archaeological Research Design (ARD), this area was within the Stage 1 HAMUs 7 and 16 (Figure 6-70).

The construction of Parramatta Light Rail Stage 1 has likely removed all potential archaeological resources in Stage 1 HAMU 7 on Church Street and at the eastern end of Stage 1 HAMU 16 where track has been laid. The remainder of the HAMU on Macquarie Street and Marsden Street is entirely within Stage 1 HAMU 16 and so retains the same assessment of potential and significance as stated for that project. The following assessments have been sourced from the 2019 ARD for Parramatta Light Rail Stage 1, and with regards to significance they are agreed with here. There is one listed archaeological site immediately adjacent to HAMU 26 listed on the SHR (SHR 02027). Listing on the State Heritage Register means that this site is of State Significance and requires no further assessment.

UPDATED HISTORICAL ARCHAEOLOGICAL ASSESSMENT

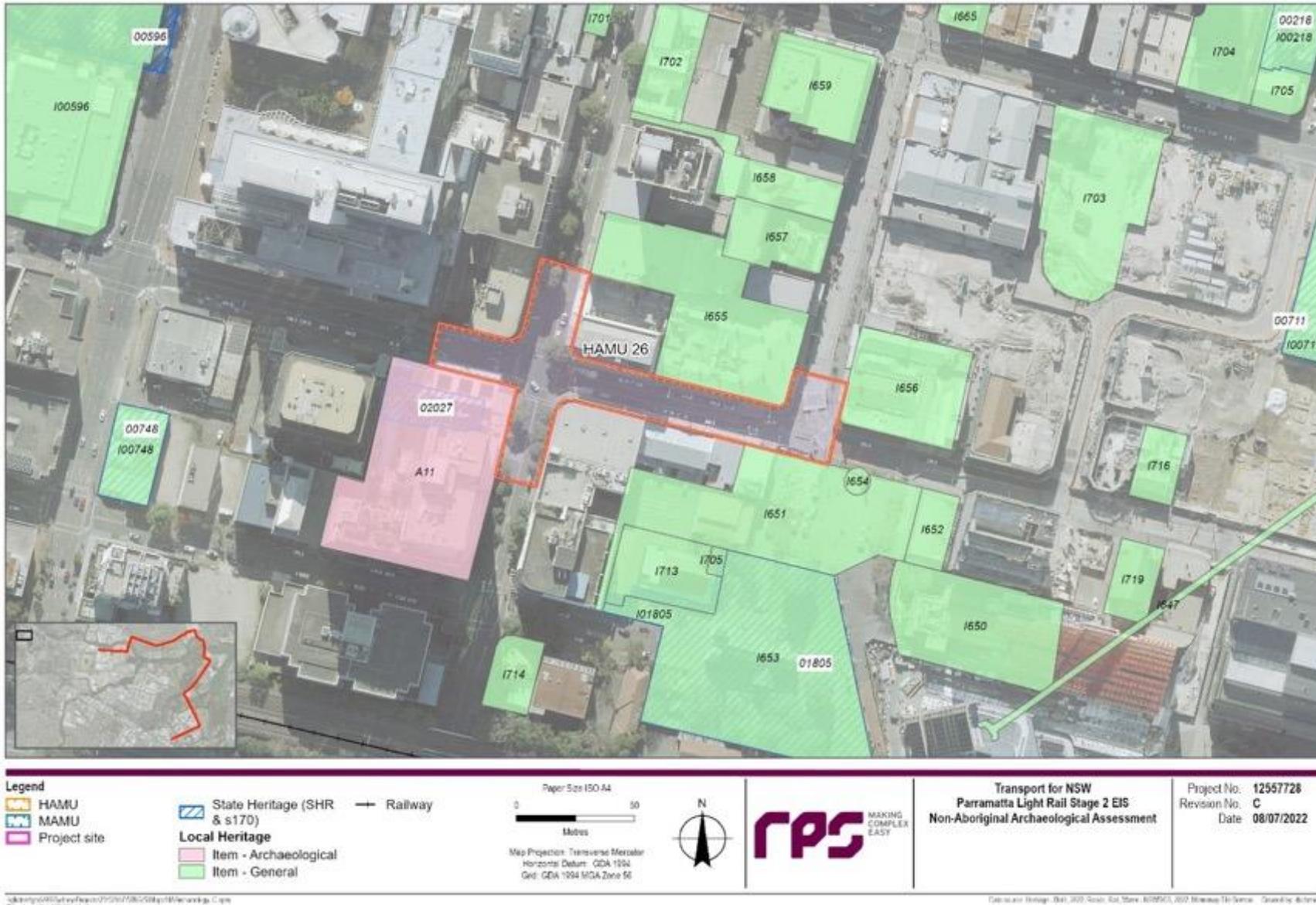


Figure 6-69: HAMU 26 showing the location, nature of present environment and all adjacent heritage listed items

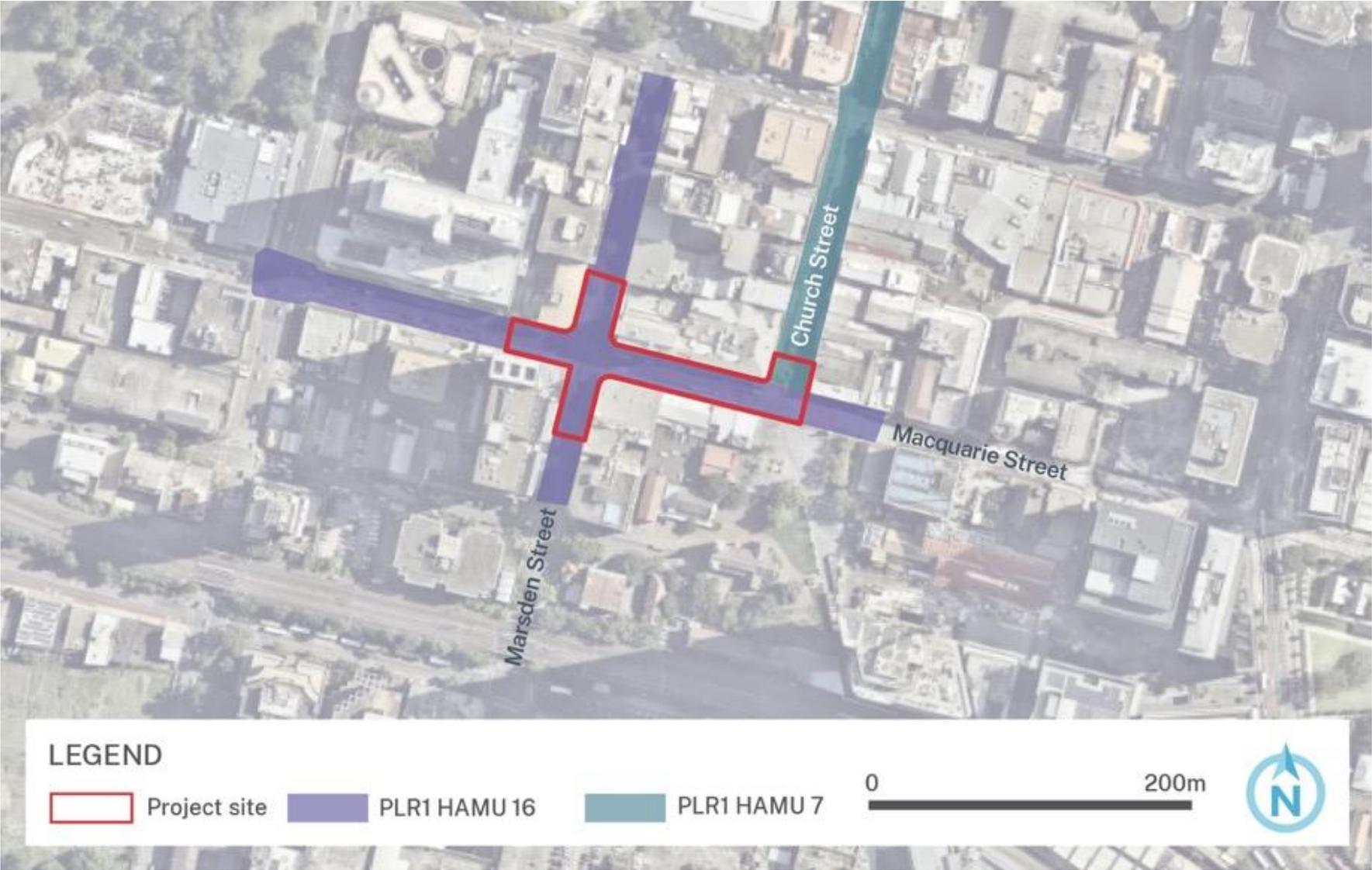


Figure 6-70: Parramatta Light Rail Stage 1 HAMUs that are included in HAMU 26 in this report

## 6.7.2 Phases of occupation and significance

For consistency with Parramatta Light Rail Stage 1, the following information is largely sourced from the Parramatta Light Rail Non-Aboriginal Archaeological Assessment (Artefact, 2017) and the Parramatta Light Rail Stage 1 Historical Archaeological Research Design and Investigation Methodology (GML, 2019) prepared for that project. Examination of the historical context of the project site within the Parramatta CBD as part of Parramatta Light Rail Stage 1 has identified three phases of occupation for this area that may have left archaeological evidence that meets the threshold of significance (Artefact 2017, GML 2019). The assessment of significance is for the entire period of occupation within this HAMU which in part reflects the interconnected nature of the archaeological resource in a heavily occupied area such as a city CBD. The assessment of significance for HAMU 26 is in Table 6-21 and the three phases identified during Parramatta Light Rail Stage 1 are:

1. Early land leases (c1790s-1814)
2. 19th century residential/commercial frontages
3. 19th century road infrastructure.

**Table 6-21: Assessment of significance within the Parramatta CBD for all phases of occupation (Artefact, 2017, GML, 2019).**

<b>All Phases</b>	
<b>Associations with individuals, events or groups of historical importance (current NSW Heritage Criterion A, B and D)</b>	<i>This HAMU has potential to contain archaeological remains associated with early transport routes and century residential settlement in Parramatta. Should an intact resource survive, these remains would reach the local significance threshold.</i>
<b>Ability to demonstrate the past through archaeological remains (current NSW Heritage Criterion A, C, F and G)</b>	<i>Potential archaeological remains within this HAMU have the ability to demonstrate past road building techniques and residential settlement in 19th century Parramatta. These remains have the potential to reach the local significance threshold under this criterion.</i>
<b>Criteria (c) Aesthetic/Technical significance</b>	<i>Potential archaeological remains within this HAMU have no known aesthetic significance although it is recognised that exposed in situ archaeological remains may have distinctive/attractive visual qualities. Archaeological remains are unlikely to reach the locals significance threshold under this criterion.</i>
<b>Criteria (e) Research potential:</b>	<i>This HAMU has the potential to contain moderate archaeological research potential associated with remains of early road surfaces and truncated 19th century residential settlement. The level of research potential is dependent on the intact and substantial nature of potential remains. These remains have the potential to reach the local significance threshold under this criterion.</i>
	<i>It is unlikely that an archaeological resource associated with the convict-era period survives within this HAMU. However, should an intact and substantially intact convict-era archaeological resource survive, these remains would reach the State significance threshold.</i>

### 6.7.3 HAMU within the Parramatta CBD

The following HAMU have been identified in this location (see Figure 6-43):

- HAMU 26 – Parramatta CBD.

Based on the analysis of potential and significance provided during Parramatta Light Rail Stage 1, the following summary assessment is provided for the HAMU. The HAMU has also been given a MR that provides an indication of the appropriate mitigation measures. This is shown in Figure 6-72. The Parramatta CBD contains numerous listed sites with archaeological potential (refer Section 2.4). The project site is not within any of them, and therefore would not directly impact upon any of them.



Figure 6-71: HAMU 26 in the Parramatta CBD on the 1943 aerial photograph showing development at that time

HAMU 26	Parramatta CBD	Parramatta		
<b>Listings</b>	PHALMS 3215, 3211, 3158			
<b>Description of site</b>	HAMU 26 is a 't' shaped area primarily along a 175-metre-long stretch of Macquarie Street. It also includes a 95-metre stretch of Marsden Street and a 15-metre stretch of Church Street.			
<b>Analysis of historic plans and aerials</b>	<p><i>1790-1800 Original Town grid</i>  <i>Part of original town grid of 1790 with allotments and convict huts on the northern side to the West of Church Street.</i>  <i>The street was laid out to the east of Church Street but there was little development until later in the 1790s.</i>  <i>Eastern end was part of large land leases to Smith and Harris until resumed by Macquarie to extend the street.</i>  <i>19th century Urban Development</i>  <i>A new street plan was established by Governor Macquarie in 1814. Original alignment of Macquarie Street retained and extended further east than Harris Street. Residential and commercial properties erected along both sides of Macquarie St extending as far east as Charles street are visible on the 1823 map of Parramatta. The 1844 Brownrigg plan and the 1895 Town Plan show the increasing density of development during the 19th century although the properties along Macquarie St a larger and more well spaced.</i></p>			
<b>Phases of occupation &amp; nature of the resource</b>	<p><b>1 - Early land leases (c1790s-1814)</b>  <i>Artefact scatters rubbish pits or dumps. water management (drains, ditches)</i>  <b>2 - 19th century residential/commercial frontages</b>  <b>3 - 19th century road infrastructure</b>  <i>evidence of earlier phases of Macquarie St (road base, kerbs, drains, surfaces, etc.)</i></p>			
<b>Impact from current buildings</b>	<i>Most of this HAMU is currently suburban streets that have been in continual used since the 18th century. These roads all have been continually repaired and many constructed with solid foundational road-bases and contain numerous services. All of which will have left an impact on any subsurface archaeological resource.</i>			
<b>Likelihood of research potential</b>	<i>This HAMU has the potential to contain moderate archaeological research potential associated with remains of early road surfaces and truncated 19th century residential settlement. The level of research potential is dependent on the integrity and substantial nature of potential remains.</i>			
<b>Archaeological potential</b>	<p><i>There is <b>high</b> potential that truncated remains associated with early services and drains survive within the road corridor</i>  <i>Due to ongoing modification of the road corridors within the Parramatta CBD, there is <b>low</b> potential that archaeological evidence associated with early agricultural uses to survive within the Macquarie Street road corridor.</i></p>			
<b>Summary</b>	<b>Phase</b>	<b>Significance</b>	<b>Potential</b>	<b>MR</b>
	Early land leases (c1790s-1814)	State	Low	1
	19th century residential/commercial frontages	Local	Low	N/A
	19th century road infrastructure	Local	Moderate	1





Figure 6-72: The MRs for the HAMU in Parramatta CBD

## **6.8 Parramatta River**

### **6.8.1 Description**

The project site includes two areas of the Parramatta River. One in the west between Camellia and Rydalmere (Figure 6-73), and another in the east between Melrose Park and Wentworth Point (Figure 6-74).

#### **6.8.1.1 Bridge between Camellia and Rydalmere**

This bridge would provide a connection across the Parramatta River between proposed redevelopment areas in Camellia/Rosehill to the south, and Rydalmere to the north. The southern end of the bridge would be located within the corridor of the Sandown Line in Camellia. The northern end of the bridge would be located within Eric Primrose Reserve to the south of Park Road in Rydalmere .

The bridge would be a five-span, concrete bridge. It would include centrally located light rail tracks with an active transport link on the western side. The bridge would consist of three spans over the river's navigation channel, to the south over mangrove vegetation, and to the north within Eric Primrose Reserve. The bridge would be supported by three piers located within the river, and a fourth on the riverbank at Park Road.

#### **6.8.1.2 Bridge between Melrose Park and Wentworth Point**

This bridge would provide a connection across the Parramatta River between proposed redevelopment areas in Melrose Park to the north, and the developing suburb of Wentworth Point to the south. It would provide additional public and active transport access to and from Wentworth Point for existing and future residents. The northern end of the bridge would be located at the southern end of Wharf Road to the east of the Ermington Boat Ramp in Melrose Park. The southern end of the bridge would be located to the west of Sanctuary Wentworth Point and Hill Road.

The bridge would be a six-span concrete bridge. It would include light rail tracks on the western side of the bridge with an active transport link on the eastern side. The bridge would also include a covered rest area adjacent to the active transport link. The bridge would consist of three larger spans over the navigation channel of the river and smaller spans over the mangrove vegetation and existing active transport infrastructure on both sides of the river. The bridge would be supported by three piers in the Parramatta River.



**Figure 6-73: Approximate area of MAMU 01, looking northeast from Camellia towards Rydalmere**



**Figure 6-74: Approximate area of MAMU 02, viewed from Ermington Boat Ramp at Melrose Park looking towards Wentworth Point**

### 6.8.2 MAMUs within the Parramatta River

The following MAMUs have been identified in these locations (see Figure 6-75 and Figure 6-76):

- MAMU 01 – Camellia to Rydalmere
- MAMU 02 – Melrose Park to Wentworth Point.

MAMU 01 was assessed in the Historical Archaeological Assessment prepared for the EIS and was mapped along a north-south section of the Parramatta River between 37A Grand Avenue, Camellia and Rydalmere Wharf. As part of the amended project, the light rail alignment has been relocated along the foreshore and would extend northeast across a bridge over the Parramatta River to the southern end of Park Road and, as such, the boundary for MAMU 01 has been revised for this assessment.

MAMU 01	Camellia to Rydalmere (alternate)	Parramatta River		
Listings	PHALMS 2996 – Parramatta and Duck Rivers (Figure 6-5).			
Description of site	MAMU 01 is a 273-metre-long, 60-metre-wide rectangular area that comprises the riverbed (excluding foreshore areas) between Camellia and Rydalmere.			
Analysis of historic plans and aerials	<p>There has been no development within the riverbed in this location. No wharves or other features in this MAMU are included in 1789 Bradley map or the 1813 CSO map. Nor do other features appear in other early 19th century maps, including Brownrigg’s 1850 map. The steps at Red Bank are considered as part of HAMU 27 and Shepherd’s Wharf in Rydalmere is considered as part of HAMU 28, given that their locations are now terrestrial.</p> <p>Analysis of historical plans and aerials show the width of the Parramatta River in MAMU 01 has not changed markedly since 1789, although the extensive tidal mud flats have been removed. A comparison with a 1943 aerial photograph shows the width to be almost identical to its current dimensions. However, the 1943 photograph also shows the river within and to the east of the project site to be very shallow with only a very narrow channel of slightly deeper water. Sediments such as these were removed to facilitate the Parramatta River Ferry Service in the 1990s.</p>			
Phases of occupation & nature of the resource	River transport and ways of life (1788-1900).			
Impact from current use	There is no development within or adjacent to this MAMU. Previous archaeological investigations of the Parramatta River have shown that the river has high potential to reveal deposits relating to the refuse of Parramatta’s residents, particularly institutions. However, these deposits have been contaminated by twentieth-century industrial waste, and are subject to tidal disturbance and extensive dredging of the upper reaches of the Parramatta River for the Parramatta River Ferry Service in the 1993.			
Likelihood of research potential	<p>The PHALMS identifies the following research questions within this MAMU:</p> <p>Is there evidence for differentiation between land-based and other transport of goods?</p> <p>Is there evidence of nineteenth-century river dredging or navigation improvements?</p> <p>What archaeological evidence exists to show the link between the River and the Parramatta economy?</p> <p>What evidence is there of transporting goods into Parramatta from the Interior, and from Parramatta to Sydney?</p>			
Archaeological potential	Due to the level of disturbance and lack of development along the shoreline, the potential for any archaeological evidence in this MAMU is assessed as being <b>nil</b> .			
Summary	Phase	Significance	Potential	MR
	River transport and ways of life – 1788 – 1900.	Local	Low	N/A

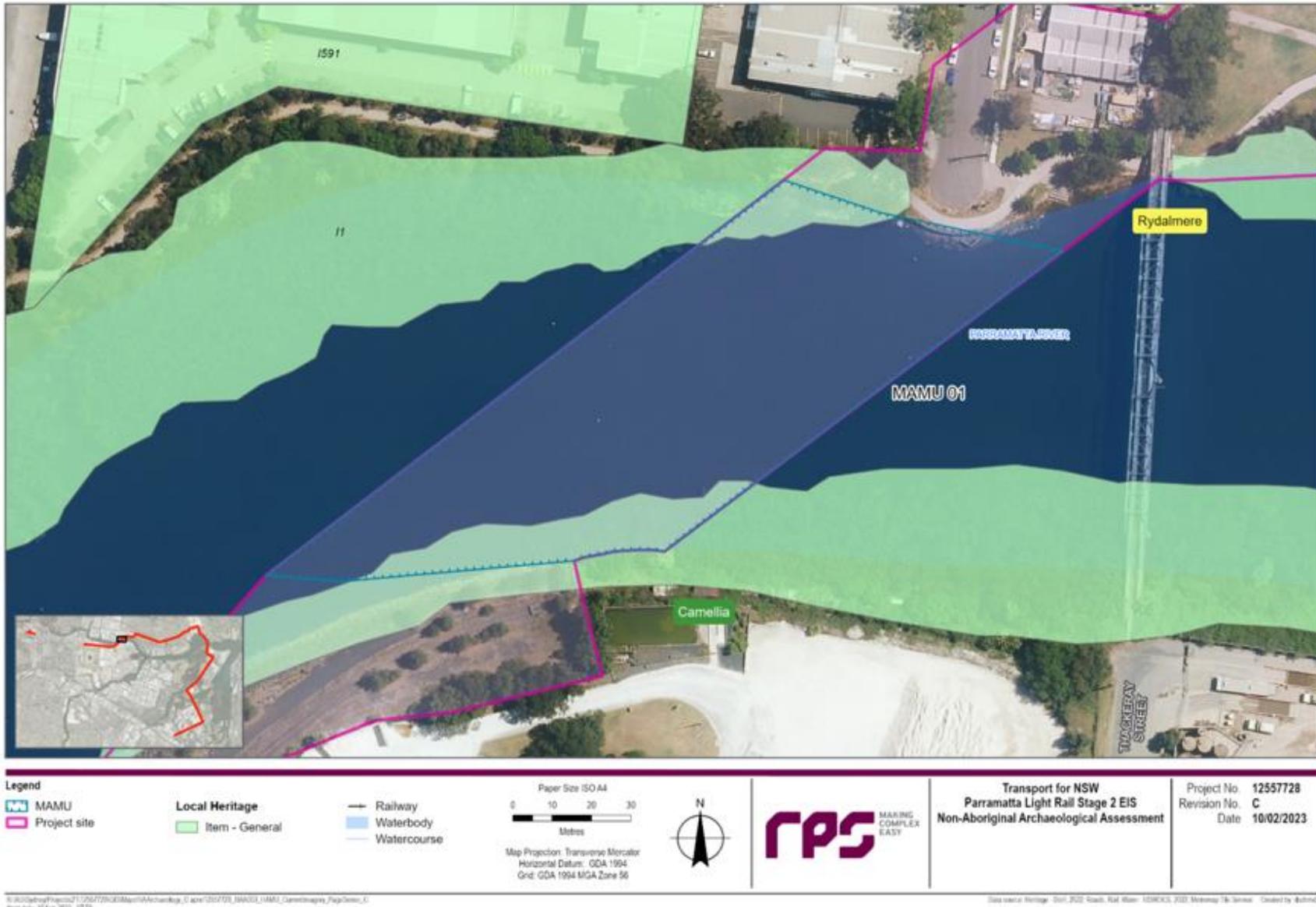


Figure 6-75: MAMU 01 between Camellia and Rydalmere showing the location, nature of present environment and all adjacent heritage listed items

MAMU 02	Melrose Park to Wentworth Point	Parramatta River
<b>Listings</b>	PHALMS 2996 (Figure 6-5).	
<b>Description of site</b>	MAMU 02 is a 175-metre-long, 108-metre-wide area that comprises the riverbed (excluding foreshore areas) between Melrose Park and Wentworth Point.	
<b>Analysis of historic plans and aerials</b>	<p>There has been no development within the riverbed in this location. However, MAMU 02 is located immediately adjacent to HAMU 15, and there is potential for archaeological evidence associated with the development and use of Ermington Wharf within that location. In particular, MAMU 02 may contain the remains of cargo that was dumped over the side of vessels, ballast, personal effects, ship fittings or even the remains of small boats. It is likely that various objects would have been dropped overboard or from the wharf throughout its history.</p> <p>Similarly, quiet stretches of water near jetties and wharves were common locations for the abandoning of watercraft. Vessels that were abandoned or broken up on site were typically not documented and little archival or historical evidence remains of such activities. As these vessels break up over time by a combination of environmental factors and salvaging (formal or otherwise), debris associated with maritime sites can be spread over a relatively wide area.</p> <p>Surviving evidence of Ermington Wharf is clear within the shoreline of Melrose Park immediately adjacent the Ermington Boat Ramp. The Ryde LEP listing for <i>Wharf</i> states an earlier jetty/wharf structure, associated with the 19th century development of the site may be located underneath this wharf. In addition, there is some potential for archaeological evidence associated with the wharf to extend into the project site. Previous studies have also shown that archaeological evidence can survive within the mangrove areas of the Parramatta LEP heritage item <i>Wetlands</i>. For example, remnants of the corduroy road were observed in the mangroves at the continuation of Cobham Street (Archaeology &amp; Heritage, 2007:6).</p>	
<b>Phases of occupation &amp; nature of the resource</b>	River transport and ways of life (1788–1900). Ermington Wharf (c. 1820s–c. 1930).	
<b>Impact from current use</b>	Survey of the riverbed indicated river currents, wave action from the river ferries, water erosion and river dredging. This disturbance has reduced the potential for archaeological remains to remain intact or in situ within the main river channel (see Appendix A).	
<b>Likelihood of research potential</b>	<p>The PHALMS identifies the following research questions within this MAMU:</p> <ul style="list-style-type: none"> <li>- Is there evidence for differentiation between land-based and other transport of goods?</li> <li>- Is there evidence of nineteenth-century river dredging or navigation improvements?</li> <li>- What archaeological evidence exists to show the link between the River and the Parramatta economy?</li> <li>- What evidence is there of transporting goods into Parramatta from the Interior, and from Parramatta to Sydney?</li> </ul> <p>These questions are relevant to Ermington Wharf.</p>	
<b>Archaeological potential</b>	<p>Quiet stretches of water near jetties and wharves were common locations for the abandoning of watercraft. Vessels that were abandoned or broken up on site were typically not documented and little archival or historical evidence remains of such activities. As these vessels break up over time by a combination of environmental factors and salvaging (formal or otherwise), debris associated with maritime sites can be spread over a relatively wide area.</p> <p>However, the riverbed and area surrounding the Ermington Boat Ramp have been disturbed by river currents, wave action from the river ferries, water erosion and river dredging. This disturbance has reduced the potential for archaeological remains to survive intact or in situ within the main river channel. Additional maritime archaeological assessment undertaken concluded there is no archaeological potential within the main riverbed (see Appendix A).</p>	

**MAMU 02**      **Melrose Park to Wentworth Point**      *Parramatta River*

The potential for abandoned watercraft and associated relics within the main riverbed is considered **nil**. The potential evidence of maritime infrastructure within the main riverbed is considered **nil**.

<b>Summary</b>	<b>Phase</b>	<b>Significance</b>	<b>Potential</b>	<b>MR</b>
	River transport and ways of life – 1788 – 1900.	Local	Nil	N/A
	Ermington Wharf (c. 1820s–c. 1930).	Local	Nil	N/A

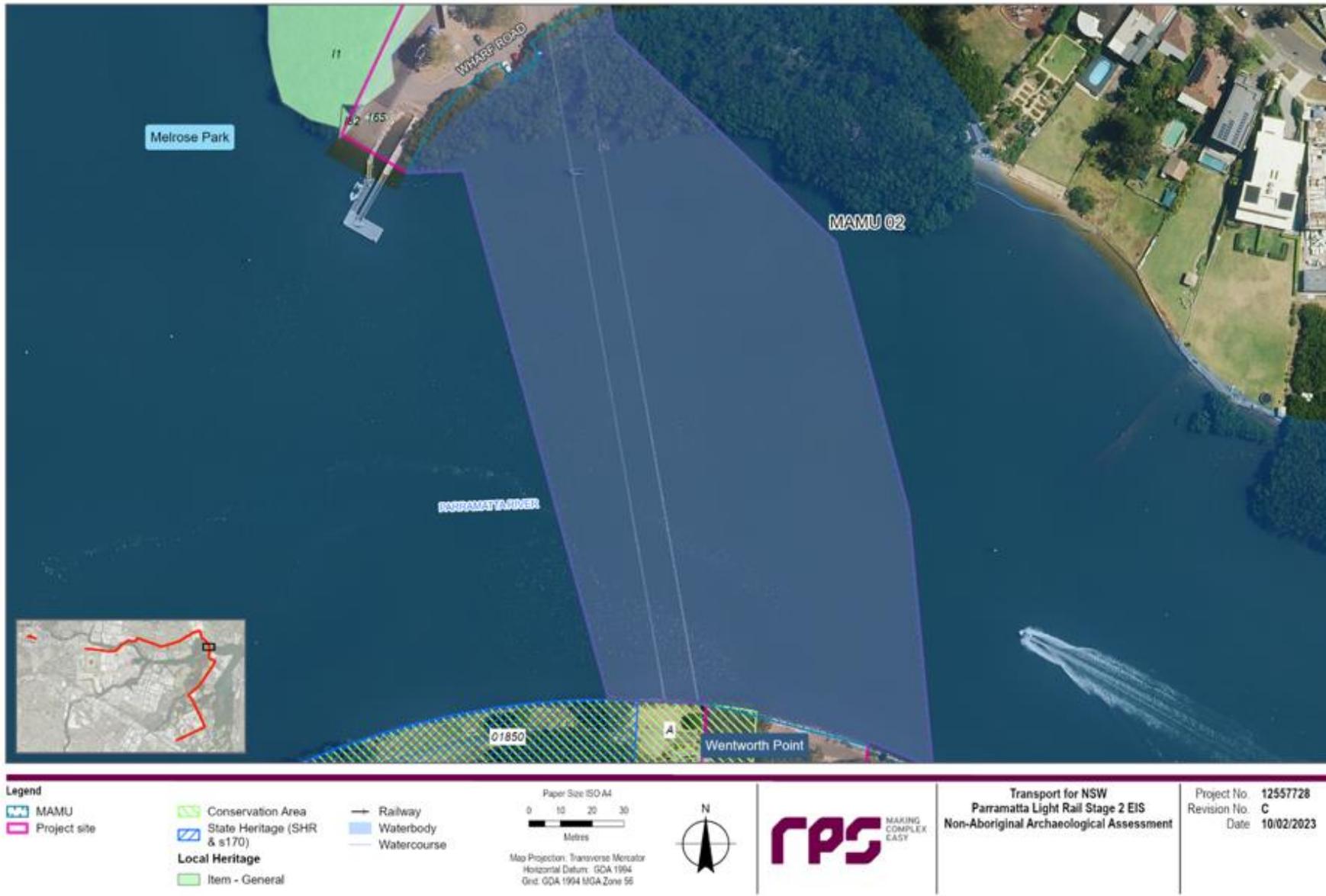


Figure 6-76: MAMU 02 between Melrose Park and Wentworth Point showing the location, nature of present environment and all adjacent heritage listed items



## 6.9 Conclusions

The assessment provided in sections 6.1 to 6.8 has divided the project site into 24 individual HAMUs and two MAMUs and analysed each of them for the likelihood (potential) to contain an archaeological resource. It has also provided an indication of the significance of that potential resource in line with established guidelines noting that a site or place can be significant for reasons other than its potential archaeological resource.

In each of the HAMUs multiple phases of occupation have been identified through historical analysis and the significance of deposits related to different phases can have different significance as demonstrated in Table 6-22). In summary:

- one HAMU has high potential for a State significant and locally significant archaeological resource
- three have medium potential for State significant resources
- one has medium potential for locally significant resources
- the remaining 19 have low to nil potential of a significant archaeological resource
- there is low to nil maritime archaeological potential within the riverbed in both MAMU 01 and MAMU 02.

The HAMU with high potential for a State significant resource (HAMU 15) relates to evidence of the 1820s Ermington Wharf. There is also high potential for locally significant resources related to the development of the surrounding area from the same period.

The three HAMUs with medium potential for State significant resources (HAMU 07, HAMU 11 and HAMU 29) related to early farming with HAMU 07 and HAMU 29 being part of the Vineyard Estate and HAMU 11 being located in land not part of any large estate but still used for farming. Testing in HAMU 07 indicates evidence of landscape clearance, a key initial farming activity, may also be present.

A key aspect of the research potential of all of these archaeological resources is the possibility of largescale comparative analysis of early farming practices. Hence, they collectively increase the significance of each other in this regard. If other archaeological resources elsewhere within the project site show substantial evidence of early farming practices, then their significance may likewise be increased.

The area with medium potential for a locally significant archaeological resource (HAMU 26) is within the Parramatta CBD. It also has low potential for a State significant archaeological resource. The location of this HAMU in the centre of Parramatta means that the archaeological resource, and research potential of this HAMU is very different to much of the rest of the study area which is all part of the Sydney and Parramatta hinterland.

**Table 6-22: Summary of the HAMUs with highest and most significant potential.**

HAMU	Phase	Significance	Potential
HAMU 07 – Broadoaks Park.	1 –The Vineyard Estate 1791-1849	State	Medium
HAMU 11 – Ken Newman Park.	1 – Early Farming 1792-1871	State	Medium
HAMU 15 – Ermington Wharf and Archer Park.	1 – Early Farming and Edmund Lockyer 1792-1827	State	Low
	2 –Ermington Wharf c.1820s-c 1930	State/Local	High
HAMU 29 – Western Eric Primrose Reserve	1 –The Vineyard Estate 1791-1849	State	Medium

## 7 PRELIMINARY IMPACT ASSESSMENT

This section identifies the impacts that the construction and subsequent use of the light rail would have on areas that have been assessed as having an archaeological resource that meets the threshold for significance. The finalisation of the construction plans would provide a clear indication of where impacts are due to occur. The planned archaeological test excavation will contribute towards a greater understanding of the significance and potential of the archaeological resource. Once both of these have occurred it will be possible to provide a more robust and in depth impact assessment.

The assessment of impact assumes that the archaeological resource in each HAMU has the potential and significance outlined in Section 6 above. The impacts have been sorted into three broad categories based in part on the *Heritage NSW Material Threshold Policy* (Heritage NSW, 2020):

- major impacts are those which would entirely remove any potential resource
- moderate impacts are those where a proportion, but not all, of the resource would be disturbed
- minor impacts are where little to no part of the resource would be removed and where impacts are related to compression or vibration (discussed in Section 3.5 of the Updated Noise and Vibration Report).

When assessing impact these three rankings apply to all areas where there is any potential for a significant archaeological resource, irrespective of the degree of potential. Likewise, the level of significance (local or State) is not considered as any archaeological resource that meets, or may meet, the threshold of local significance is protected. This approach has been taken to ensure that the impact to any area with a potential archaeological resource has been appropriately assessed and so the results can be effectively integrated into future mitigation and design consideration.

The appropriate mitigation strategies for managing these impacts are discussed in in the next chapter and in the RDEM (Appendix B).

### 7.1 Camellia

In Camellia the project would impact upon potential archaeological resources in two HAMUs.

In HAMU 01 there is low archaeological potential of a State significant archaeological resource that relates to early farming on the Elizabeth Farm Estate from 1796 to 1881. This may include hoe, spade and ard marks, postholes and fence lines, ditches and gullies, artefacts and palaeobotanical evidence such as seeds and pollen. There is also high potential for physical items related to industrialisation from 1881 onwards. This may include the extant tracks, and associated infrastructure. However, these physical items are unlikely to meet the threshold of local significance for archaeological research potential but may be significant under other criteria. The laying of new rail track and the construction of a stop at the western end (Sandown Boulevard) would include extensive subsurface works including trenching, bulk excavation, and landscaping. This would involve the removal of any evidence of the Elizabeth Farm Estate so is considered to have a major impact on the archaeological resource. The establishment of a construction compound at the eastern end of the HAMU may impact the resource through compression and vibration caused by the movement and placement of heavy machinery. This impact would be minor. HAMU 01 also contains a small section of the LEP listed, locally significant, remains of the Parramatta Tramway that ran through the area. The project impact on this item is discussed in the Updated Statement of Heritage Impact (Built Heritage) where it is noted that would be a minor adverse direct impact primarily due to the potential removal of a small section the extant tracks.

HAMU 27 is assessed as having low potential for a State significant resource relating to the Elizabeth Farm Estate from 1796 to 1881. If present in the area this resource is likely to include evidence of agriculture such as hoe, spade and ard marks, postholes and fence lines, ditches and gullies, artefacts and palaeobotanical evidence such as seeds and pollen. Historical research suggests that during the Elizabeth Farm phase, a large hut and enclosure were built in the vicinity of HAMU 27. Evidence of this structure, its purpose, or use would be particularly important as it could have high research potential especially if it contains *in situ* occupation deposits and may result in the need for salvage excavation. If evidence of this structure is encountered advice would need to be sought from Heritage NSW. Given its riverine location there is also the potential for evidence of fishing, boating and other river-based activities to be present in addition to evidence of wharves, steps, piles, and bank shoring. Any evidence of the steps shown in the 1844 Brownrigg Plan or

any wharf structure that dates to that period would have very high research potential as it may facilitate examination of the riverine economy in the first half of the 19th century. Works proposed for this area include the laying of new track and the construction of a bridge. This would include extensive subsurface work including piling for bridges, road works excavations, potential crane pad excavations, and abutment settlement.

### 7.2 Rydalmere

The project would impact on the potential archaeological resource in all five of the HAMUs in Rydalmere.

There is low potential for a State significant resource related to The Vineyard Estate from 1791 to 1849 in HAMU 28. If evidence is present, it would likely consist of farming related activities such as hoe, spade and ard marks, postholes and fence lines, ditches and gullies, artefacts and palaeobotanical evidence such as seeds and pollen. As Park Road appears to have been an early route way through the landscape there is potential for evidence of earlier road surfaces beneath the existing surface. There is low potential for evidence of Shepherds Wharf such as the original wharf structure as the area has been heavily modified during road works in the 1980s. Bridge construction in the area, which would include extensive subsurface work such as piling for bridges, road works excavations, potential crane pad excavations, and abutment settlement is considered to be a major impact on the archaeological resource.

HAMU 29 has medium potential for a State significant archaeological resource related to The Vineyard Estate from 1791 to 1849 and low potential for evidence of post-war housing from 1945 onwards. Evidence relating to post-war housing is not assessed as meeting the threshold for local archaeological significance but may still be encountered during works. If substantially intact deposits from this phase are found, then reassessment would be necessary although this is considered unlikely. Evidence from The Vineyard Estate could include plough and ard marks, channels, gullies and ditches, fencelines, postholes and other structural features in addition to artefact spreads and archaeobotanical evidence such as seeds and pollen. The riverine location means there may also be evidence of fishing encampments and other river based activities. The new light rail track and light rail stop established through this HAMU would include extensive subsurface impacts including trenching for utilities and foundations which would remove the archaeological resource and so is considered a major impact.

In HAMU 05 there is low potential for evidence relating to the Vineyard Estate from 1791 to 1849 which is of State significance. Evidence of the Vineyard Estate may include plough and ard marks, channels, gullies and ditches, fencelines, postholes and other structural features in addition to artefact spreads and archaeobotanical evidence such as seeds and pollen. This HAMU is close to the river so in addition to the evidence of farming, there may also be evidence of fishing encampments and other riverine based activities. The laying of new track and the construction of a bridge would include extensive subsurface works including trenching and piling. The trenching along the track alignment would remove any archaeological evidence and so is a major impact. The bridge impact would also be major as work including excavation of foundations for abutment walls and approach ramps would be undertaken.

In HAMU 06 there is low potential for evidence of the State significant Vineyard Estate and low potential for evidence of the locally significant post-war housing estate from 1945 onwards. Evidence relating to post-war housing is not assessed as meeting the threshold for local archaeological significance but may still be encountered during works. If substantially intact deposits from this phase are found, then reassessment would be necessary although this is considered unlikely. Evidence of the Vineyard Estate may include plough and ard marks, channels, gullies and ditches, fencelines, postholes and other structural features in addition to artefact spreads and archaeobotanical evidence such as seeds and pollen. Evidence of the post-war housing estate here may include construction yards with building materials, artefacts deposited during construction, informal temporary structures, utilities such as drains and demolished houses. The new track through this HAMU and new stops at John Street and Nowill Street would include extensive subsurface excavation for utilities and foundations which would constitute a major impact on the archaeological resource, if one is present. The new bridge over Silverwater Road would have a major impact, as extensive subsurface work including piling for bridges, road works excavations, potential crane pad excavations, and abutment settlement would be needed.

In HAMU 07 there is medium potential for State significant evidence relating to the Vineyard Estate 1791-1849 and the lack of development in this HAMU makes this even more likely. Evidence of the Vineyard Estate may include plough and ard marks, channels, gullies and ditches, fencelines, postholes and other structural features in addition to artefact spreads and archaeobotanical evidence such as seeds and pollen.

Test excavation completed in late 2022 found evidence of landscape clearance that may date from this period. Evidence of post-war housing from 1945 onwards was also encountered during the test excavation. This consisted of a layer of broken building materials from the period. Other evidence of post-war housing includes the informal buildings identified on the 1943 aerial photograph. The area surrounding these buildings was not included in the test excavation program as the focus was on the earlier phase of occupation. At present evidence relating to post-war housing is not assessed as meeting the threshold for local significance but given the results of the testing some further evidence is likely to be encountered during works. If substantially intact deposits from this phase are found, then reassessment would be necessary although this is considered unlikely based on the results of test excavation where only discarded common building materials were found. Other evidence from this phase could include yards with building materials, artefacts deposited during construction, and utilities such as drains. The establishment and use of a construction compound in this HAMU may cause compression and vibration impact on the archaeological resource which is considered a minor impact.

No additional maritime archaeological potential has been identified at the proposed bridge crossing between Camellia and Rydalmere and no heritage impact is anticipated.

### 7.3 Ermington

HAMU 08 has low potential for archaeological resources relating to the State significant Early Farming 1792 to 1871 and low potential for evidence of post-war housing estates. Evidence of early farming may include plough and ard marks, channels, gullies and ditches, fencelines, postholes and other structural features in addition to artefact spreads and archaeobotanical evidence such as seeds and pollen. Evidence of post-war housing may include, artefacts deposited during construction, informal temporary structures, and utilities such as drains. Evidence relating to post-war housing is not assessed as meeting the threshold for local archaeological significance but may still be encountered during works. If substantially intact deposits from this phase are found, then reassessment would be necessary although this is considered unlikely. The new light rail track laid through this HAMU would include extensive subsurface impacts including trenching for utilities and foundations which would remove the archaeological resource and so is considered a major impact. The new bridge over Silverwater Road would have a major impact as substantial footings for abutment walls and approach ramps would be needed which would likely remove all of the potential archaeological resource.

In HAMU 09 there is low potential for archaeological resources relating to the State significant early farming 1792 to 1871, and low potential for archaeological evidence of locally significant post-war housing estates from 1945 onwards. The watermain that runs through this HAMU has likely had a major impact on any archaeological resource. That said, either side of the watermain trench evidence may survive including plough and ard marks, channels, gullies and ditches, fencelines, postholes and other structural features in addition to artefact spreads and archaeobotanical evidence such as seeds and pollen from the early farming phase. Evidence of post-war housing may include, artefacts deposited during construction, informal temporary structures, and utilities such as drains. Evidence relating to post-war housing is not assessed as meeting the threshold for local archaeological significance but may still be encountered during works. If substantially intact deposits from this phase are found, then reassessment would be necessary although this is considered unlikely. New light rail tracks and their associated subsurface aspect would likely remove all of the archaeological resource therefore the impact is considered to be major. The stop at River Road would have a similar impact which is also considered to be major. In both instances the removal of the archaeological resource would be total.

HAMU 10 has low potential for archaeological resources relating to the State significant early farming 1792 to 1871 and low potential for archaeological evidence of locally significant post-war housing estates. Evidence of early farming may include plough and ard marks, channels, gullies and ditches, fencelines, postholes and other structural features in addition to artefact spreads and archaeobotanical evidence such as seeds and pollen. Evidence of post-war housing may include, artefacts deposited during construction, informal temporary structures, and utilities such as drains. Evidence relating to post-war housing is not assessed as meeting the threshold for local archaeological significance but may still be encountered during works. If substantially intact deposits from this phase are found, then reassessment would be necessary although this is considered unlikely. Utility works in this HAMU would involve trenching that would entirely remove the archaeological resource, and this is considered a major impact.

In HAMU 11 there is high potential for State significant evidence of early farming 1792 to 1871 and medium potential for evidence of locally significant post-war housing from 1945 onwards. Evidence of early farming

may include plough and ard marks, channels, gullies and ditches, fencelines, postholes and other structural features in addition to artefact spreads and archaeobotanical evidence such as seeds and pollen. Evidence of post-war housing may include, artefacts deposited during construction, informal temporary structures, and utilities such as drains. Evidence relating to post-war housing is not assessed as meeting the threshold for local archaeological significance but may still be encountered during works. If substantially intact deposits from this phase are found, then reassessment would be necessary, although this is considered unlikely. Analysis shows that this HAMU has not been substantially developed in the past which contributes to its potential. The laying of new light rail track in this HAMU would have a major impact as it involves extensive subsurface works. The building of a new bridge in Ken Newman Park may have a major impact if extensive footings are required or a moderate to minor impact if the structure is piled. The construction compounds may have a minor impact, based on vibration and compression only.

HAMU 12 has low potential for archaeological resources relating to the State significant early farming 1792 to 1871 and low potential for archaeological evidence of post-war housing estates. Evidence of early farming may include plough and ard marks, channels, gullies and ditches, fencelines, postholes and other structural features in addition to artefact spreads and archaeobotanical evidence such as seeds and pollen. Evidence of post-war housing may include artefacts deposited during construction, informal temporary structures, and utilities such as drains. Evidence relating to post-war housing is not assessed as meeting the threshold for archaeological significance at a local level, but may still be encountered during works. If substantially intact deposits from this phase are found, then reassessment would be necessary although this is considered unlikely. The laying of new light rail track and a new stop at Murdoch Street would involve extensive subsurface work, including trenching and foundations, which is a major impact on the archaeological resource.

In HAMU 13 there is low potential for locally significant archaeological evidence relating to the Swane Brothers Nursery 1919-1967. The area of the Swane Brothers Nursery has been continually occupied and modified since it was built. The house, Willowmere, and its garden are considered to be at least partially intact. Evidence may include artefacts and refuse related to either the house or nursery. The new light rail track and stop at Atkins Road would likely remove all archaeological evidence as this construction and would involve substantial subsurface works. As such, it is considered to be a major impact.

### 7.4 Melrose Park

HAMU 14 has nil potential for archaeological resources hence there can be no impact.

In HAMU 15 there is low potential for archaeological evidence of State significance relating to early farming and Edmund Lockyer 1792 to 1827, high potential for State and locally significant evidence from the period of the Ermington Wharf circa 1820s to circa 1930 and low potential for an archaeological resource that relates to subdivision, growth and post-war housing from the 1840s to 1945, and post 1945. Historical analysis suggests only minimal 20th century development in this area which increases the likelihood of intact archaeological resources from the 18th and 19th century. Evidence of early farming could include plough and ard marks, channels, gullies and ditches, fence lines and postholes, waste artefacts from muck spreading, seeds, pollen and other macrofossils.

Evidence relating to mid-19th century, typified by the Ermington Wharf, is also likely to be present in HAMU 15 and this includes wharf structures, associated huts, sheds and other buildings, objects used in the construction, maintenance and operation of the wharf. From this period in the surrounding area there is the likelihood of barns, and other farming related structures including Mr Eyre's cottage, in addition to landscape features such as paddocks. HAMU 15 contains an extant well/cistern visibly on the ground that is likely to be from the 19th century. Archaeological investigation is required to determine the age and significance of this structure. It is a clear indication of a high degree of preservation, and minimal later impact in the area.

Evidence of subdivision and growth could include construction yards with building materials, refuse deposited during construction, informal temporary structures, utilities such as drains, and demolished houses. Evidence relating to post-war housing is not assessed as meeting the threshold for archaeological significance at a local level but may still be encountered during works. If substantially intact deposits from this phase are found, then reassessment would be necessary although this is considered unlikely. The laying of new light rail track and construction of a new stop in this HAMU would be a major impact to the archaeological resource as it would involve extensive subsurface work including trenching and foundations. The establishment of a construction compound may cause compression and vibration to occur which is a minor impact to the archaeological resource. The construction of the new bridge over the river would also

cause a major impact to the potential archaeological resource in the area as it would include extensive subsurface work including piling for bridges, road work excavations, cut/fill for the carpark, replacement power pole footings, potential crane pad excavations, and abutment settlement would be needed.

The proposed works would involve some disturbance of riverbed deposits near Ermington Wharf in MAMU 02. Deposits within this area are likely to have been considerably disturbed by water erosion, wave action, construction works and site use. Artefacts once scattered in the river are likely to have been further disturbed by river currents and dredging. Any potential impact to maritime archaeology would arise from piling, with the highest archaeological potential being located within the vicinity of the known site of Ermington Wharf. Additional assessment of this location has concluded there is no unidentified maritime archaeological archaeology within the project site and therefore no archaeological impact (see Appendix A).

Construction and associated activities related to bridge construction such as piling would have an impact on any extant archaeological deposits. However, most of the riverbed has been subject to extensive disturbance through activities such as dredging, and ongoing propeller wash from ferries and recreational vessels.

Due to the level of disturbance by dredging, no maritime archaeological potential has been identified within the riverbed and so the heritage impact is considered low in relation to the potential for maritime infrastructure and associated archaeological deposits, or any historic shipwreck remains.

No works should occur within the fenced preservation area of Ermington Wharf, which is the area of highest significance and has been nominated as an exclusion zone (see Figure 7-1). Archaeological investigations were undertaken in 2010 during the construction of jetty, and results indicated little archaeological potential on the western side of the preservation area, where site establishment for the bridge works are proposed.

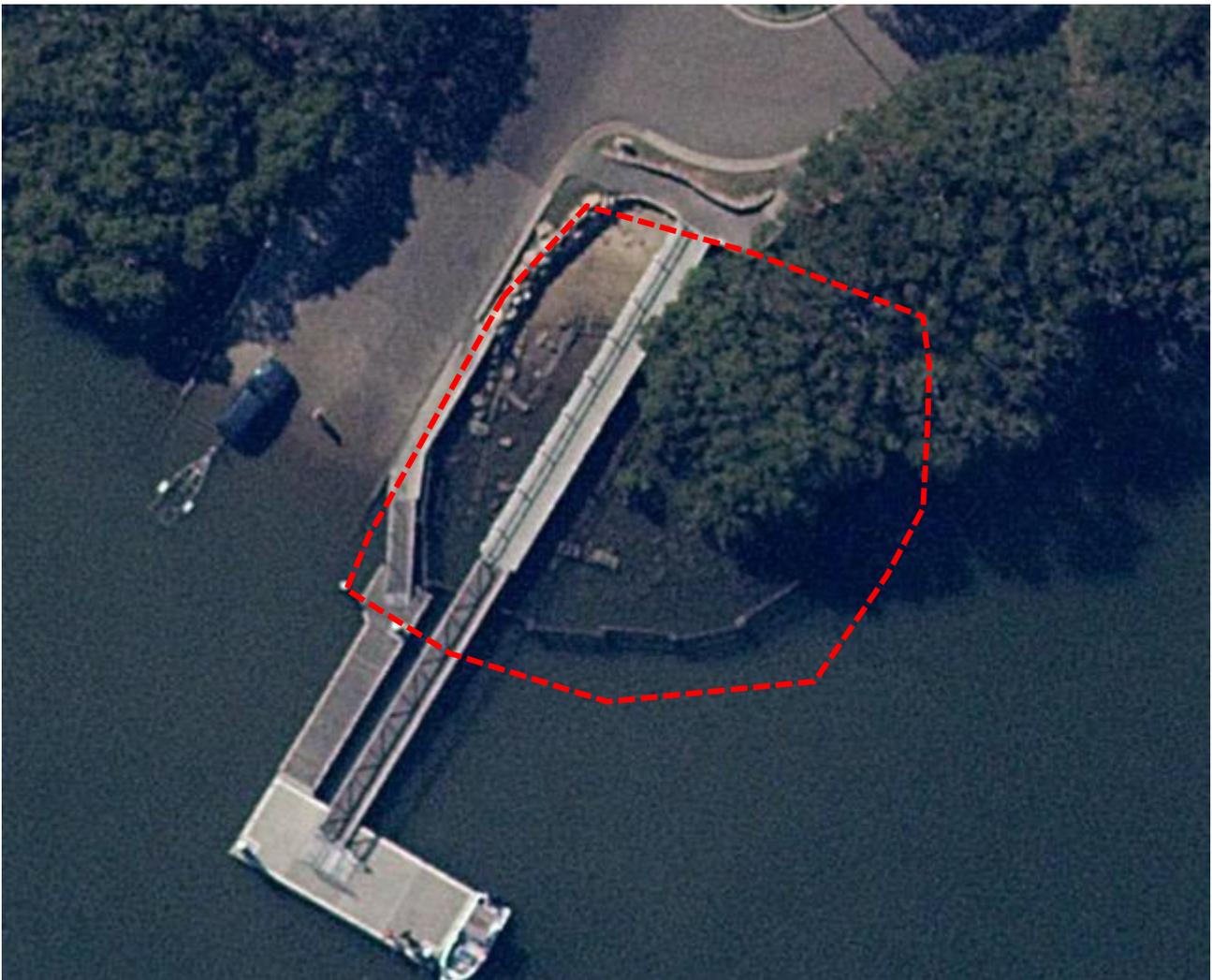


Figure 7-1: Aerial view of fenced preservation area/exclusion zone (SIX Maps)



Figure 7-2: Fenced preservation area/exclusion zone



Figure 7-3: Fenced preservation area/exclusion zone

## 7.5 Wentworth Point

HAMU 17 in Wentworth Point has no archaeological potential and as such no assessment of the project impacts is required.

## 7.6 Sydney Olympic Park and Carter Street precinct

None of the HAMUs (HAMU18, 19, 20, 22, 23, 24, 25 or 26) in Sydney Olympic Park and the Carter Street precinct have potential archaeological resources, and no archaeological impact is anticipated.

## 7.7 Parramatta CBD

The existing Parramatta Light Rail Phase 1 has already been constructed at the eastern end of HAMU 26 around Church Street meaning there is unlikely to be any further impact in this area. This impact assessment covers the rest of HAMU 26, which corresponds to part of Parramatta Light Rail Stage 1 HAMU 16.

The remainder of HAMU 26 has low potential for State significant archaeological resources relating to early land leases (circa 1790s-1814). This may include brick and stone footings, paving, timber structures, cesspits, wells, rubbish pits, and deposits containing artefacts and fossil pollen. There is also low potential for a locally significant resource relating to 19th century residential/commercial frontages including wells, footings and cesspits, and moderate potential for a locally significant archaeological resource related to 19th

century road infrastructure. This may include sewers and stormwater drains built from brick, stone, timber, ceramic and cast iron (GML 2019). The building of new light rail track along this HAMU, including extensive subsurface excavation for laying utilities and landscape remodelling to provide a base for tracks, would result in major impact to the archaeological resource.

Two LEP listed items with archaeological potential are adjacent to the project site: potential (Murrays' Building (and potential archaeological site) (Parramatta LEP Item No. I652) and Shop (and potential archaeological site) (Parramatta LEP Item No. I655). A further five sites are considered nearby (i.e. within 66 metres) to the project site. These are Parramatta Town Hall (and potential archaeological site) (Parramatta LEP Item No. I650), Horse parapet façade and potential archaeological site (Parramatta LEP Item No I656), Telstra House (former post office) (and potential archaeological site) (Parramatta LEP Item No. I1657), HMV (former Commonwealth Bank) (and potential archaeological site) (Parramatta LEP Item No. I658) and Archaeological site (134-140 Marsden Street) (Parramatta LEP Item No. A11). There is no direct impact from the project on any of these items. There is the possibility for minor indirect impact in the form of vibration but this is unlikely to damage the potential archaeological resource.

One SHR listed known archaeological site, *Archaeological Site and Associated Artefacts* (SHR No. 02027), is also adjacent to the project area. The project would have no physical impact to the identified heritage significance of these item. However, there is potential for minor impact through vibration. Potential vibration impacts would be managed through implementation of the mitigation measures provided in the Updated Noise and Vibration Report. These potential minor impacts would be minimised and managed by the preparation of a CEMP for the project as outlined within the Updated Noise and Vibration Report to ensure the protection and management of these heritage items throughout the construction of the project.

### 7.8 Parramatta River

No maritime archaeological resources have been identified within the riverbed and no archaeological impact is anticipated. For more information see Appendix A.

### 7.9 Cumulative impacts

Parramatta is currently subject to a number of significant developments and has undergone a drastic and fast paced regeneration throughout the early decades of the 21st century. As a result, important and rare historical archaeological resources are being encountered, mitigated and removed throughout the Parramatta CBD and North Parramatta, in particular. This has led to a variety of approaches being implemented including mitigation, removal and in situ preservation. Archaeological evidence associated with the early development of the Rose Hill colony, and early convict period in particular, are becoming increasingly rare as the construction of new infrastructure, residential and commercial spaces, and public areas has a deeper and a wider subsurface impact than before. It is vital that what remains of these resources be preserved in- situ where possible, or, where retention or redesign is impossible, be subject to rigorous research-based archaeological investigation and high-quality interpretation. Failure to do so will eventually remove all physical evidence of the embryonic stages of Australia as a nation state, permanently irradicating the subconscious testimony of countless individuals who were not recorded in the written histories of the early colony.

When each development is viewed in isolation the impact it has on the irreparable and irreplaceable archaeological resource may appear to be minor or insignificant. A cumulative impact assessment acknowledges that a succession of minor impacts can collectively create a much larger impact. Archaeological evidence is a finite resource whose extent and nature is largely unknown until careful and detailed assessment takes place. As such, those sites that have been archaeologically assessed are discussed in greater detail. In general, the significance of an archaeological resource is partially intrinsic in its intactness. Harm can, in specific situations, be permissible especially if it is known that similar resources are definitely known to be present elsewhere. One of the key anticipated archaeological resources in this project site is evidence of early farming. This has likely already been severely impacted by the circa 200 years of development since the first farms in Australia were created in this area along the Parramatta River. It is beyond the scope of this report to accurately provide a baseline of survival of this resource, but it is likely to have already been severely impacted on by any and all construction in the area. The PHALMS identifies multiple archaeological landscapes in Parramatta and the role of each of these sites within that landscape has been considered. The cumulative impact of the following sites has been considered alongside the potential impact of Parramatta Light Rail Stage 2. All assessments of significance and potential come from



pre-existing reports and no further assessment of these has been undertaken here. Where relevant the assessment of potential and significance from PHALMS has also been included. Where the nature of the impact is not known, it is assumed to be total removal.

### 7.9.1 Parramatta Leagues Club Hotel, Parramatta

Location and description	Listed sites	PHALMS AMU	Likely impact on resource
17-19 O’Connell Street (Lot 369 of DP752058, Lot 7054 of DP1074335). The site is commonly known as 1 Eels Place, Parramatta. It is south of the current Parramatta Leagues Club building and north of Western Sydney Stadium. This site is around 900 metres north of HAMU 26.	None	3118 - Moderate potential of a locally significant resource	Major - Total removal

There are no listed sites within the Hotel project area and the PHALMS assessed the site as having moderate potential for a locally significant archaeological resource. Detailed assessment of the site was undertaken by Austral Archaeology (2018) which reassessed the site as having low to moderate potential of a State significant resource that relates to an 1820s-1840s Mud Lodge and the Ross Street Gatehouse. The Mud Lodge and Ross Street Gatehouse are not directly related to any identified phase of occupation within the Parramatta Light Rail Stage 2 project site. These are both part of the same archaeological landscapes of Parramatta though, including the Convict Landscape, and the Landscapes of Control, Production and Consumption as identified in the PHALMS. Mud Lodge in particular is part of a farming landscape, so there is the potential for useful and informative cross site comparative study. The impact at this site is anticipated to totally remove the archaeological resource. The site is around one kilometre from the project site and so is unlikely to directly impact on spatially related resources. The two resources are thematically linked and the removal of the resource at this site does contribute towards to cumulative impact on evidence of early convict activities broadly, and specifically early convict farming. There is no physical interaction between this project and Parramatta Light Rail Stage 2 therefore there is no physical cumulative impact.

### 7.9.2 Private hospital and hotel, Parramatta

Location and description	Listed sites	PHALMS AMU	Likely impact on resource
41-43 Hunter Street, Parramatta (Lot 1 of DP27310) The site is located on the corner of Hunter Street and Marsden Street and is approximately 200 metres south of HAMU 26 along Macquarie Street.	LEP item I714 – Two storey dwelling.	3185 – Nil potential and nil significance 2990 – High potential of a State significant resource.	Unknown – no construction plans examined.

This project is still in the early planning phase as such no detailed assessment of the potential or significance of an archaeological resource at this site has been made to date. The site contains an LEP listed item and part of the site is assessed in PHALMS has having high potential for a State significant archaeological resource. Without a more detailed indication of the nature of this archaeological resource it is not possible to accurately assess the cumulative impact with this site beyond noting that it includes a potentially State significant archaeological resource; assuming an intact archaeological resource is found, its removal would contribute generally to the decline in extant archaeological deposits in Parramatta. There is no physical interaction between this project and Parramatta Light Rail Stage 2 therefore there is no physical cumulative impact.

### 7.9.3 Parramatta Sydney Metro West – Over Station Development, Parramatta

Location and description	Listed sites	PHALMS AMU	Likely impact on resource
14 lots in the Parramatta CBD includes the former City Centre Car Park, and Parramatta Shopping Centre: 41-59 George Street (Lot 10 in DP858392), 45A George Street (Lot 2 in DP701456), 61B George Street (Lot 1 in DP607181), 71 George Street (Lot 100 in DP607789), 220 Church Street (Lot 1 in DP1041242), 222 Church Street (Lot 1 in DP702291), 232 Church Street (Lot 1 in DP651992), 236 Church Street (Lot 1 in DP128437), 238 Church Street (Lot 2 in DP591454), 48 Macquarie Street (Lot B in DP394050), 58-60 Macquarie Street (Lot 1 in DP399104), 62-64 Macquarie Street (Lot AY in DP400258), 68 Macquarie Street (Lot 1 in DP711982), 70 Macquarie Street (Lot E DP 402952), 72 Macquarie Street (Lot 3 in DP218510), 74 Macquarie Street (Lot H in DP405846). The site is immediately northeast of HAMU 26 on Macquarie Street.	the LEP item I703 - Shops (and potential archaeological site) LEP item I656 – House LEP item I716 - Kia Ora (and potential archaeological site) SHR item 00711 – Roxy Theatre	2873 - Nil potential and nil significance 3075 – Exceptional potential of a State significant resource 3180 - Nil potential and nil significance 3177 - Nil potential and nil significance 3181 - Nil potential and nil significance 3178 – High potential of a State significant resource 3179 - Nil potential and nil significance	Unknown – no construction plans examined

This project is still in the early planning phase as such no detailed assessment of the potential or significance of an archaeological resource at this site has been made to date. There are multiple LEP listed items and one SHR listed item within the Sydney Metro West project area, and two areas with the potential for State significant archaeological evidence. Without a more detailed indication of the nature of this archaeological resource it is not possible to accurately assess the cumulative impact with this site beyond noting that it includes a potentially State significant archaeological resource; the planned construction will effectively remove all material from the site, except where buildings are retained. The removal of the resource would contribute generally to the decline in extant archaeological deposits in Parramatta. This site is immediately northeast of HAMU 26 but there is not anticipated to be a cumulative physical impact.

### 7.9.4 Powerhouse Parramatta, Parramatta

Location and description	Listed sites	PHALMS AMU	Likely impact on resource
34-54 & 30B Phillip Street and 338 Church Street, Parramatta (Lot 1 of DP128474, Lot 2 of DP1247122 and Lot 1 of DP1247122). This is 175m north of HAMU 26.	LEP item I737 - Willow Grove (and potential archaeological site) LEP item I738 - St George's Terrace (and potential archaeological site)	3083 – Exception potential of a locally significant resource 2882 – High potential of a State significant resource 3092 – Little potential of a locally significant resource	Total removal

There are two LEP listed items in this project’s proposal area and PHALMS assessment indicates two potentially State significant archaeological resources. Detailed assessment undertaken by Advisian (2020) confirms there is moderate to high potential of a State significance resource that relates to multiple phases of occupation from the early township onwards. There is no direct link between the archaeological resources in the project site and those at this site. Broadly though they belong to the same archaeological landscapes of Parramatta including the Convict Landscape, and the Landscapes of Control, Production and Consumption as identified in the PHALMS. It is anticipated that the impact at this site will entirely remove the archaeological resource. Cumulatively with Parramatta Light Rail Stage 2 this further reduces the number of remaining significant archaeological resources from the 18th and 19th centuries. There is no physical

interaction between this project and Parramatta Light Rail Stage 2 therefore there is no physical cumulative impact.

### 7.9.5 Sydney Metro West, Parramatta & Sydney Olympic Park

Location and description	Listed sites	PHALMS AMU	Likely impact on resource
Sydney Metro West Parramatta Station located on the north-eastern boundary of the project site bounded by George, Macquarie, Church and Smith streets. This largely aligns with the same development discussed in Section 7.9.3, immediately northeast of HAMU 26 on Macquarie Street.	LEP item I703 - Shops (and archaeological site) LEP item I647 - Convict Drain LEP item I716 - Kia Ora (and archaeological site).	2873 - Nil potential and nil significance 3075 – Exception potential of a State significant resource 3177 - Nil potential and nil significance 3178 – High potential of a State significant resource 3180 - Nil potential and nil significance 3181 - Nil potential and nil significance	Total removal
Clyde stabling and maintenance facility located approximately 800 metres south of HAMU 01 at Camellia on Colquhoun Street.	LEP item I1 – Wetlands LEP item I576 – RTA Depot	2870 - Nil potential and nil significance 2909 – Moderate potential for a locally significant resource 2911 - Nil potential and nil significance 2968 – Moderate potential for a locally significant resource 2969 - Nil potential and nil significance 2970 - Nil potential and nil significance 2971 - Nil potential and nil significance	Unknown – no construction plans examined
Sydney Metro West Sydney Olympic Park Station construction site connects to HAMU 24 along Dawn Fraser Avenue.	Sydney Olympic Park s170 register - Abattoir Heritage Precinct	N/A	None - No archaeological resource present

The Sydney Metro West works will encounter multiple different archaeological resources with varying levels of significance. All relevant locations contain listed heritage items. PHALMS indicates that some of the site of the Sydney Metro West Parramatta Station contains State significant archaeological resources, and that part of the Clyde stabling yard contains a locally significant resource. The impact on the various archaeological resources, which cover effectively a city block, has been further assessed in detail (Artefact, 2020). This detailed assessment indicates that at the Sydney Metro West Parramatta Station there is high potential for multiple different State significant archaeological resources, at the Clyde stabling yard works there is no archaeological potential and at the Sydney Metro West Sydney Olympic Park Station there is no archaeological potential. The potential archaeological resources at Sydney Metro West Parramatta Station relate to a variety of periods and themes. They are not directly related to those in the project site but are part of the same broad archaeological landscapes of Parramatta including the Convict Landscape, and the Landscapes of Control, Production and Consumption as identified in the PHALMS. Works at this site will entirely remove the archaeological resource. Cumulatively with Parramatta Light Rail Stage 2 this further reduces the number of remaining significant archaeological resources from the 18th and 19th centuries. There is minimal physical interaction between this project and Parramatta Light Rail Stage 2 therefore there is unlikely to be physical cumulative impact.

### 7.9.6 Draft Camellia-Rosehill Precinct (Place Strategy), Camellia & Rosehill

Location and description	Listed sites	PHALMS AMU	Likely impact on resource
The master plan includes three sub precincts and covers approximately 320 hectares across Camellia, Rosehill, and a portion of Clyde. Development within the immediate vicinity of this project site includes a proposed town centre, a foreshore linear park along Parramatta River, a new urban plaza at James Ruse Drive and a new primary school and central local park. This area includes all of HAMU 01, 02, 03 and 04.	LEP item I6 - Tram Alignment LEP item I2 - Clyde Carlingford Rail Bridge abutments LEP item I555 - Clyde Carlingford Rail Bridge abutments LEP item I3 - Grave of Eliner Magee & child LEP item I5 - Pumping Station LEP item I575 - Capral Aluminium LEP item I576 - RTA Depot LEP item I1 - Wetlands LEP item I735 - Wetlands SREP (SHC) item 35 - Shell Oil Refinery Wharf SREP (SHC) item 36 - Industrial Wharves SHR item 01643 - Sewage Pumping Station 67	2864 – Moderate potential for a locally significant resource 2909 – Moderate potential for a locally significant resource 2911- Nil potential and nil significance 2936 – Moderate potential for a locally significant resource 2962 – Moderate potential for a locally significant resource 2963 – Moderate potential for a locally significant resource 2964 – Moderate potential for a locally significant resource 2965 – Moderate potential for a locally significant resource 2966- Nil potential and nil significance 2967- Nil potential and nil significance 2968 – Moderate potential for a locally significant resource 2969- Nil potential and nil significance 2970- Nil potential and nil significance 2972 – Moderate potential for a locally significant resource 2984 - Nil potential and nil significance 3005 – Moderate potential for a locally significant resource	Unknown – no construction plans examined

This project is still in the early planning phase as such no detailed assessment of the potential or significance of an archaeological resource at this site has been made to date. Rather than a specific construction regimen, it is a master plan for an entire area which includes specific projects discussed in Section 7.9.7 and Section 7.9.8 below. The master plan contains multiple SHR and LEP listed items and multiple parts of the site are assessed in PHALMS has having moderate potential for locally significant archaeological resource. Without a more detailed indication of the nature of this archaeological resource it is not possible to accurately assess the cumulative impact with this site beyond noting that it includes a potentially State significant archaeological resource; the removal of the resource would contribute generally to the decline in extant archaeological deposits in Parramatta. Cumulatively with Parramatta Light Rail Stage 2 this further reduces the number of remaining significant archaeological resources from the 18th and 19th centuries. This area includes part of the landscape that is also part of Parramatta Light Rail Stage 2 so there may be a physical cumulative impact.

### 7.9.7 Camellia Waste Facility, Camellia

Location and interaction with the project	Listed sites	PHALMS	Likely impact on resource
37 Grand Avenue Camellia (Lot 1 of DP539890) The site is approx. 2.3ha in area and is zoned IN3 Heavy Industrial. It is adjacent to HAMU 02 and 03.	None	2967- Nil potential and nil significance	None - No archaeological resource present.

This site contains no listed sites and PHALMS indicates that there is no potential for an archaeological resource that meets the threshold of significance. It is demonstrative of the size and scale of areas of Parramatta that contain no potential for a significant archaeological resource in part due to past development activities and highlights the growing scarcity of archaeological evidence. As there is no archaeological resource at the site there is no physical cumulative impact.

### 7.9.8 Viva Energy Clyde Western Area Remediation Project

Location and interaction with the project	Listed sites	PHALMS	Likely impact on resource
Remediation of the south-western part of the Clyde Terminal site. The site is located at Durham Street on the Camellia Peninsula and consists of Lot 398 of DP41324, Lots 100 and 101 of DP1168951, Lot 101 of DP809340, Lot 2 of DP224288, and Lot 1 of DP383675. It is located 335 metres south of HAMU 02.	None	2966- Nil potential and nil significance	None - No archaeological resource present

This site contains no listed sites and PHALMS indicates that there is no potential for an archaeological resource that meets the threshold of significance. Detailed assessment undertaken in 2018 corroborates this (Aecom, 2018). It is demonstrative of the size and scale of areas of Parramatta that contain no potential for a significant archaeological resource in part due to past development activities and highlights the growing scarcity of archaeological evidence. As there is no archaeological resource at the site there is no physical cumulative impact.

### 7.9.9 Melrose Park North Planning Proposal, Melrose Park

Location and interaction with the project	Listed sites	PHALMS	Likely impact on resource
The Melrose Park North Planning Proposal applies to the Northern Precinct of the Melrose Park Urban Renewal Precinct. This is approximately bounded by Victoria Road to the north, Wharf Road to the east, Hope Street to the south and Hughes Avenue to the west. It is adjacent to HAMU 14 to the north.	LEP item I311 – landscaping (including millstones at Reckit)	N/A	Unknown – no construction plans examined

A substantial rezoning and planning proposal is currently underway for Melrose Park. The North Planning Proposal DA was lodged in December 2021 and is currently awaiting further information. This would include the construction of roads, infrastructure and services, and public domain works. To date no archaeological assessment has been undertaken and PHALMS does not cover the area. There is one LEP item in the area. The cumulative impact that this proposal would have is currently unknown as the nature of the archaeological resource is undetermined. As this area is immediately adjacent to part of the landscape that is also part of Parramatta Light Rail Stage 2 there may be a physical cumulative impact.

### 7.9.10 Holdmark Planning Proposal (Melrose Park Southern Precinct)

Location and interaction with the project	Listed sites	PHALMS	Likely impact on resource
The Melrose Park South precinct comprises of land bounds by Hope Street to the north, Wharf Road to the east, Parramatta River to Dairy the south and Atkins Road to the west. The eastern boundary is shared with the City of Ryde Council. It is adjacent to HAMU 14 to the south.	LEP item I1 - wetlands LEP item I64 – Bulla Cream LEP item I82 – Ermington Wharf	N/A	Unknown – no construction plans examined

Melrose Park Southern Precinct has been assessed as having potential for significant archaeological resources however the level of potential and significance are not clear (Tropman & Tropman, 2020). There

are three LEP listed items within the Holdmark proposal area, all of which are also assessed in this report and the Updated Statement of Heritage impact (Built Heritage). The anticipated archaeological resource relates to early farming and so is directly related to anticipated archaeological resources in this project. The cumulative impact that this proposal would have is currently unknown as the nature of the archaeological resource is undetermined. As this area is immediately adjacent to part of the landscape that is also part of Parramatta Light Rail Stage 2 there may be a physical cumulative impact.

### 7.9.11 Sanctuary, 14-16 Hill Road, Wentworth Point

Location and interaction with the project	Listed sites	PHALMS	Likely impact on resource
The site is located within the Wentworth Point Urban Activation Precinct. The site is 94,580m <sup>2</sup> in area and is located on the western side of the northern extend of Hill Road. It is immediately north of HAMU 18.	None	N/A	Unknown – no construction plans examined.

There are no listed sites within this project’s boundaries and it is outside the scope of PHALMS. No historical heritage assessment for the site has been located. The cumulative impact that this proposal would have is currently unknown as the nature of the archaeological resource is undetermined. As this area is immediately adjacent to part of the landscape that is also part of Parramatta Light Rail Stage 2 there may be a physical cumulative impact.

### 7.9.12 Sydney Olympic Park new high school, Wentworth Point

Location and interaction with the project	Listed sites	PHALMS	Likely impact on resource
7, 9, 11 Burroway Road, Wentworth Point (Lot 202 DP1216628, part Lot 203 DP1216628 and part Lot 204 DP1216628). It is 225 metres east of HAMU 17.	None	N/A	None - No archaeological resource present.

There are no listed sites within this project’s boundaries and it is outside the scope of PHALMS. Detailed assessment of the site indicates that there is no potential for a historical archaeological resource (Comber, 2021). There is no cumulative impact from this site as there is not anticipated to be an archaeological resource that meets the threshold of significance.

### 7.9.13 Sydney Olympic Park – Open Water Surf Facility URBN SURF

Location and interaction with the project	Listed sites	PHALMS	Likely impact on resource
Pod B5 Car park, Hill Road, Sydney Olympic Park (Lot 71 in DP1191648). It is adjacent to HAMU 19.	None	N/A	None – No archaeological resource present.

There are no listed sites within this project’s boundaries and it is outside the scope of PHALMS. Detailed assessment of the site has concluded that there is no archaeological potential (Umwelt, 2017). There is no cumulative impact from this site as there is not anticipated to be an archaeological resource that meets the threshold of significance.

### 7.9.14 Residential development, 1 & 2 Murray Rose Avenue

Location and interaction with the project	Listed sites	PHALMS	Likely impact on resource
1-2 Murray Rose Avenue, Sydney Olympic Park (Lot 1 & 2 of DP1185060). It is located approximately 300 metres northeast of HAMU 22.	None	N/A	None – No archaeological resource present.

There are no listed sites within this project’s boundaries and it is outside the scope of PHALMS. Detailed assessment of the site has concluded that there is nil to low archaeological potential (Artefact, 2018). There is no cumulative impact from this site as there is not anticipated to be an archaeological resource that meets the threshold of significance.

### 7.9.15 Mixed Use Development – Sites 2A and 2B Sydney Olympic Park

Location and interaction with the project	Listed sites	PHALMS	Likely impact on resource
2A and 2B Australia Avenue, Sydney Olympic Park (Lot 71 of DP1134933). It is located 70 metres south of HAMU 24.	None	N/A	None – No archaeological resource present.

There are no listed sites within this project’s boundaries and it is outside the scope of PHALMS. Detailed assessment of the site has concluded that there is no archaeological potential (Biosis, 2021). There is no cumulative impact from this site as there is not anticipated to be an archaeological resource that meets the threshold of significance.

### 7.9.16 Carter Street precinct, Lidcombe

Location and interaction with the project	Listed sites	PHALMS	Likely impact on resource
4-6 Uhrig Road (Phase 3) 4 Uhrig Road (Lot 9 of DP1228764), 6 Uhrig Road (Lot 8 of DP1228764), and 8 Uhrig Road (Lot 5 of DP1228764). It is located adjacent to the southern end of HAMU 24	None	N/A	Unknown – no assessment has been undertaken
13 Carter Street (Phase 4) 11A Carter Street (Lot 6 of DP1228764) and 13 Carter Street (Lot 7 of DP1228764). It is located adjacent to the southern end of HAMU 24.	None	N/A	Unknown – no assessment has been undertaken

There are no listed sites within this project’s boundaries and it is outside the scope of PHALMS. Detailed assessment of the site has not been located. There is no cumulative impact from this site as there is not anticipated to be an archaeological resource that meets the threshold of significance.

## 7.10 Discussion of impacts

### 7.10.1 Discussion of impacts to the amended project site

The cumulative impact assessment has included consideration of 16 sites, including four precincts, where development is currently being undertaken. Of these five have been assessed as having potential for a State significant archaeological resource, all of which are in the Parramatta CBD. As the second British settlement in Australia and a crucial component of multiple historical landscapes, it is understandable that the central area of Parramatta would contain a large amount of State significant archaeological evidence. The area of this project in the CBD, HAMU 26, is assessed as having a locally significant archaeological resource. This is largely due to the area being constrained to existing streets which were laid out as part of the original town and so have never seen any construction, habitation or other use that may leave behind more significant archaeological evidence. As such, if found to be unavoidable, the managed removal of the archaeological resource in HAMU 26 would not contribute cumulatively to the decline in State significant deposits elsewhere in the Parramatta CBD. That said, in terms of all significant archaeological resources, including those of local significance, then removal in HAMU 26 would contribute to the rapid decline in remaining archaeological evidence. As rarity is a criteria that is considered when assessing significance, it is plausible that as the number of potential archaeological sites in Parramatta decline, so the significance of those that remain will increase.

The areas around Clyde, Camellia, and Rosehill, where the light rail would be constructed, includes two areas examined in this comparative analysis, both of which have areas of moderate potential for a locally significant archaeological resource. This area includes HAMUs 01 and 27. Both of these HAMUs have low

potential for a State significant resource related to Elizabeth Farm, and low potential for locally significant resources related to Industrialisation. The cumulative impact of Parramatta Light Rail Stage 2 with the other proposed developments would largely remove all archaeological evidence from Clyde, Camellia, and Rosehill, which collectively formed the majority of the Elizabeth Farm Estate. That said, to date, and including within the project site, no substantial evidence of the Elizabeth Farm Estate has been located and the areas with the highest likelihood (i.e. around the extant Elizabeth Farm House at 70 Alice St, Rosehill) are away from the project site.

A further five have been assessed as having no resource of any significance, all of which are in Sydney Olympic Park. This is in line with the assessment made here. Historical activity of significance in Wentworth Point, Sydney Olympic Park and the Carter Street precinct was minimal and as such no archaeological resources that meet the threshold of significance have formed.

Only very limited comparative analysis of the area north of the Parramatta River has been possible due to the small number of previous studies and lack of current development. This area, which includes Rydalmere, Ermington and Melrose Park, is part of the unique late 18th century farming landscape and was critical to the survival of the fledgling colony. Evidence of food procurement from this period relies heavily on written sources which are incomplete, lack detail and are generalised. Critically they are results focused, presenting the amount of land cleared and crops produced and miss the detail on how the work was accomplished and the people who undertook the work. It is likely that evidence of these activities will always be rare as they are unlikely to have left a substantial and easily detectable mark on the landscape, hence all efforts should be taken to avoid any impact, or to record in as much detail the evidence before it is impacted. As evidence of early farming practices will likely always be assessed as being of State significance, efforts to avoid impact should be strongly considered and action to preserve archaeological resources in situ should be taken.

All archaeological resources along the Parramatta River are part of multiple wider past landscapes and should be viewed in this wider landscape context. The number of sites that are assessed as having no archaeological potential is somewhat demonstrative of the excessive damage already undertaken to the archaeological record. It also shows that assessments of archaeological potential are intrinsically related to the values of the society defining the levels of significance. There is no way to know how these values may change in the future. At present, the ability of archaeological research to contribute otherwise unknown knowledge to our understanding and appreciation of the past is a key determining factor when examining the value of archaeology. Time is also a key concept when considering the value of archaeology and there is a common theme that age adds importance to an archaeological relic and to its appreciation by society as a whole. There is no 'tipping point' in assessments of impact to archaeology as there is elsewhere (see Godwin, 2011) and so it is difficult to make definitive statements regarding cumulative impacts. At any given time, the only knowledge available in an assessment of cumulative impact is 1) that which has been excavated and 2) that which is presently being assessed. Under the present approach to management of the archaeological resource, the only time its true nature and extent will be known, will be once it has all been removed. The project should acknowledge the finite nature of the archaeological resource and endeavour to always minimise any impact in accordance with the principles of the Burra Charter.

### 7.10.2 Summary of changes in impact between the exhibited project and amended project

Since the exhibition of the EIS a number of amendments have been made to the project and associated footprint of the project site (see Table 1-1). These have largely had a positive impact on the historical archaeological resource, in particular in Camellia where the impact to potential State significant evidence of the Elizabeth Farm Estate has been notably reduced. Table 7-1 summarises all of the notable changes between the exhibited and amended project and their impact. If the change has had zero impact on the significance or potential of the HAMU, it has not been included in the table. The only exception is where MAMU 01 has been entirely relocated. The amended project site does include one new area of medium potential for State significant archaeological evidence in Rydalmere, related to early farming, but overall, it has a positive impact when compared to that presented in the EIS.



**Table 7-1: Summary of the notable changes between the exhibited project and the amended project**

<b>HAMU/MAMU</b>	<b>Change</b>	<b>Discussion</b>
<i>Camellia</i>		
HAMU 02	No longer in project site	Much less impact to LEP listed Item I6 (Tram Alignment)
HAMU 03	No longer in project site	Removal of impact to State significant archaeological resource related to Elizabeth Farm
HAMU 04	No longer in project site	Removal of impact to State significant archaeological resource related to Elizabeth Farm
MAMU 01	Relocation approximately 300 metres west	No change
HAMU 27	New HAMU	No anticipated impact on any archaeological resource of significance
<i>Rydalmere</i>		
HAMU 28	New HAMU	No anticipated impact on any archaeological resource of significance
HAMU 29	New HAMU	New impact on area with medium potential for State significant archaeological resource related to Early Farming
HAMU 05	Reduction in size	Less impact
<i>Ermington</i>		
No notable changes	-	-
<i>Melrose Park</i>		
HAMU 15	Reduction in size	No change to area with archaeological resource
HAMU 16	No longer in project site	Removal of impact related to State significant evidence of Early Farming and Edmund Lockyer and locally significant evidence of Ermington Wharf
MAMU 02	Increase in size	No change
<i>Wentworth Point</i>		
No notable changes	-	-
<i>Sydney Olympic Park and Carter Street precinct</i>		
No notable changes	-	-

## 8 RECOMMENDED MITIGATION MEASURES AND MANAGEMENT RATINGS

### 8.1 Approach

Archaeology is a finite and non-renewable resource that cannot be repaired, replaced or amended after it is impacted upon. An assessment of the significance of an archaeological resource is used to recommend appropriate management measures that either preserve the archaeological resource *in situ* or indicate ways in which it can be appropriately removed through the archaeological process and subsequently destroyed. It is critical that any archaeological resource is treated as holistically as possible. It is not just the relics in the ground but also includes the contextualizing deposits in which they are found and the wider landscape a site or relic may be located in.

There are four HAMUs within the project site that have at least medium potential for a State significant archaeological resource. Archaeological test excavation was undertaken in one of these (HAMU 07) in 2022. Limited evidence of landscape clearance was found in the test trenches here that may relate to landscape clearance in the 18th century and so may be part of a State significant archaeological resource related to early farming. That said, the evidence consisted of only a single example of root burning and could not be conclusively dated to this phase of land use. Whilst useful, it is critical to remember that the test excavation only covered a relatively small area of the overall HAMU and the initial results do not provide a conclusive indicator of the intactness of an archaeological resource across the entire HAMU.

As it stands the project would have a minor impact on HAMU 07 and a major impact on the other three (HAMUs 11, 15, and 29). If possible, the proposed works in HAMUs 11, 15, and 29 should be reconsidered to minimise the impact or design refinements should be undertaken to remove the impact entirely. If this is not possible mitigation would have to occur, noting that the evidence from HAMU 07 indicates that the potential archaeological resources may be difficult to define. At a minimum further test excavation should be undertaken. An overall summary of mitigation measures (Table 8-1) identifies the key components of a standardised approach.

The division of the project site into individual HAMUs means that each area can be assessed independently and have appropriate mitigation measures formulated based on a combination of significance and potential. In many instances a single HAMU may have multiple ratings as different periods and events in the past may have different levels of significance and archaeological potential. The approach at this assessment phase has been to assign one of three Management Ratings (MR) to each HAMU and to provide a broad indication of possible strategies that may be appropriate if it is determined that the harm to the archaeological resource is unavoidable. Site specific research needs to be undertaken in any HAMU that has a significant resource that is going to be impacted so that the nature and significance of the resource can be better understood. Once understood, appropriate strategies to minimise impact and guide management of the archaeological resource can be undertaken. These areas should also be subject to archaeological testing to interrogate the findings of this report.

Further archaeological testing would take place prior to construction, and will focus on the untested areas that have been assessed as having State significant archaeological resources (HAMUs 11, 15 and 29). This testing will seek to confirm the existence of the archaeological resource in these areas and affirm this assessment of significance. Further, it will seek to clarify the nature of the archaeological resource and provide guidance for design development of the project in these areas. A full methodology for the testing is included in the RDEM (Appendix B) which also provides an explanation and rationale for testing.

### 8.2 Summary of mitigation measures

**Table 8-1: Summary of overall mitigation measures**

Recommendation	Discussion	Project phase
1. Archaeological Test Excavation	This historical archaeological assessment has identified areas that have the potential to contain archaeological resources that meet the criteria of local and State significance. If this potential is confirmed then the project	Design

Recommendation	Discussion	Project phase
	<p>could cause irreversible and permanent harm to this resource.</p> <p>Test excavation has already been undertaken in HAMU 07 and would be undertaken in all other areas where there is a medium or high potential for State significant archaeological resources, and high potential for locally significant resources. This is discussed below in Section 8.3 and the RDEM.</p>	
<b>2. Project Design</b>	<p>If archaeological testing (Recommendation 1) confirms the presence of State significant archaeology, modification of the proposed route alignment or construction work areas to avoid State significant archaeology is recommended. Impacts to historical archaeological sites of State significance should be avoided where possible.</p> <p>As the design development process progresses, care should be taken to avoid impacts to identified archaeological sites of State significance and avoid or minimise impacts to archaeological sites of local significance. Impacts to potential archaeological resources arising from the design development process has been addressed in the archaeological Research Design and Excavation Methodology (RDEM).</p>	Design
<b>3. Heritage Interpretation Strategy and Public Engagement</b>	<p>Appropriate heritage interpretation would be incorporated into the design development process which would include the results of archaeological investigations. Consideration would be given to how best to incorporate archaeological findings noting that these may not be available until further into the design phase</p> <p>A Heritage Interpretation Strategy would be prepared for the project in accordance with the <i>NSW Heritage Manual</i>, the NSW Heritage Office's <i>Interpreting Heritage Places and Items: Guidelines</i> (August 2005), and the NSW Heritage Council's <i>Heritage Interpretation Policy</i>. The Heritage Interpretation Strategy for the project could consider brochures and guidelines, site specific displays, online platforms such as websites and mobile phone applications as well as a moveable heritage item exhibition in appropriate locations within the localities concerned. There should be a seamless link between Parramatta Light Rail Stage 1 and Parramatta Light Rail Stage 2 regarding interpretation and the best possible outcomes. This is especially relevant for areas where the impacts may increase such as the Parramatta CBD.</p> <p>Public engagement during archaeological investigations would be undertaken where practicable. This may include public open days, media releases, or other forms of heritage interpretation, based on significance and community interest.</p>	Design
<b>4. Maritime Archaeology</b>	<p>The following mitigation measures are recommended in relation to maritime archaeological resources:</p> <ol style="list-style-type: none"> <li>1. Implementation of an Exclusion Zone at Ermington Boat Ramp (comprising the fenced preservation area of the remains of Ermington Wharf)</li> <li>2. Archaeological monitoring of works surrounding the Ermington Boat Ramp to ensure no works impact the identified archaeological resource of Ermington Wharf. Details of monitoring are contained in the RDEM prepared for the project.</li> <li>3. Implementation of specific mechanisms within the <i>Transport for NSW Unexpected Heritage Items Procedure July 2022</i> to manage maritime archaeology.</li> </ol>	Construction

## 8.3 Archaeological testing

At present the nature and extent of the potential archaeological resource is not completely understood. Limited archaeological research and excavation has been undertaken in the vicinity of the project site (see Section 5.1.9). The assessment of significance provided in this report indicates that some areas have medium and high potential for State significance resources and testing should be undertaken in these areas to ensure that the approach taken to managing the archaeological resource is appropriate.

### 8.3.1 Test excavation program in 2022

As part of Technical Paper 6 (Historical Archaeological Assessment) prepared for the EIS, an AREF was prepared that identified five HAMUs for archaeological test excavation, outlined the specific location of the trenches and provided context for the program.

The aims of the test excavation program were:

1. confirm the presence or absence of an intact archaeological resource in areas where the Historical Archaeological Assessment has assessed that it is likely to be present
2. provide an indication of whether or not the resource in a tested area is likely to support the level of significance presented in the Historical Archaeological Assessment
3. use the knowledge gained about the nature of the archaeological resource to help refine and develop the RDEM
4. provide indications of areas where impacts to the archaeological resource should be avoided and to provide detail that may inform the final project design.
5. provide information that can be used as a proxy for other nearby areas where testing is presently not possible.

The test excavation program was devised in collaboration with the Aboriginal archaeological testing program to ensure that both archaeological resources would be sufficiently and appropriately recognised and examined. The locations identified for testing and their status are detailed Table 8-2.

Testing was proposed initially for HAMU 03 in Camellia but not attempted due to levels of contamination in the area. Test excavation commenced in November 2022, first in HAMU 16 at Melrose Park with one trench, followed by two trenches at HAMU 07 in Rydalmere. Test excavation was not started in HAMU 11, Ermington due to asbestos finds in nearby Aboriginal archaeology Test Pits.

**Table 8-2: Summation of the test excavation program outlined in the AREF submitted with the EIS version of this document**

HAMU	Location	Trenches	Phases & highest level of significance	Current status
03	37 Grand Avenue, Camellia	Two 25 metres x 2 metres	Phase 1: Elizabeth Farm Estate (1793–1881) State significance	Testing not attempted due to known contamination. HAMU no longer within project site. Testing no longer required.
07	Broadoaks Park, Rydalmere	Two 20 metres x 2 metres	Phase 1: The Vineyard Estate (1791 – 1849) State significance Phase 3: Post-war housing estate (1945 onwards) No significance	Both test trenches completed as 20 metres x 1 metre in November 2022. Evidence from both phases found (see Section 8.3.2) Further testing recommended noting asbestos found in surrounding Aboriginal Test Pits.
11	Ken Newman Park, Ermington	Two 20 metres x 2 metres	Phase 1: Early Farming (1792–1871) State significance Phase 3: Post-war housing estate (1945 onwards) No significance	Testing not attempted due to asbestos contamination in adjacent Aboriginal Test Pits. Testing still required.

HAMU	Location	Trenches	Phases & highest level of significance	Current status
15	Ermington Wharf, Melrose Park	Three 15 metres x 1 metre, One 10 metres x 1 metre	Phase 1: Early Farming and Edmund Lockyer (1792–1827) State significance Phase 2: Ermington Wharf (c.1820s–c1930) State significance 3 – Subdivision, and growth, and post-war housing (1840s–1945, and post-1945) No significance	Testing not attempted due to asbestos contamination in adjacent Aboriginal Test Pits. Testing still required.
16	Ermington Wharf, Melrose Park	One 25 metres x 2 metres	Phase 1: Early Farming and Edmund Lockyer (1792–1827) State significance Phase 2: Ermington Wharf (c.1820s–c1930) State significance 3 – Subdivision, and growth, and post-war housing (1840s–1945, and post-1945) No significance	Trench started but abandoned due to asbestos immediately beneath the modern topsoil. HAMU no longer within project site. Testing no longer required.

### 8.3.2 Test excavation result summary

#### 8.3.2.1 HAMU 07

Both test trenches in this location were fully excavated and the Aboriginal archaeology test pits were also examined. At the western side of the park adjacent to Primrose Avenue three of the Aboriginal test pits had a layer of demolition material including Marseilles roof tile fragments, glass, asbestos etc. which dates from the c. 1940s to 1950s. This material comes from the post-war housing phase of occupation which is assessed as having no significance at present (Figure 8-1).



**Figure 8-1: Aboriginal TP906 where examples of Marseilles roof tile and other 20th century building materials are visible in the trench section. View to the west, scale = 1 metre in 200 millimetre increments**

No substantial evidence of historical occupation was located in either test trench. Based on the soil profile encountered, the original soil that covered the area had been stripped off down to the underlying geological clays. Following this, new topsoil was imported to the site to create the modern park. Fired tree roots, which indicate landscape clearance, were found in one trench (Figure 8-2). The lack of stratigraphy above the clay prevents the dating of when the landscape clearance occurred but this kind of activity was commonplace during the late 18th century when the first farmers were clearing land for cultivation.



**Figure 8-2: Trench H07 TT02 in the northwest corner of Broadoaks park. A burnt-out tree root is visible in the centre of the trench. View to the south, scale = 1 metre in 200 millimetre increments.**

### **8.3.2.2 HAMU 16**

Following the stripping of the modern topsoil a compressed mottled clay was found across the trench which had a drainage line cut into it. Twentieth century artefacts were found across the clay in small quantities (Figure 8-3). This included asbestos which necessitated the closure of the trench on safety grounds. Since the closure of this uncompleted trench, changes in project alignment mean that this HAMU is no longer within the project site therefore there is no need to recommence testing in HAMU 16.



Figure 8-3: Trench H16 TT01 near to Ermington Wharf. This trench was closed at this point following the discovery of asbestos. View to the east, scale = 1 metre in 200 millimetre increments

## 8.4 Provisional mitigation measures

If impact to the archaeological resource is unavoidable then the following measures should be considered. This is provided as an indicative guide only and the RDEM, expands and contextualises these measures.

### 8.4.1 General provisions

Several general measures are applicable to all parts of the project site.

- **The option not to excavate should be a primary consideration.** In all instances where a significant archaeological resource has been located or is likely to be located the development must consider alternative methods of construction that leave the archaeological resource undisturbed. Excavation should never be the first option.
- **All contractors must undergo a heritage induction.** This should be prepared and run by a suitably qualified and experienced archaeologist and must be undertaken prior to working on a site. It should include a brief overview of the history of the area and the likely nature of the archaeological resource. It should clearly explain the procedures for managing unexpected finds and what is appropriate behaviour on site regarding relics.
- **Post excavation reporting.** A key part of archaeological work is the production of a high-quality excavation report which clearly and comprehensively presents the findings of the excavation and responds to the questions raised in the research design. The purpose of this report is to clearly explain why and how archaeological investigation adds knowledge and value to understanding the past. This involves the analysis and cataloguing of retained artefacts, processing of all site records and



interpretation of findings. It should be consistent with industry standards and meet or exceed all minimum standards for Final Historical Archaeological Excavation Reports detailed on the Heritage NSW website.

- **Exhumation Policy and Guideline.** The project site does not contain any known areas with the potential to contain human skeletal material. That said, the inhumation of human remains external to demarked areas is known to have occurred. An exhumation policy will be developed in line with the Heritage Council’s Guideline *Skeletal Remains* (NSW Heritage Office 1998).

### 8.4.2 Management Rating 3

This MR applies to resources that have been assessed as having high potential for a State significant archaeological resource. The approach here is based around the scarcity of such important archaeology and is high historic, scientific, and social value. In instances where a HAMU has been assessed as MR 3 *in situ* preservation must be considered which can involve redesigning structures so that they do not impact the resource. Archaeological test excavation should be undertaken to interrogate the assessment of the resource. Likewise public engagement such as open days, media releases, and substantial heritage interpretation must be considered. The management of substantially intact State significant resources should consider seeking the advice of Heritage NSW to ensure all appropriate steps are taken. They are discussed in detail in the RDEM (Appendix B) and summarised in Table 8-3.

**Table 8-3: Mitigation measures for Management Rating 3**

Mitigation Measure
• An Excavation Director who meets the NSW Heritage Council requirements for directing State significant archaeological investigations must manage the archaeological program including any potential further testing, salvage excavation and monitoring.
• Any further test excavation, salvage, conservation or other activity outlined in the archaeological Research Design and Excavation Methodology (RDEM) (Appendix B) should be undertaken by a suitably qualified and experienced historical archaeologist in accordance with Heritage Council requirements.
• Heritage induction for all contractors.
• Testing required as impact or removal is generally unacceptable for substantially intact State significant archaeology identified. Any proposed removal of State significant archaeology would need to be appropriately justified.
• In situ retention of archaeological evidence may be required.
• If archaeological excavation is undertaken, it would follow a well-structured and detailed methodology with robust research questions commensurate with the significance of the resource.
• Public engagement, such as media releases, potential public open days, or heritage interpretation, are recommended.
• Post-excavation reporting, artefact analysis and relics conservation and interpretation would be required if relics are identified. The report will also need to address the artefact repository for recovered relics

### 8.4.3 Management Rating 2

This MR applies to resources that have been assessed as having high potential for a locally significant archaeological resource and either medium or low potential for State significant archaeological resources. Locally significant archaeology is still important and can still have historic, associative, scientific, and social value. Its value is more likely to be to a smaller area or group of people than State significant archaeology. Its importance to the local community means though that public engagement can be a core component of mitigation especially when *in situ* preservation is not appropriate. They are discussed in detail in the RDEM (Appendix B) and summarised in Table 8-4.

**Table 8-4: Mitigation measures for Management Rating 2**

Mitigation measure
<ul style="list-style-type: none"> <li>An Excavation Director who meets the NSW Heritage Council requirements for directing locally or State (depending on the assessment of the resource) significant archaeological investigations must manage the archaeological program.</li> </ul>
<ul style="list-style-type: none"> <li>Any further test excavation, salvage, conservation or other activity outlined in the archaeological Research Design and Excavation Methodology (RDEM) (Appendix B) should be undertaken by a suitably qualified and experienced historical archaeologist in accordance with Heritage Council requirements.</li> </ul>
<ul style="list-style-type: none"> <li>Heritage induction for all contractors.</li> </ul>
<ul style="list-style-type: none"> <li>Impact or removal is likely to be considered acceptable if appropriate mitigation measures are followed.</li> </ul>
<ul style="list-style-type: none"> <li>Heritage NSW is to be notified if the resource is of State significance, noting that exceptional preservation can increase significance. Likewise under s146, Heritage NSW is to be notified if relics are encountered.</li> </ul>
<ul style="list-style-type: none"> <li>Public engagement, such as media releases, potential public open days, or heritage interpretation, may be appropriate.</li> </ul>
<ul style="list-style-type: none"> <li>Post-excavation reporting, artefact analysis and relics conservation and interpretation would be required if relics are identified. The report will also need to address the artefact repository for recovered relics.</li> </ul>

### 8.4.4 Management Rating 1

This MR applies to resources that have been assessed as having medium or low potential for a locally significant archaeological resource. This acknowledges the importance of locally significant archaeology but also accounts for potential disturbance that may have occurred. They are discussed in detail in the RDEM (Appendix B) and summarised in Table 8-5.

**Table 8-5: Mitigation measures for Management Rating 1**

Mitigation measure
<ul style="list-style-type: none"> <li>An Excavation Director who meets the NSW Heritage Council requirements for directing locally significant archaeological investigations must manage the archaeological program including any potential further testing, salvage excavation and monitoring.</li> </ul>
<ul style="list-style-type: none"> <li>Any further test excavation, salvage, conservation or other activity outlined in the archaeological Research Design and Excavation Methodology (RDEM) (Appendix B) should be undertaken by a suitably qualified and experienced historical archaeologist in accordance with Heritage Council requirements.</li> </ul>
<ul style="list-style-type: none"> <li>Monitoring of removal may be an appropriate management strategy.</li> </ul>
<ul style="list-style-type: none"> <li>Heritage induction for all contractors.</li> </ul>
<ul style="list-style-type: none"> <li>Impact or removal is likely to be considered acceptable if appropriate mitigation measures are followed.</li> </ul>
<ul style="list-style-type: none"> <li>Heritage NSW is to be notified if the resource is of State significance, noting that exceptional preservation can increase significance. Likewise under s146, Heritage NSW is to be notified if relics are encountered.</li> </ul>
<ul style="list-style-type: none"> <li>Post-excavation reporting, artefact analysis, relics conservation and interpretation would be required if relics are identified. The report will also need to address the artefact repository for recovered relics.</li> </ul>

### 8.4.5 Management rating for HAMUs that do not meet the threshold of significance

This applies to areas where the resource, as assessed, does not currently meet the threshold of significance. This is most likely when the disturbance and damage to any previous archaeological resource is sever and little information is likely to be retrievable. Despite the of nil potential the possibility always exists for unknown archaeological evidence to remain in the ground, hence the need for unexpected finds and an archaeologist to be engaged on an on-call basis They are discussed in detail in the RDEM (Appendix B) and summarised in Table 8-6.

**Table 8-6: Mitigation measures for HAMUs that do not meet the threshold of significance.**

Mitigation measures
<ul style="list-style-type: none"> <li>Heritage induction for all contractors</li> <li>Preparation and implementation of an Unexpected Finds Protocol that outlines steps to be undertaken if artefacts are encountered.</li> </ul>

## 8.5 Maritime archaeology

### 8.5.1.1 Monitoring

Based on the results of the archaeological testing a strategy has been included in the RDEM to address proposed excavation works adjacent to Ermington Wharf to appropriately manage the potential for significant terrestrial archaeological remains.

The methodology and research questions for this archaeological monitoring has formed part of the RDEM in Appendix B. Management of any archaeological evidence uncovered in excavation areas would be managed in accordance with the RDEM.

### 8.5.1.2 Exclusion zones

The bridge construction is unlikely to impact any **known** submerged historical maritime archaeology. However, exclusion zones should be developed to ensure that no ancillary works associated with the development (such as temporary work platforms, construction areas, placement of machinery, access, scaffolds) impact known maritime archaeological sites. These exclusion zones consist of the fenced preservation area of Ermington Wharf and visible remnants of the structure. These areas must be specified in the Heritage Management Plan.

### 8.5.1.3 Unexpected Finds – maritime archaeology

The *Transport for NSW Unexpected Heritage Items Procedure July 2022* is to be applied to the project. However, this should be developed to adequately incorporate maritime archaeological resources that may be encountered during the project. As a minimum, the following additional considerations should be made as they relate to maritime archaeology:

- if any submerged material is identified during works, all work in the area must cease and a suitably qualified and experienced maritime archaeologist called to assess the find. Depending on the nature of the find, additional conservation specific to maritime environments may also be required based on the advice of the maritime archaeologist
- where the remains are confirmed to be relics, notification will be required pursuant to s146 of the Heritage Act.

## 9 CONCLUSION

This report has divided the project area into 24 individual HAMUs. It has found that 15 of the HAMUs have potential archaeological resources of significance. The construction of the project would impact on the potential historical archaeological evidence of State and local significance in all 15 of the HAMUs in the project site. In 11 of these there is only low potential for a significant archaeological resource to be present, but in the remaining four there is at least a medium potential for State significant archaeological resources. One of the HAMUs with medium potential has been tested with limited evidence of a State significant resource was located.

The HAMUs in the project site with medium or high potential for State significant historical archaeology to be present, or where known State significant archaeological features are present are:

- HAMU 07 – Broadoaks Park, Rydalmere where there is high potential relating to the Vineyard Estate 1791 to 1849. Testing of this HAMU so far proved inconclusive with some possible evidence from the Vineyard Estate.
- HAMU 11 – Ken Newman Park, Ermington where there is high potential relating to Early Farming from 1792 to 1871.
- HAMU 15 – Ermington Wharf and Archer Park, Melrose Park where there is low potential relating to Early Farming and Edmund Lockyer from 1792 to 1827, and high potential relating the Ermington Wharf (c.1820s–c1930).
- HAMU 29 – Western Eric Primrose Reserve, Rydalmere where there is medium potential relating to Vineyard Estate 1791 to 1849.

The project would cause a major impact to State significant archaeological resources in three of the HAMUs (HAMU 11, HAMU 15, and HAMU 29) identified and cause a minor impact in the other (HAMU 07). These archaeological resources have the potential to contain irreplaceable evidence of human action in the past. Impacts to State significant archaeology should be avoided. In order to assist with design refinements, testing has been undertaken in one HAMU (HAMU 07) and will be undertaken in the remaining areas as outlined in the RDEM provided in Appendix B. This testing would also assess the nature and integrity of the archaeological resource across the project site. It would be undertaken alongside the testing for Aboriginal cultural heritage.

Maritime infrastructure and any archaeological evidence within the project site has been assessed to be of local significance. The following mitigation measures are recommended:

- works should be located away from remnant footings to avoid impact on the evidence of maritime infrastructure associated with Ermington Wharf
- areas identified archaeological potential will require a program of archaeological management, including monitoring by a suitably qualified archaeologist. The details of this monitoring has been provided in the RDEM (Appendix B)
- the *Transport for NSW Unexpected Heritage Items Procedure July 2022* must be followed, with maritime heritage managed under the recommendations detailed in Section 8.4.

## 10 REFERENCES

### 10.1 Statutory documents

*NSW Heritage Act 1977* No. 136, Current version for 1 July 2021 to date (accessed 3 March 2022 at 15:04)

*Environmental Planning and Assessment Act 1979* No 203, Current version for 1 December 2021 to date (accessed 3 March 2022 at 15:04)

NSW Heritage Office (2001), Assessing Significance: a NSW Heritage Manual Update. New South Wales Heritage Office

NSW Heritage Office (1996), Archaeological Assessment Guidelines. Heritage Office, Department of Urban Affairs and Planning

NSW Heritage Office (1998) Skeletal Remains. Heritage Office, Department of Urban Affairs and Planning

NSW Heritage Branch (2009) Assessing Significance for Historical Archaeological Sites and 'Relics', Heritage Branch, Department of Planning [Sydney].

*Parramatta Local Environmental Plan 2011*, Current version for 22 December 2021 to date (accessed 3 March 2022 at 15:05)

*Ryde Local Environmental Plan 2014*, Current version for 1 December 2021 to date (accessed 3 March 2022 at 15:05)

### 10.2 Maps

Fowkes, F., et al. (1788). Sketch & description of the settlement at Sydney Cove Port Jackson in the County of Cumberland taken by a transported convict on the 16th of April, 1788, which was not quite 3 months after Commodore Phillips's landing there. London, R. Cribb, No. 288 High Holborn.

Reuss F. H. & Browne J. L. (1858) Reuss and Browne's map of the subdivisions of Parramatta, Z/M3 811.13gbbd/1859/1, Maps/0313 <https://collection.sl.nsw.gov.au/record/74Vv7bxqZZJd>

Brownrigg, W.M. (1844) Plan of the town of Parramatta and the adjacent properties. 1844 M4 811.1301/1844/1, <https://collection.sl.nsw.gov.au/record/74VvyriD6JMg>

Brownrigg, W.M. (1850) Parish of Saint John, County of Cumberland, District of Parramatta [cartographic material] / printed & published by W. Meadows Brownrigg, surveyor, Jamison Street, Sydney., <https://collection.sl.nsw.gov.au/record/74VvyZwmlZ0y>

Sketch plan of Rydalmere area Sheet 4 n.d. (post 1881) SP/R19, Z/SP/R19 <https://collection.sl.nsw.gov.au/record/74Vvdxwma0ed>

Manuscript map of subdivision of the village of Ermington & Plan of the village of Ermington on the Parramatta River: to be sold by auction by Mr. Blackman, on 23rd April – 1841, Maps/0233 <https://collection.sl.nsw.gov.au/record/74VKwwJdXjdl>

Plan of Land Ermington, Property of Mrs Bobart - Pennant Hills St, Mary St, Wharf St, Henry St, 1858 SP/E11, Z/SP/E11 <https://collection.sl.nsw.gov.au/record/74VM4L2NKp2b>

Medland, T., et al. (1789). Sketch of Sydney Cove, Port Jackson in the County of Cumberland New South Wales July 1788. London, J. Stockdale.

### 10.3 Primary sources

Philip Schaffer - Land grant, 22 February 1792 SLNSW Safe 1/86

King, P. G. (2003 (1790)). The Journal of Philip Gidley King Lieutenant, R.N. 1787-1790.

Tench, W. (1998 (1793)). A Complete Account of the Settlement at Port Jackson. London, G. Nicol and J. Sewell.

Bladen, F. M. (1892). Historical records of New South Wales. Vol. I, Part 2. - Phillip.

Collins, D. (2003 (1802)). An Account of the English Colony in New South Wales From Its First Settlement, in January 1788, to August 1801. London, T. Cadell Jun. and W. Davies.

## 10.4 Secondary

Attenbrow, V. (2010). Sydney's Aboriginal past : investigating the archaeological and historical records. Sydney : University of New South Wales Press

Auchmuty, J.J. (1967), Wentworth, D'Arcy, Australian Dictionary of Biography, Volume 2

Irish, P. (2017). Hidden in plain view : the Aboriginal people of coastal Sydney, Sydney NSW, NewSouth Publishing.

Irish, P. & Goward, T. (2012) "Where's the evidence? The archaeology of Sydney's Aboriginal history." Archaeology in Oceania, 47, 60-68.

Irving, T.H. (1966), Blaxland, John. Australian Dictionary of Biography, Volume 1

Godwin, L. (2011). The Application of Assessment of Cumulative Impacts in Cultural Heritage Management: A Critique. Australian Archaeology, 73.

Hoskins, . (2015) River Cycles - A History of the Parramatta River, Dictionary of Sydney at <[https://dictionaryofsydney.org/entry/river\\_cycles\\_a\\_history\\_of\\_the\\_parramatta\\_river](https://dictionaryofsydney.org/entry/river_cycles_a_history_of_the_parramatta_river)>

Jones, E. L. and G. W. Raby (1988). The fatal shortage : establishing a European economy in New South Wales 1788-1805. Bundoora, Vic, School of Economics La Trobe University.

Karskens, G., Burnett, G. & Ross, S. (2019) "Traces in a Lost Landscape: Aboriginal archaeological sites, Dyarubbin/Nepean River and contiguous areas, NSW, Australia (Data Paper)". Internet Archaeology, 52.

McClymont, J. (2009), Camellia, Sydney Journal 2 (1)

McDonald, J. (2008). "Rock art and cross cultural interaction in Sydney: How did each side perceive the other?". In: Veth, P., Sutton, P. & Neale, M. (eds.) Strangers on the Shore Early coastal contacts in Australia. Canberra: National Museum of Australia Press.

National Trust of Australia (N.S.W.) 1986. "Listing Proposal. N.T.N. 05" by R. Purkis. Card 8.

People Australia, National Centre of Biography (n.d.), Meredith, Frederick (1763–1836), Australian National University,

Read, S. (2015) Early vineyards and viticulture in the Sydney Basin, AGHS 2015 Seminar – Adelaide 15 October 2015

Rowland, J. (2008) West Pennant Hills, [http://dictionaryofsydney.org/entry/west\\_pennant\\_hills](http://dictionaryofsydney.org/entry/west_pennant_hills)

Savige, T. (1965). "Australian Camellias of the Nineteenth Century." International camellia journal : an official publication of the International Camellia Society 1(3): 64-79.

Society of Australian Genealogists. No date. Draft article on Ermington Wharf. Ryde Municipal Library. Local History Collection

Stancombe G.H. (1967), Laycock, Thomas, Australian Dictionary of Biography, Volume 2

Tracey, S. (2021), Swane, Valerie Gwendoline. Australian Dictionary of Biography, Volume 19

Willich, A. F. M. (1802). The domestic encyclopædia, or, A dictionary of facts, and useful knowledge [electronic resource] : comprehending a concise view of the latest discoveries, inventions and improvements, chiefly applicable to rural and domestic economy ... : illustrated wth numerous engravings and cuts / by A.F.M. Willich. London, Printed for Murray and Highley [et al.].

## 10.5 Newspapers and pamphlets

Sydney Morning Herald, 02 October 1883 page 5

Transport for NSW 2019, The Carlingford Line, Celebrating 132 Years

Sydney Olympic Park, 2015, Fact Sheet - History

City of Ryde 2010, Media Release: New Wharf Street Boat Ramp Boost for Riverlife and Boaties at <  
[http://www.ryde.nsw.gov.au/files/assets/public/council/media-releases/archive/2010/120210\\_new-wharf-street-boat-ramp-boost-for-riverlife-and-boaties.pdf](http://www.ryde.nsw.gov.au/files/assets/public/council/media-releases/archive/2010/120210_new-wharf-street-boat-ramp-boost-for-riverlife-and-boaties.pdf)> accessed on 10 June 2022

### 10.6 Reports

Advisian (2020) [Powerhouse Parramatta Statement of Heritage Impact](#)

AECOM (2018) [Viva Energy Clyde Western Area Remediation Project](#).

Archaeology & Heritage (2007) [Statement of Heritage Impact for 100 Lancaster Avenue Melrose Park](#)

Artefact (2018) [1&2 Murray Rose Avenue, Olympic Park Historical Archaeological Assessment](#)

AMAC (1997) [Archaeological Test Excavations & Survey, Australia Avenue, Fig Tree Avenue Circuit 2000 Olympic Site](#)

AMAC (2000) [Archaeological Monitoring Report, Former AJC Racecourse, Olympic Tennis Centre, Homebush 1998-2000](#)

Archaeology and Heritage Pty Ltd (2007) [Statement of Heritage Impact and Results of Test Trenching for 100 Lancaster Avenue, Melrose Park, 2007](#)

Artefact (2018) [1&2 Murray Rose Avenue, Olympic Park Historical Archaeological Assessment](#)

Artefact (2019) [Parramatta Geotechnical Investigation Monitoring Program - Parramatta Light Rail Preworks Geotechnical Investigation under Exception in 2017](#)

Artefact (2020) [Sydney Metro West, Non-Aboriginal Heritage](#)

Austral (2018) [Parramatta Leagues Club Hotel Development, Aboriginal Due Diligence and Historical Archaeological Assessment](#)

Biosis (2021) [Site 2 – Sydney Olympic Park: Historical Archaeological Assessment and Statement of Heritage Impact](#)

Casey & Lowe (2005) [Preliminary Excavation Report Stage 2b – Blood Bank, Parramatta Justice Precinct former Parramatta Hospital Site, George & Marsden Streets, Parramatta](#)

Casey & Lowe (2009) [Preliminary Results Archaeological Investigation 15 Macquarie Street, Parramatta](#)

Casey & Lowe (2020) [3 Parramatta Square, Parramatta Formerly 153 Macquarie Street, Parramatta, Archaeological Investigation](#)

Comber Consultants (2021) [Sydney Olympic Park High School Statement of Heritage Impact](#)

Curio (2020) [Powerhouse site, Parramatta Final Archaeological Research Design](#)

Dallas Consulting (2014) Parramatta Aboriginal Cultural Heritage Study Review. Report to Parramatta City Council.

Dominic Steele Consulting Archaeology (2013) Aboriginal Archaeological Assessment & Aboriginal Heritage Impact Permit Application AHIMS Site # 45-5-3068 184-188 George Street, Parramatta, NSW.

Edward Higginbotham & Associates (2005) [Report on the Archaeological Excavation of 50, 50A & 52 O'Connell and 6-12 Grose Street, North Parramatta, N.S.W](#)

Golder Associates (2015), [Camellia Precinct Contamination Study – Part 1](#)

GML (2000) [Parramatta Historical Archaeological Landscape Management Study 2001](#)

Godden Mackay Heritage Consultants (1998) [Goodyear Site, Camellia: research design](#)

Greater Sydney Commission (2018) [Greater Sydney Region Plan A Metropolis of Three Cities, Sydney](#)

Jonathan Falk Planning Consultants Pty Ltd (1986) [Ryde Heritage Study](#). Ryde Municipal Council and Department of Environment and Planning.\_

Kuiters, S (2012) Wharves and Jetties of the Parramatta River The maritime cultural landscape from 1788 to 1900 at: <https://heritagensw.intersearch.com.au/heritagenswjspui/retrieve/07b264d2-2387-4dc2-ae72-66ef94683892/H12292%20-%20WHAR.pdf>

Martin, Megan. 1988. ' Ermington Wharf- wharf at end of Wharf Rd., Ermington'.

North, M. & Cremin, A. (1997) Goodyear site, Camellia: industrial heritage and archaeological assessment

SGS (2017) Connecting Sydney Olympic Park and GPOP with Greater Sydney- final technical report. Prepared for Sydney Olympic Park Business Association, May 2017.

Stedinger Associates (2010) Archaeological Excavations at Ermington Wharf, Melrose Park. Monitoring of Boat Ramp Reconstruction Works

Thorp, W. (1993) Homebush Bay Project, Review of Archaeological Data and Studies Relating to Homebush Bay

Thorp, W. & Tropman, L. (1985) Parramatta River Heritage Study, European Heritage and Conservation (Stage 2)

Tropman & Tropman Architects (2020) Holdmark Planning Proposal, Melrose Park South, Heritage Assessment & Heritage Impact Statement

Tropman & Tropman Architects (2020) Holdmark Planning Proposal Heritage Assessment & Heritage Impact Statement. report to Holdmark Property Group.

Umwelt (2017) Heritage Desktop Assessment, Wave Park Group.



## Appendix A

# MARITIME ARCHAEOLOGICAL ASSESSMENT (COMBER CONSULTANTS)



ARCHAEOLOGY - HERITAGE - MEDIATION - ARBITRATION

# Parramatta Light Rail Stage 2

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## Maritime Archaeological Assessment – Melrose Park to Wentworth Point River Crossing

28 October 2022

Report to: RPS on behalf of Transport for NSW

LGAs: City of Ryde, City of Parramatta,  
Unincorporated

Version: Final





## ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the Traditional Custodians of the land that we live and work on.

We pay our respects to the Elders, past, present and emerging, for they hold the memories, the traditions, the culture and hopes of Aboriginal people.

We honour and acknowledge the stories, traditions and living cultures of Aboriginal and Torres Strait Islander peoples on this land and commit to building a brighter future together.

A better understanding and respect for Aboriginal and Torres Strait Islander cultures develops an enriched appreciation of Australia’s cultural heritage and can lead to reconciliation. This is essential to the maturity of Australia as a nation and fundamental to the development of an Australian identity.

## DOCUMENT CONTROL

**PROJECT NO.:** RG430      **STATUS:** FINAL

Rev	Date	Prepared by	Edited by	Approved by
Final	28/10/2022	David Nutley	Dr Jillian Comber	Dr Jillian Comber

## INTEGRATED MANAGEMENT SYSTEM

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## GLOSSARY AND ABBREVIATIONS

**CBD:** Central Business District

**EIS:** Environmental Impact Statement

**EP&A Act:** NSW *Environmental Planning & Assessment Act 1979*

**GPOP:** Greater Parramatta and the Olympic Peninsula area

**Historic Shipwreck:** means the remains of any ship (including any articles associated with the ship)--

- (a) that have been situated in State waters, or otherwise within the limits of the State, for 75 years or more, or
- (b) that are the subject of a historic shipwrecks protection order.

**Marine zone:** the section of the Parramatta River below the mean high water mark

**Maritime archaeology:** can encompass the investigation of all means all traces of human existence having a cultural, historical or archaeological character which are partially or totally under water. This includes shipwrecks and relics protected under the *Heritage Act 1977*.

For the purposes of this assessment, 'maritime archaeology' applies to the marine zone of the study area and excludes sites above the mean low water mark which have been assessed in Technical Paper 6 (Historical Archaeological Assessment)

**MBES:** Multibeam Echo Sounder

**Project:** the proposed construction and operation of Parramatta Light Rail Stage 2

**Project site:** refers to the area that may be disturbed during the construction of the project

**Relic:** means any deposit, artefact, object or material evidence that:

- (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and
- (b) is of State or local significance

**Shoaling:** (of water) where a water body becomes shallower, e.g., through build-up of sediments

**SSS:** Side Scan Sonar

**State significance:** a heritage item that has being assessed against standard heritage criteria as demonstrating state significance.

**Study area:** is the Parramatta River between Melrose Park to the north and, to the south, Wentworth Point on the eastern border of Newington Nature Reserve as shown in Figure 3-1

**Transport for NSW:** Transport for NSW is the lead agency of the NSW Transport cluster

**Underwater archaeology:** archaeology conducted in an underwater or semi-underwater context

**Underwater cultural heritage:** 'Underwater cultural heritage' is an alternative title for 'maritime archaeology'. The 2001 UNESCO Convention on the protection of the underwater cultural heritage describes underwater cultural heritage as including:

- (i) sites, structures, buildings, artefacts and human remains, together with their archaeological and natural context;
- (ii) vessels, aircraft, other vehicles or any part thereof, their cargo or other contents, together with their archaeological and natural context; and
- (iii) objects of prehistoric character. [*Note: in Australia this translates to Indigenous underwater cultural heritage*]



## EXECUTIVE SUMMARY

This maritime archaeological assessment has been prepared on behalf of Transport for NSW for the Parramatta Light Rail Stage 2 project ('the project'), which will connect the Parramatta CBD and Parramatta Light Rail Stage 1 to Camellia, Rydalmere, Ermington, Melrose Park, Wentworth Point and Sydney Olympic Park. It will be a transformative public transport network for the region and in line with the NSW Government's plan for *A Metropolis of Three Cities*, where Parramatta and its surrounds will form the Central River City.

A desktop assessment (refer to Technical Paper 6 (Historical Archaeological Assessment)) identified the need for a maritime archaeological survey to identify archaeological potential associated with the proposed bridge between Melrose Park and Wentworth Point. Accordingly, a survey was undertaken of the proposed bridge location and a nominal 40 metres upstream and downstream of that location, (the study area). This report assesses the results of that survey and the potential for deposition and survival of significant cultural materials within Parramatta River at, and adjacent to, the proposed bridge location between Wentworth Point and Melrose Park.

The findings of this assessment are designed to assist Transport for NSW to prepare the environmental impact statement (EIS) for the project by providing:

- a description of existing non-Aboriginal heritage within the marine environment within and adjacent to the study area and an assessment of potential direct and indirect impacts during construction and operation of the project
- identification of measures to be implemented to avoid, minimise, manage, offset and/or monitor the potential impacts of the project at this location.

The assessment found the potential for impact on maritime archaeological heritage in the study area is **low**. Accordingly, the recommendations of this assessment are that site inductions for all personnel should include:

- a brief history of the study area
- details of the unexpected finds protocol that requires the immediate reporting of any unexpected finds or observed impacts on cultural heritage within the river or the tidal zone to the site supervisor and to the project maritime archaeologist.



## 1 INTRODUCTION

### 1.1 Parramatta Light Rail

The NSW Government's Greater Sydney Region Plan *A Metropolis of Three Cities* (Greater Sydney Commission, 2018) outlines a vision for a three-city metropolis. The Central River City covers the four local government areas of the City of Parramatta, Blacktown City, Cumberland City and The Hills Shire. *A Metropolis of Three Cities* highlights Greater Parramatta as the focal point for the Central River City, with employment growth and public transport being of key importance.

The Greater Parramatta and the Olympic Peninsula area (GPOP), which extends from Westmead and Parramatta in the west to Sydney Olympic Park to the east, is fast emerging as the heart of Sydney's Central River City and is set to grow and change significantly over the next 20 years. Forecasts predict that GPOP will accommodate almost 170,000 new residents by 2041. Employment opportunities will also grow, with an additional 100,000 jobs predicted by 2041 (SGS, 2017).

Parramatta Light Rail will deliver an integrated light rail service that supports the population and employment growth expected throughout GPOP. It will integrate with existing and future modes of transport, including buses, trains, ferries and active transport (pedestrian and cycle networks), as well as Sydney Metro West services and the existing road network.

Parramatta Light Rail will be delivered in stages to keep pace with development:

- Stage 1 will connect Westmead to Carlingford via the Parramatta central business district (CBD) and Camellia. The construction and operation of Parramatta Light Rail Stage 1 was approved by the NSW Minister for Planning in May 2018. Major construction is underway, with the track installation complete and light rail stop construction in progress. Stage 1 is expected to start operating in 2024. Further information on Stage 1 is available at [Parramatta Light Rail](#)
- Transport for NSW is now proposing to construct and operate Stage 2 of Parramatta Light Rail ('the project'). Stage 2 would connect the Parramatta CBD and Stage 1 to Camellia, Rydalmere, Ermington, Melrose Park, Wentworth Point and Sydney Olympic Park.

Figure 1-1 provides an overview of the Parramatta Light Rail network showing both stages.



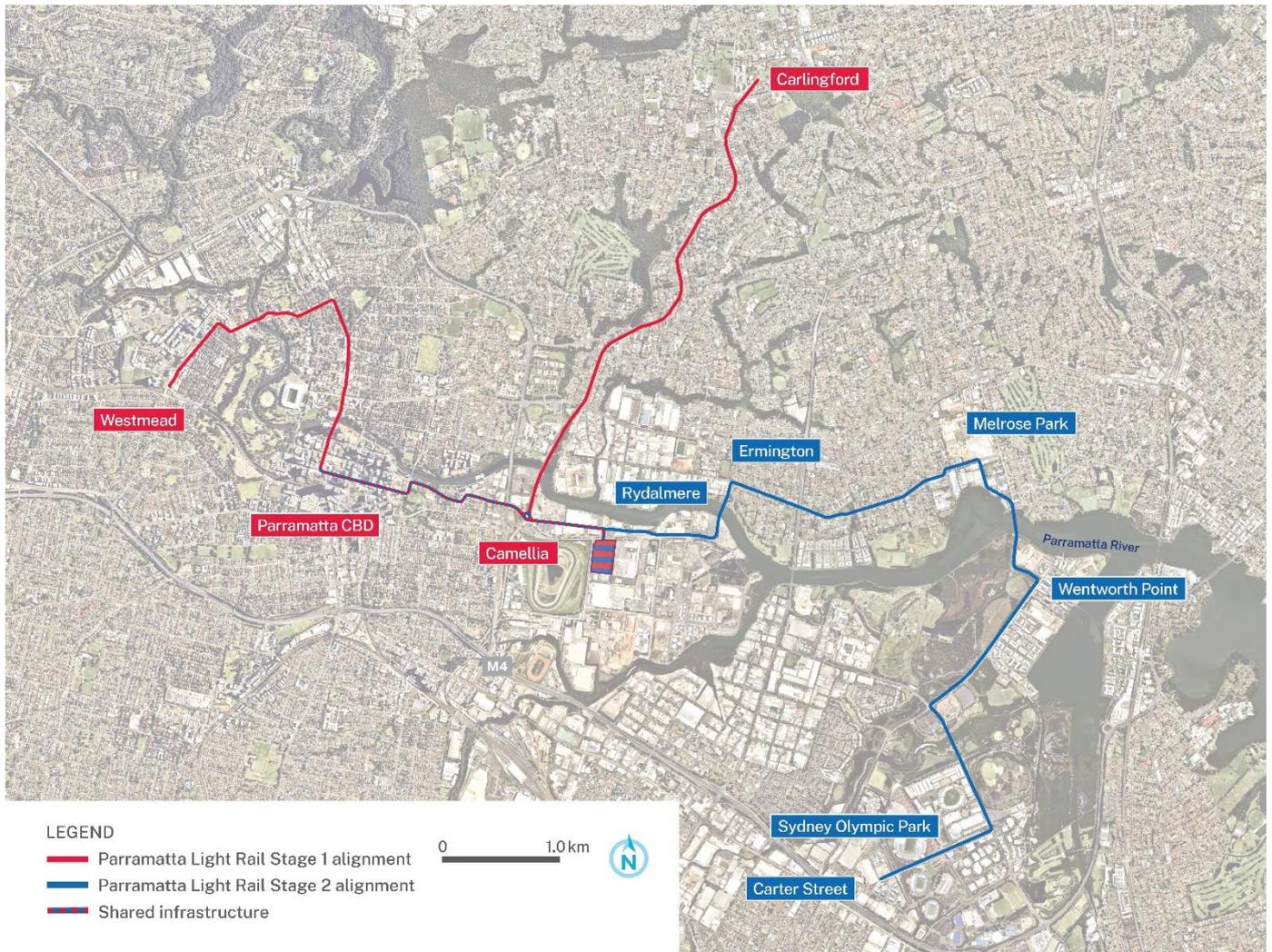


Figure 1-1: Parramatta Light Rail network

## 1.2 Project overview

The project comprises two main elements:

- construction of about 10 kilometres of light rail infrastructure between Camellia and the Carter Street precinct adjacent to Sydney Olympic Park
- operation of about 13 kilometres of light rail alignment between the Parramatta CBD and the Carter Street precinct, including a section of infrastructure constructed by Parramatta Light Rail Stage 1 between Camellia and the Parramatta CBD.

Further information on the location of the project, and a description of the project site for the purposes of this document, is provided in the environmental impact statement (EIS).

### 1.2.1. Key features

The key features of the project, which are shown on Figure 1-2, include:

#### Light rail track and bridges

- a new 10 kilometre long dual light rail track, with 14 stops, between the Parramatta Light Rail Stage 1 line in Camellia and the Carter Street precinct adjacent to Sydney Olympic Park
- two bridges over the Parramatta River between Camellia and Rydalmere, and between Melrose Park and Wentworth Point
- a bridge over Silverwater Road between Rydalmere and Ermington



- other bridge works in Ken Newman Park and Sydney Olympic Park.

#### **Active and public transport integration**

The project would also deliver:

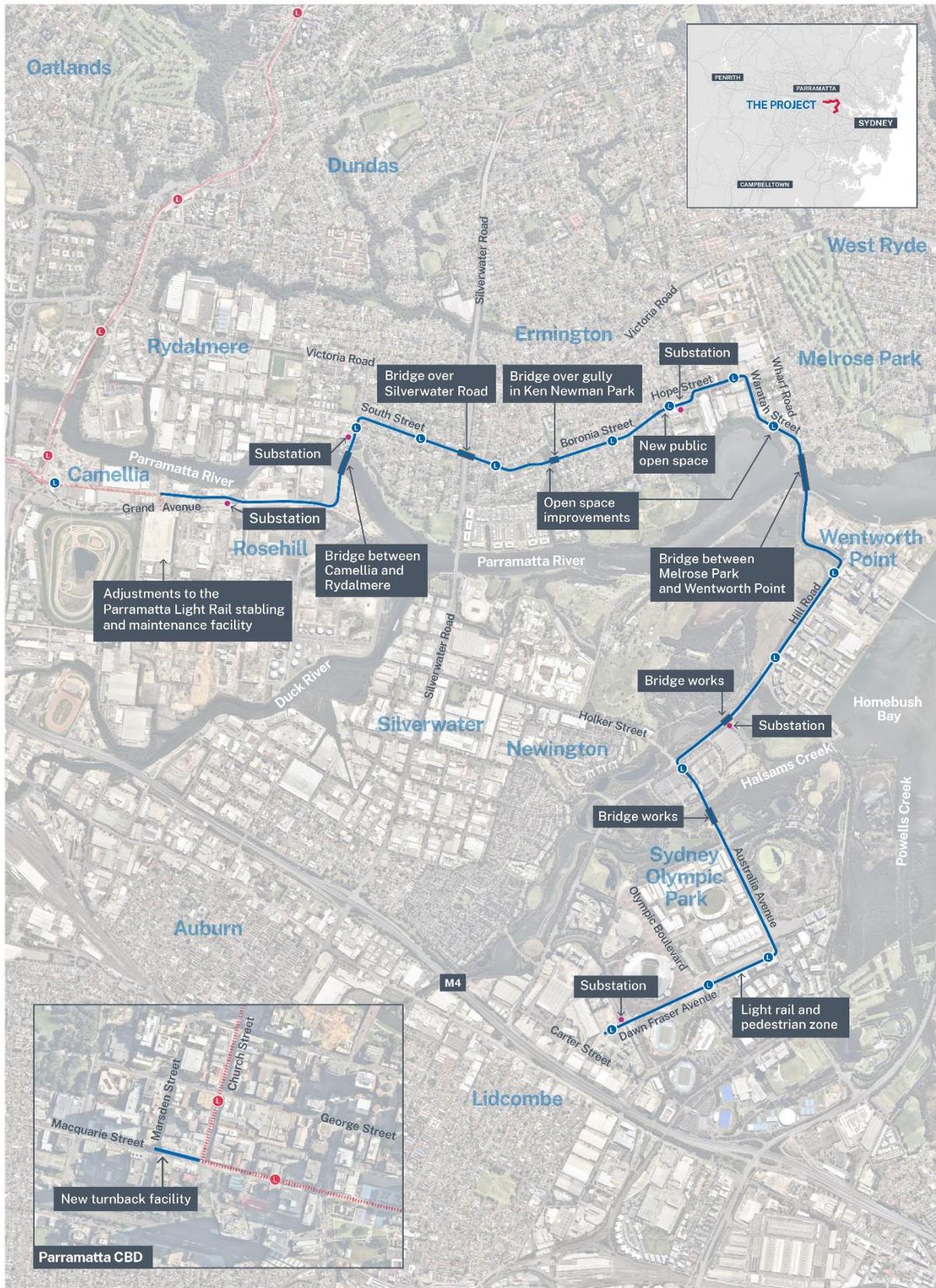
- about 8.5 kilometres of new active transport links between Camellia and the Carter Street precinct, which would connect with the existing cycling and pedestrian network
- interchanges with other forms of public transport, including trains, ferries, buses and Sydney Metro West, with the main interchanges located in the Parramatta CBD, Rydalmere and Sydney Olympic Park
- a light rail and pedestrian zone (no through vehicle access) within Sydney Olympic Park along Dawn Fraser Avenue between Australia Avenue and Olympic Boulevard
- bus access over the proposed bridge between Melrose Park and Wentworth Point.

#### **Other works**

Works proposed to support the project's operation:

- turnback facilities, including along part of Macquarie Street in the Parramatta CBD
- adjustments to the Parramatta Light Rail stabling and maintenance facility at Camellia
- five new traction power substations to convert electricity to a form suitable for use by light rail vehicles
- new and improved open spaces and recreation facilities at Ken Newman Park, the Atkins Road stop and Archer Park.

Further information on the project's design features is provided in the EIS (see Chapter 6 (Project description – infrastructure and operation)).



LEGEND

- Proposed project alignment
- - - Parramatta Light Rail Stage 1 alignment
- Proposed project stops
- Parramatta Light Rail Stage 1 stops

Figure 1.2 The project

0 1km



Figure 1-2: Key features of the project



### 1.2.2. Operation

The project would operate between the Parramatta CBD and the Carter Street precinct, using a section of the Parramatta Light Rail Stage 1 alignment and the alignment constructed as part of the project.

Between the Parramatta CBD and Camellia, the project would operate along about three kilometres of the Parramatta Light Rail Stage 1 alignment. Parramatta Light Rail Stage 2 services would terminate at the Stage 1 Parramatta Square stop to allow customers direct and convenient access to Parramatta's CBD, and interchange with Stage 1 light rail services, trains, buses and Sydney Metro West.

From Camellia, the project would operate along the light rail infrastructure proposed as part of Stage 2, terminating at the proposed Carter Street stop.

The project would operate as a turn-up-and-go light rail service from 5am to 1am, seven days a week, in line with Parramatta Light Rail Stage 1. The project would have travel times of around 31 minutes from the Carter Street stop in Lidcombe to the proposed Sandown Boulevard stop in Camellia, and a further seven minutes to the Parramatta Square stop in the Parramatta CBD.

Further information on the project's operation is provided in the EIS (see Chapter 6 (Project description – infrastructure and operation)).

### 1.2.3. Timing

It is anticipated that construction would start in 2025, subject to obtaining all necessary approvals, and the first passenger services are proposed to start from 2030/2031.

An indicative construction methodology is provided in the EIS (see Chapter 7 (Project description – construction)).

### 1.2.4. Approval requirements

The project is State significant infrastructure and is subject to approval by the NSW Minister for Planning under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act).

The project is also determined to be a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and requires approval from the Australian Minister for the Environment and Water.

## 1.3 Purpose and scope of this report

The EIS has been prepared to support an application for approval of the project in accordance with Division 5.2 of the EP&A Act. It addresses the environmental assessment requirements of the Secretary of the Department of Planning and Environment (the SEARs).

This report has been prepared as part of the EIS to assess the potential underwater maritime heritage impacts from constructing and operating the project. The report:

- addresses the relevant SEARs listed in Table 1-1
- describes the existing environment with respect to underwater maritime heritage
- assesses the impacts of constructing and operating the project on underwater maritime heritage
- recommends measures to mitigate and manage the impacts identified.

The methodology for the assessment is described in Section 2.



Table 1-1:SEARs Key issue number 7.4 maritime archaeological assessment

Requirements	Where addressed in this report
7.4(a) search of maritime heritage online	Section 3.2 and Section 9.2 report on the findings of the Maritime Heritage database search.
7.4(b) identify extent, nature and significance or any features or relics	Section 9.1 discusses archaeological potential Section 9.3 identifies archaeological zones Section 9.4 provides an assessment of archaeological potential in each of these zones.
7.4(c) consider the potential impacts of the proposal both above and below the water;	Section 10 considers the potential impacts of the project within the archaeological zones identified below the water (above the water impacts have been assessed in Technical Paper 6 (Historical Archaeological Assessment))
7.4(d) consider the effects of the proposal on the riverbed and riverbank and geomorphological effects to heritage items;	Section 10 considers the impacts of the project to the riverbed, riverbank and geomorphological effects to heritage items.
7.4(e) include an appropriate mitigation strategy and Research Design and Excavation Methodology where harm cannot be avoided.	Section 11.2 provides recommendations on mitigation strategies which includes an unexpected finds protocol, which is outlined in Section 11.3.

The scope of this assessment is the span of the river between Wentworth Point (near the junction with Sydney Olympic Park to the south) and Melrose Park to the north. The report assesses the potential for structures such as wharves or jetties, shipwrecks or the deposition of other significant cultural materials over the course of the history of this study area. In addition, the report assesses the potential for that material to survive natural riverine processes as well as human intervention in the configuration of the river to meet the needs of agriculture, commerce, industry, and recreation in the colonial and post-colonial eras.

The findings of this assessment are designed to assist Transport for NSW to prepare the EIS for the project by providing:

- a description of existing non-Aboriginal maritime heritage and an assessment of potential direct and indirect impacts during construction and operation of the project
- identification of measures to be implemented to avoid, minimise, manage, offset and/or monitor the potential impacts of the project.



## 2 LEGISLATION

A detailed review of legislation relevant to maritime archaeology is provided as part of the maritime archaeology desktop assessment included in Technical Paper 6 (Historical Archaeological Assessment). A summary of key legislation is provided below.

### 2.1 Environmental Planning & Assessment Act 1979

This project is being undertaken as State significant infrastructure under Part 5, Division 5.2 of the NSW *Environmental Planning & Assessment Act 1979* (EP&A Act). State significant infrastructure is exempt from requiring certain authorisations under section 5.23 of the EP&A Act, these include:

- approvals under Part 4 (including historic shipwrecks), or an excavation permit under section 139 of the *Heritage Act 1977*
- Aboriginal heritage impact permits under section 90 of the *National Parks and Wildlife Act 1974*.

### 2.2 Heritage Act 1977 (as amended)

#### State Heritage Register

Section 31 of the NSW *Heritage Act 1977* provides for the establishment and maintenance of the State Heritage Register by the Heritage Council. Section 32 allows the Minister to direct the listing of an item which is of State heritage significance and sets out the procedure for listing an item.

No items of State significance are listed in the maritime archaeological study area (as defined in Section 3.1).

#### Protection of historic shipwrecks:

Part 3C, Section 51 of the *Heritage Act* provides provisions for the protection of a ship and any article associated with a ship that has been a shipwreck for 75 years or more:

- (1) A person must not move, damage or destroy any historic shipwreck otherwise than in accordance with a historic shipwrecks permit.
- (2) This section does not apply to a historic shipwreck that is subject to an interim heritage order made by the Minister or a listing on the State Heritage Register.
- (3) This section does not prevent a person from moving, damaging or destroying a historic shipwreck situated in any land in accordance with an excavation permit in force in respect of that land.
- (4) It is a defence to proceedings for an offence under this section if the defendant establishes that the act giving rise to the offence was done for the purpose of—
  - (a) saving human life, or
  - (b) securing the safety of a ship where the ship was endangered by stress of weather or by navigational hazards, or
  - (c) dealing with an emergency involving a serious threat to the environment.

If a historic shipwreck is to be disturbed, a historic shipwreck permit is required as described in s51 of the Act and an application submitted in accordance with s140 of the *Heritage Act*.

#### Protection of relics

As defined in (s) 4 of the *Heritage Act 1977* a “relic”:

*means any deposit, artefact, object or material evidence that:*

- (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and*
- (b) is of State or local significance*

Under section 139 of the *Heritage Act 1977*:

*A person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit.*



As this project is for State significant infrastructure a permit under section 140 of the *Heritage Act 1977* is not required to disturb or excavate a relic. In addition, this report assesses that the potential for relics, as defined in the Act, being discovered, moved, damaged or destroyed during or as a result of the construction works in the study area is low (see Section 10).

## 3 METHODOLOGY

### 3.1 Study area

The maritime archaeological assessment study area is the Parramatta River between Melrose Park to the north and Wentworth Point to the south on the eastern border of Newington Nature Reserve as shown in Figure 3-1. To the north of the study area is Koonadan Reserve and Korpie Reserve. The southern boundary is the bank of the Parramatta River near the intersection of Louise Sauvage Pathway and the River Walk.

The study area (shaded in hatched green in Figure 3-1) encompasses:

- a) the marine component, including the intertidal zone of the Parramatta Light Rail Stage 2 light rail project site for the bridge between Melrose Park and Wentworth Point (i.e., the area that may be disturbed for construction) (shaded orange in Figure 3-1), and
- b) up to 40 metres upstream and downstream of the project site for a total width of 130 metres across the river.

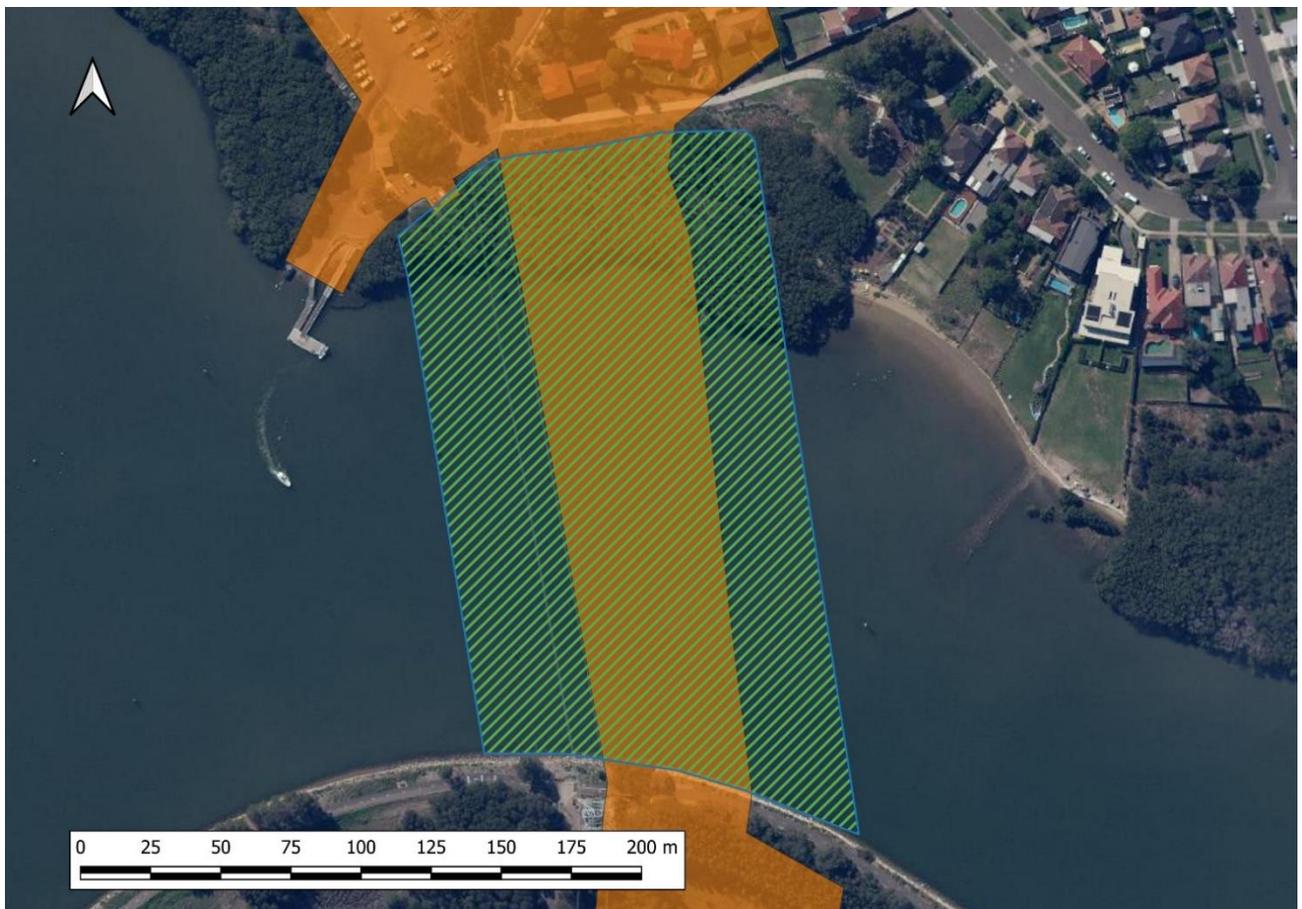


Figure 3-1: Relationship of the maritime archaeological study area to Parramatta Light Rail Stage 2 project site (Base Map: NSW Six Maps; Parramatta Light Rail Stage 2 project site (orange) overlay Transport for NSW; Study area overlay (hatched green): Comber Consultants)

### 3.2 Background research

This assessment included research of:

- the Heritage New South Wales maritime heritage database (15 March 2022 and 3 June 2022)
- the history of the study area through primary and secondary sources (refer Section 5)
- previous archaeological studies on the Parramatta River (refer Section 6)
- and analysis of remote sensing survey data (refer Section 3.3).





### 3.3 Survey

Data from a 16 March 2022 Multibeam Echo Sounder (MBES) survey was obtained from the Port Authority of NSW. The MBES coverage includes the project site for the river crossing and up to 40 metres upstream and downstream of the project site.

Investigations were also made into the viability of conducting a Side Scan Sonar (SSS) survey. Advice from the Port Authority hydrographers was that effective SSS coverage could not be obtained in the shallows on either side of the channel. As the shallows were the main areas of interest, that survey did not proceed. Better coverage could be obtained from the multi-beam survey data.

For more information on the survey refer to Section 7.

### 3.4 Archaeological zones

Archaeological zones were established across three environmental zones to identify archaeological potential and impacts within:

1. the intertidal zone north of the riverbank that was mapped in 1789 (and which has since receded northwards)
2. the intertidal zone between the recorded extent of 1789 tidal mudflats and 1789 riverbanks
3. the main channel of the river.

For more information on archaeological zones refer to Section 9.3.



## 4 EXISTING ENVIRONMENT

### 4.1 Site description

The study area consists of:

- a) the main body of the Parramatta River
- b) mudflats and mangrove stands to the north
- c) reclaimed land bounded by a seawall to the south.

The main navigational channel for the ferry services is in the southern third of the study area and is the deepest part of the study area.

The Parramatta River carries sediments during normal tidal movements and regularly carries large volumes of water-borne sediment during floods. When the river slows, during both floods and tides, these sediments are predominantly deposited along the northern shore and trapped within the mangrove stands. The deposited sediment is fine silt.

## 5 HISTORY

### 5.1 Aboriginal history and colonial contact history

The Parramatta River was mapped by William Bradley in 1789 (Bradley, 1790, Chart 11). His survey shows the location of the northern riverbank at that time (yellow line in Figure 5-1: ), the extent of the mudflats at that time and the width of the main channel (brown line). The current study area straddles the original northern bank, the main channel and a small portion of the southern mudflats.

The area on the southern side of the Parramatta River opposite the study area was a traditional fishing location for the Wann (men: Wanngal, women: Wangalleon). The north side of the river was occupied by the Wallumede (men: Wallumedegal, women: Wallumedegalleon). Almost no specific information is available about the traditional use of the tidal mudflats by the Wann. Typically, estuarine ecosystems provided the Aboriginal communities with resources for food and tool manufacture.

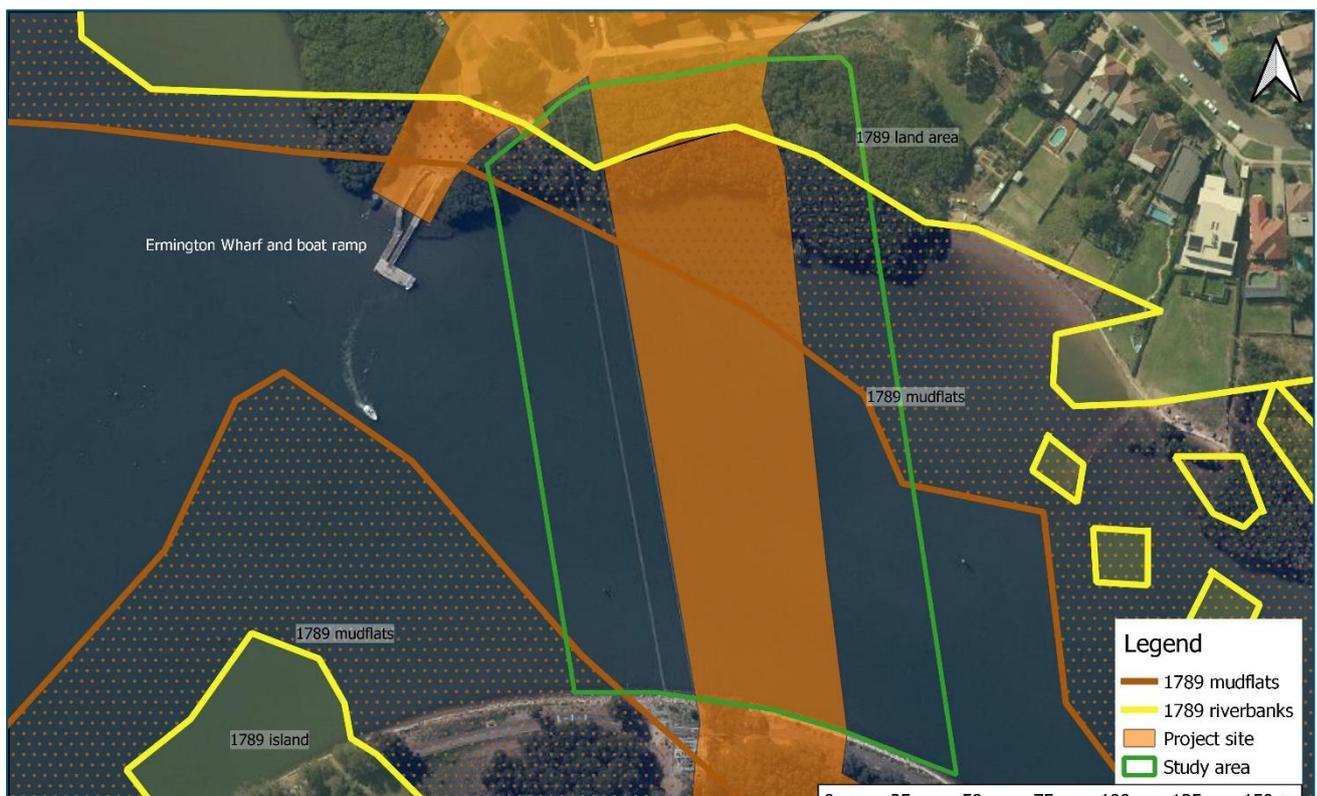


Figure 5-1: The project site and study area overlaid on current aerial map with mudflats and riverbanks derived from a 1789 map. Original riverbank (yellow). Original extent of mud flats (brown). (Source: SLNSW 'Flats at the head of Port Jackson & channel up to Rose Hill' by-W Bradley)

The major impact on Aboriginal occupation in the study area began with colonial exploration in 1788. On 22 April 1788 Surgeon John White records rowing along Parramatta River to the 'head of the harbour' (Cole, 1983:9,10).

New settlement quickly expanded along Parramatta River, past the study area, and on to Parramatta. Aboriginal use of the area for fishing and extraction of resources from the mud flats were rapidly curtailed by introduced regulations and through introduced diseases. As the Europeans began to expand across Sydney, conflicts with Aboriginal people occurred. To prevent these conflicts, Governor Phillip in 1791, encouraged the trade of fish and other wares between Aboriginal people, the convicts and marines at Parramatta (Irish 2006:27). This plan, however, did not last long as within weeks convicts destroyed the canoe of a young Wallumetta man, Balloderry, who had been fishing along the river and bringing his catch into town (Irish, 2006:27).

Irish suggests that Aboriginal people were still cutting bark from trees at Homebush Bay in the 1810s and it is likely that they were still fishing in the river and gathering food in these areas (2006:28). Aboriginal groups in the region were able to continue using their languages, and from the 1790s a dialect developed among the Aboriginal communities of the area which was a mixture of an Aboriginal dialect and English (Irish, 2006:27-28). By the 1830s, however, it appears that there

was a very limited number of Aboriginal people left living along the river, but many traditional beliefs and language were maintained through elders of the clan (Irish, 2006: 28). After 1850, information on Aboriginal people in the area becomes increasingly scarce with only scattered references to Aboriginal people around the Parramatta River (Irish 2006:29).

Walker (1928:84) refers to fishing in the Parramatta River, near to what became the Newington Armoury Precinct, and the access provided by regular exposure of the mud flats allows inferences to be made on the harvesting of shellfish, crustaceans. When covered by tidal waters, the area is also likely to have been used for fishing from bark canoes.

## 5.2 Navigation and reconfiguration of the river

In 1789, the river was charted as being a narrow channel with extensive mud flats on its northern and southern sides as shown in Figure 5-2. Aboriginal use of the river (Powell 1987:4) had not required modification to the riverbanks or river channel.

From as early as November 1788 (Historical Records of Australia, 16 1788, 30 Oct:97, 16 Nov: 98; Powell 1987:4), the colonists were establishing a settlement at Rose Hill (now Parramatta). The river provided an essential corridor through the agricultural lands being developed to the west of Sydney (Prescott, 1984:8). Row boats were used to navigate the narrow, winding waterway and its shoals as recorded by Captain John Hunter in circa 1790-1791 (Hunter, 1793: 179). In 1820, surgeon John Cunningham reported that ‘...two passage boats daily proceed’ to Parramatta (Cole, 1983:10). Stops along the way serviced the supply needs of those issued with land grants. Until Parramatta Road transformed from being a rough and often muddy track, Parramatta River transported settlers, military personnel, mail and equipment upstream to Parramatta and agricultural products and timber downstream to Sydney (Powell, 1987:5). One Tree Wharf, (now Ermington Boat Ramp), at the end of Wharf Road, (formerly Pennant Hills Wharf) was established in the 1820s and was one of these stops (Finlay and Sahni, 2021). This wharf post-dates the 1813 Colonial Secretaries map, shown in Figure 5-3 but that map does show plans for a laneway between adjoining allotments which leads directly to the current study area. A natural headland jutting into the river is in the precise location of today’s Ermington Boat Ramp.



Figure 5-2: 1789 chart by Bradley showing study area in relation to former shorelines and mudflats (Bradley 1789: Chart 11)

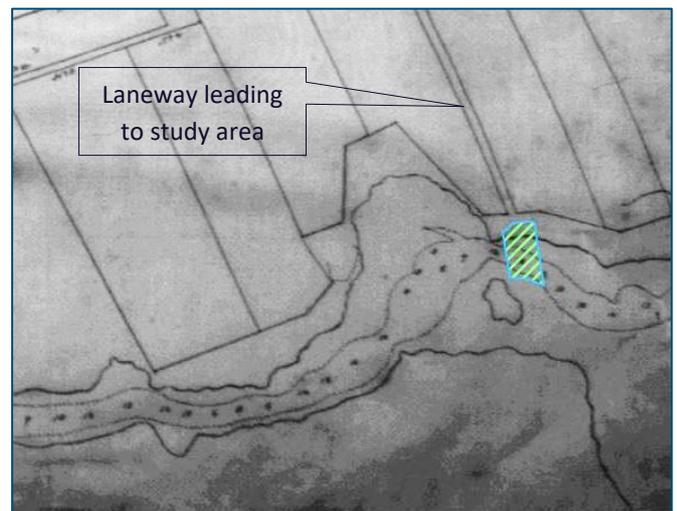


Figure 5-3: 1813 map showing study area and laneway between properties to the north (Source: CSO Plan\_BT36Plan17)

In 1820, explorer and botanist Allan Cunningham described the upper half of the river as featuring cultivated fields:

*Few cultivated spots are to be seen on either bank until you reach halfway up the river, ...'*  
(Cole 1983:10)

Early ferry services on Sydney Harbour included those that were operated by Sydney resident, Ann Marsh. Ann Marsh, an ex-convict, ran her goods and passenger ferry service to Parramatta from the early 1790s Sydney Gazette and New South Wales Advertiser, Sunday 8 May 1803:1). Her watercraft, and those of other similar ferry service providers, were wooden sailing boats relying on auxiliary power from oars.



The 'Rose Hill Packet', named by the convicts and launched on 5 October 1789 (Collins, 2003: 76, 91, 100; Hardie, 2021), was the first vessel built in the colony and the first recorded ferry. William Bradley, describes the vessel as

*'A vessel of 12 tons was launched, which was the first vessel built in the colony the construction was that of a lighter and of easy draught of water for the purpose of carrying stores and provisions over the flats to Rose Hill. (Bradley 5 October 1789:178)*

Bradley's credentials as a mariner make his description reliable but the vessel is also referred to as a 'launch', or 'hoy' built from local timbers and with a capacity to carry 10 tonnes (Collins, 2003:91). The vessel was nicknamed the 'Lump', due to its quality of build and performance (Footnote to Collins, 2003:107); Powell, 1987:4-5). A regular ferry service on the river was established in the following years.

The length of the voyage to Parramatta could be considerable. In his journal, Captain Hunter reported in circa 1790-1791 that he left Sydney at 5am and arrived in Parramatta at noon – eight hours later (Hunter, 1793: 179). Although a normal passage could take four to five hours, they frequently took ten to twelve hours. One passenger complained about departing the wharf at Sydney at 4pm and not arriving in Parramatta until daylight the next day (The Sydney Gazette, Sun 26 Jun 1803 Page 2). Recognising 'irregularities practiced by the Passage Boatmen that ply between Sydney and Parramatta...' William Neate Chapman, Secretary to Governor King, (Colonial Secretary Index 1788-1825) issued an instruction on 6 July 1803 regarding the Passage Boatmen's licencing conditions and conduct so as to be 'more circumspect towards their passengers'. In addition to Bonds and Securities to be paid to the Government, these conditions included that:

*The boats to be always kept tight, furnished with at least four Oars in case the passengers may wish to assist in rowing, and with one Mast and Sail. To treat the passengers with civility, and any improper treatment on the part of the Boatmen, to be considered as a forfeiture of the Bond, unless mitigated by two Magistrates before whom the complaint is to be made. ... The Boats to leave Sydney at the first low water, and Parramatta at the first high water between Sun-rise and Sun-set. (Sydney Gazette 1803 10 July:1).*

To help ensure a reasonable voyage time, each stop was limited to ten minutes, and boats were forbidden to go alongside ships for 'parcels or luggage' without permission from the 'wharfinger' (owner or keeper of a wharf).

The narrow river was unsuited to sailing vessels and, as early as the 1830s, steamboats were beginning to ply the river. As commerce and industry grew, there was a need for larger vessels with deeper drafts. In March 1831, the first of these was the Parramatta steam packet *Surprise* (see advertisement at Figure 5-4) (Sydney Herald, Mon 25 Apr 1831, Domestic Intelligence:4, Postscript 2<sup>nd</sup> May:4; Prescott, 1984:8). Sydney Herald 8 August 1831, Page1). Even on its maiden voyage, the *Surprise* capsized in a gale but was refloated before continuing its journey (Sydney Herald, Mon 6 Jun 1831, Domestic Intelligence:4). The *Surprise* did not prove to be economical and was sold to the Derwent in Tasmania in 1832 (Sydney Herald, Mon 9 January 1832, Domestic Intelligence:3).

Within days of the launch of the *Surprise*, the imported *Sophia Jane* also made an appearance and both vessels impressed with their trial runs (Sydney Herald, Mon 13 June 1831, Domestic Intelligence:4; Powell 1987:5). The *Sophia Jane* was not intended for the Parramatta service but, with the departure of the *Surprise*, the *Sophia Jane* briefly filled in as a replacement (Wolfe, 1990:15). The next ferry was aptly name *Experiment*. Recognising the limitations of (a) sail, (which required a considerable amount of rowing in leu of accommodating wind), and (b) early steam engines, the *Experiment* trialled a treadmill –driven by four horses. This too proved unsuccessful and the *Experiment* was sold off and converted to steam and sent to Queensland to work on the Brisbane River between Brisbane and Ipswich (Wolfe, 1990:16).



**THE SURPRISE**  
**Parramatta Steam Packet,**  
*Leaves the Lord Liverpool Wharf, Sydney.*

<b>MONDAY, 8th August, at .....</b>	<b>8 o'clock</b>
<b>WEDNESDAY, 10th do. ....</b>	<b>8 ditto</b>
<b>THURSDAY, 11th do. ....</b>	<b>8 ditto</b>
<b>FRIDAY, 12th do. at half-past ....</b>	<b>8 ditto</b>
<b>SATURDAY, 13th do. at half-past</b>	<b>8 ditto</b>
<b>SUNDAY, 14th do. at quarter-past</b>	<b>9 ditto</b>

*Leaves the Steam Packet Wharf, Parramatta.*

<b>TUESDAY, 9th August, at .....</b>	<b>9 o'clock</b>
<b>WEDNESDAY, 10th do. half-past</b>	<b>11 ditto</b>
<b>THURSDAY, 11th do. ....</b>	<b>12 ditto</b>
<b>FRIDAY, 12th do. half-past ....</b>	<b>12 ditto</b>
<b>SATURDAY, 13th do. ....</b>	<b>1 ditto</b>
<b>SUNDAY, 14th do. ....</b>	<b>3 ditto</b>

—ooo—

The owners of the above Packet, beg leave to acquaint the Public, that on Friday, the 22nd July, they opened a RECEIVING HOUSE at their Wharf, (near the Mill,) Parramatta, and at the Lord Liverpool Wharf, Sydney, and will charge for FREIGHT & WAREHOUSING for one day as follows :—

Puncheon or Pipe .....	each	5	0
Porter Hogshead, or half Pipes .....	ditto	2	9
Provision Casks .....	ditto	1	3
Bag of Sugar .....	ditto	0	8
Chest of Tea .....	ditto	0	9
Wheat and Flour.....	per bushel	0	3
Wool.....	per bale	2	6
Kegs of five gallons and under .....	each	0	6
Small Packages .....	ditto	0	6
Dead Weight .....	per ton	6	6
Measurement Goods .....	ditto	8	6

Figure 5-4: Advertisement for steam packet *Surprise* to Parramatta from Lord Liverpool Wharf, Sydney. (Sydney Herald 8 August 1831, page 1).

A much more successful venture began in 1837 Australian Conveyance Company purchasing the *Rapid*, the first double ended ferry to operate in Sydney harbour. The *Rapid* lasted 13 years before being run ashore at Glebe Point and hulked. Ferry services expanded over the next 20 years with Edye Manning purchasing the *Black Swan*, *Comet*, *Emu*, *Pelican* and *Star*. A larger vessel, *Victoria* was purchased in 1856 (Prescott, 1984:25, 81).

The early paddle ferries also included the *Australia*, *Kangaroo*, *Raven*, and *Emu*. The paddle wheelers were gradually replaced by screw ships including *Cygnets*, *Gannet*, *Eclipse*, *Halcyon* (shown in Figure 5-5, *Pheasant* and *Bronzwing* (Cole, 1983:20).

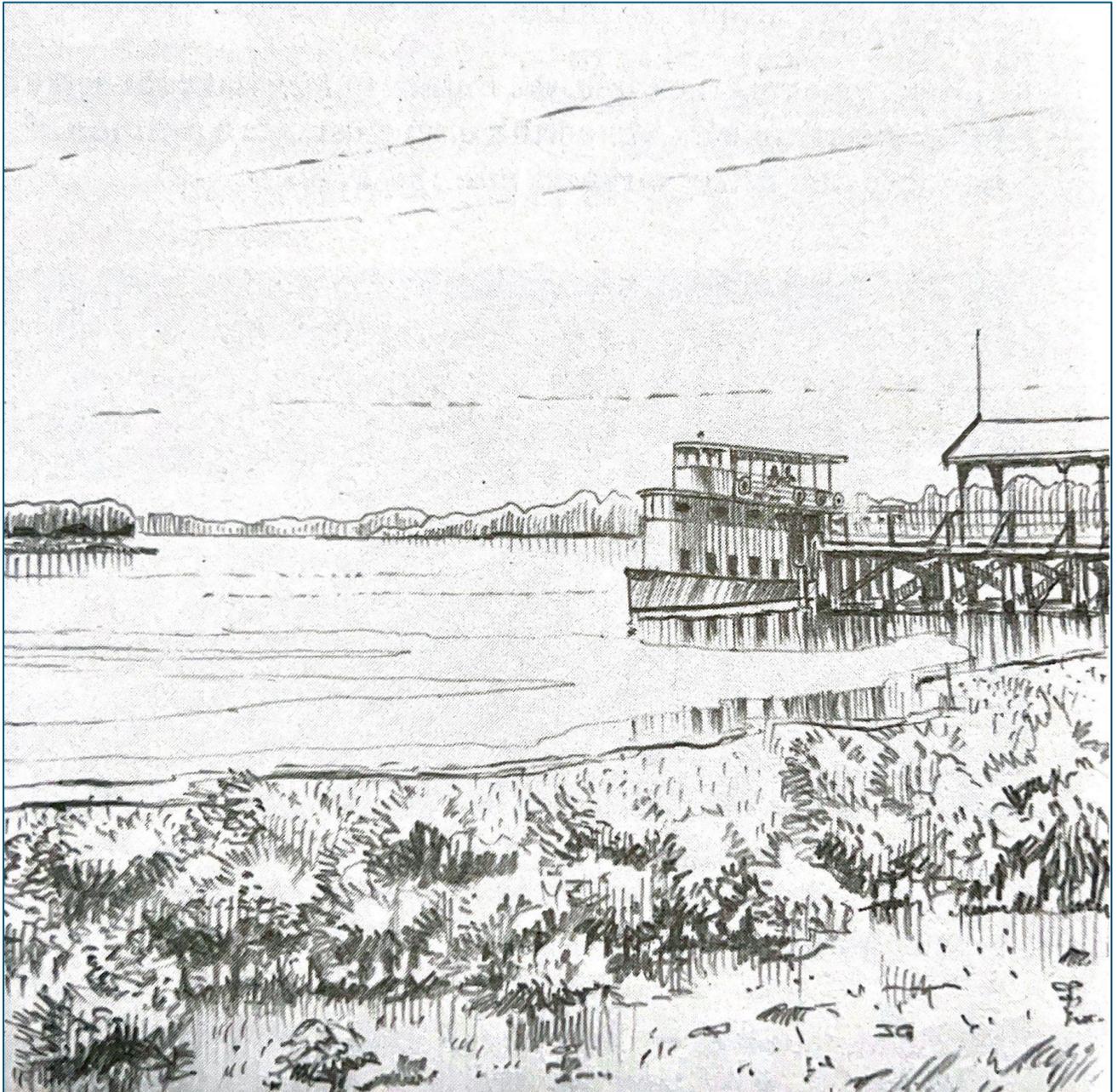


Figure 5-5: *Halcyon* at Redbank Wharf (Source: Cole 1983:21)

The enterprises of both Edye Manning and the Australian Conveyance Company were taken over by the Parramatta River Steam Company in 1865. However, silting of the Parramatta River had been increasing, likely due to extensive land clearing along the river and its upper reaches. Queens Wharf, at Parramatta closed and the ferry terminal was moved downstream to Redbank (now Camellia). As larger vessels and screw propellers required a deeper draft, these craft could only proceed upstream as far as Duck River (Cole, 1983:20). A further relocation of the ferry terminal was to the junction of Parramatta River and Duck River. A tramway service, established by Jules Joubert in 1881, was then established to carry passengers from Duck River to Parramatta. Soon the steam trams were being met by the steamers *Cygnets* (built 1866), *Gannet* (built 1883), *Halcyon* (built 1884) and *Pheasant* (built 1889), (Andrews, 1994:19).

In 1889 the company, was sold and became the Parramatta River Steamers and Tramways Company. In 1901, the Sydney Ferries Company became the new owners and continued the passenger service until 1928 (Powell, 1987:17). Its cargo service continued until 1941. (Wolf, 1990:16). Documentation of the effects of increased wash from these vessels has not been found but erosion of the riverbanks is evidenced to the north and north-west of the study area by comparison between in the configuration in 1789 and the twenty-first century shoreline shown in Figure 5-1:

The river had been increasingly acquiring a social role and provided an attractive venue for sport and recreation for local and international visitors in the nineteenth and early twentieth century (as shown in Figure 5-6), (Powell 1987:9). However, with industrialisation in its upper reaches and Homebush Bay, growing pollution and other focuses of recreation both for local and overseas visitors, the river, for a time, became a feature with very little use (Powell, 1987:17). Increased urbanisation and a reduction in industrialisation along the river slowly changed perspectives on the values of Parramatta River, leading to the 1990s reintroduction of a ferry service between Circular Quay and Parramatta.

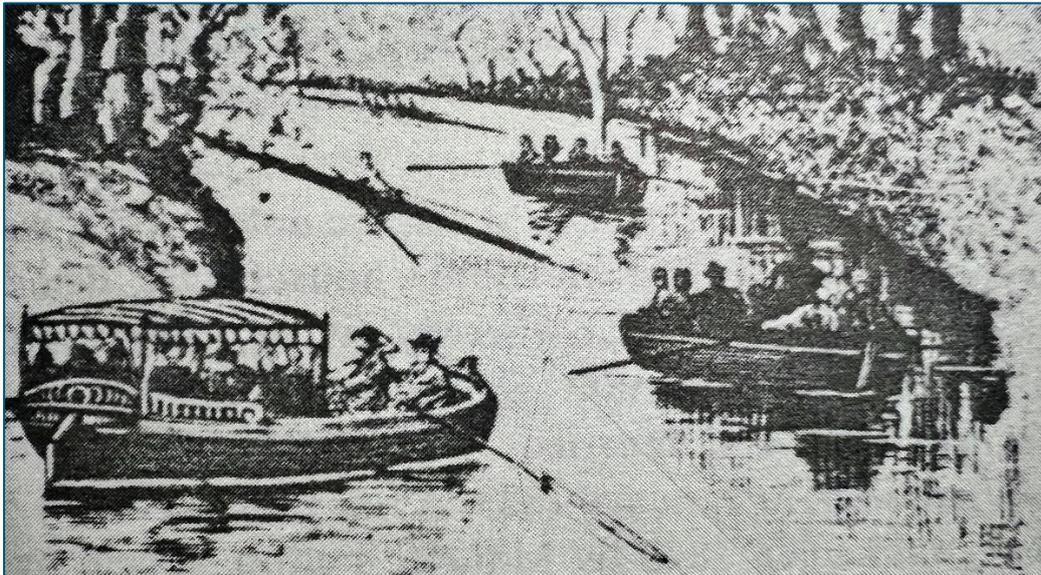


Figure 5-6: 'On the river' (Cole 1983: p25)

Within the study area, reclamation on the southern bank, and discontinuation of the river trade in 1941, led to increased shoaling. This is evident by the 1943 aerial – both upstream from and within the study area as shown in Figure 5-7. The shoaling is no longer present due to subsequent dredging works for the Parramatta River Ferry.

### 5.3 Shipwrecks and shipping incidents

A search of the NSW Maritime Heritage Database does not include any shipwrecks events in the vicinity of the study area. Documented shipping incidents on the Parramatta River during the nineteenth century and early twentieth century are limited to:

- **Unidentified incident**  
A Parramatta 'Passage Boat' was reported to have capsized enroute with the loss of a ram, but no name, location or other details are provided. (Sydney Herald 16 May 1831 Domestic Intelligence:4 and Mon 30 May 1831:4).
- **Little Violet**  
The *Little Violet* was a wooden steamer of 37 tonnes and was involved in a collision with the steam launch 'Undine' near the Brothers Rocks, Henley in the Parramatta River and downstream of the study area and west of the Gladesville Bridge. The vessel was refloated but two lives were lost. (Heritage NSW Maritime Heritage Database; Sydney Morning Herald 1888 – 13-16 February 1888).
- **Dawn of Hope**  
This is an 1888 incident that evidently occurred upstream of the study area at Duck River. The reference is limited to a mention in a list compiled by the NSW Maritime Services Board in the 1980s. The data in the list is unsourced and does not contain information about the type of vessel or details of the event (Maritime Services Board Wreck File: Vessels wrecked on or near the coast of Australia in Heritage NSW library).
- **Karrabee**  
The *Karrabee* was a Sydney triple expansion steam ferry built in 1913 by Morrison and Sinclair Ltd at Balmain, NSW and converted to diesel power in 1936. The ferry could carry 653 passengers. Maritime Services Board state that the *Karrabee* was involved in an incident on the Parramatta River on 4 April 1943, but no other details are provided (Wolfe, 1990:14).





## 5.4 Pollution

Like the Tank Stream at Circular Quay, Parramatta River was a convenient waste disposal facility. It carried every imaginable form of waste downstream but depositing much of the material in sediments along the way. Legislation and regulations failed to stop the ingrained practices. In 1970, a *Sydney Morning Herald* journalist took a journey along the river ahead of Queen Elizabeth's visit as a visit to the river was being planned for inclusion on the Queens itinerary. The journalist learnt from the Metropolitan Medical Officer for Health that "acids, alkalis, solvents, phenolic and bituminous matter, plastic wastes, metals, zincs, chromes and carbonates' were present. (*Sydney Morning Herald* 14 March 1970 in Cole, 1983:40).

Subsequently, active measures were undertaken to clean up water quality in the river and by 1975, the then Minister for Planning and the Environment announced that the Parramatta River was 'cleaner than the Thames'. However, while water quality had improved, the contaminants in sediments remained. This was particularly evidenced during archaeological excavations at Duck River in 1992 (Wolfe, 1992) and at Queens Wharf, Parramatta, also in 1992 (Bower, 1993).

## 5.5 Dredging and reclamation

Reclamation and dredging have both reconfigured the Parramatta River in the vicinity of the study area, as shown in Figure 5-7. On the southern border of the study area, land reclamation covered the original mudflats and dominates Wentworth Point and the northern extent of Sydney Olympic Park. Fill was undertaken using contaminated material from the nearby petroleum storage infrastructure (Wentworth Point DCP 2014:15). The approximate full extent of the landfill was completed in 1943.

Detailed records of the dredging of Parramatta River in the study area have not been found. However, the now absent mid-river mudflats, that were present in 1788, bears testimony to their removal to open up and deepen the river channel to improve navigation. These include:

- (a) those that were once present in the south-western corner of the study area,
- (b) similar small islands to the east of the study area

In addition, the river once had two channels separated by a small island in the eighteenth and nineteenth century. The main channel was to the north of the island and the southern channel was exposed as mud flats at low tide as shown in Figure 5-1: . The closure of the southern channel through reclamation narrowed the river channel and forced tidal and flood waters through the now restricted passage between the northern and southern banks. This would have increased the localised rate of waterflow, particularly during flood, and swept sediments and smaller cultural objects downstream. Archaeological excavations upstream of the study area in advance of dredging for the Parramatta River ferry services to Parramatta, confirmed that the centre of the river did not retain cultural materials (Wolfe, 1992). The upstream archaeological investigations found that the only areas with cultural deposits were close to the southern embankment adjacent to the Queens Wharf.

A comparison of the land grants shown in 1813, shown in Figure 5-3 and the 1943 aerial photograph, shown in Figure 5-7, confirms that very little change has occurred to the land use on the northern bank of the Parramatta River. The 1943 boat ramp to the west of the study area has been formalised with the construction of Ermington Boat Ramp.

A small boat ramp is shown in the 1943 aerial to the east of the study area. This does not appear to have been connected to any significant road or industry and may have been for small, private vessels. The 1943 photograph suggests that it may have already fallen into disuse as there is no evidence of vehicle tracks leading to it from Lancaster Avenue. The southern bank shows the creation of wetlands on reclaimed land. Post-World War II subdivisions now occupying land that was still vacant in 1943 (Figure 5-8).



Figure 5-7: 1943 aerial showing the study area with land reclamation to the south and shoal water in centre of the study area (Base map: NSW Six Maps)

Subdivisions already visible to the north and east of the study area in 1943 subsequently extended to both sides of Wharf Street. Today they reach to the northern side of the Parramatta Valley Cycleway (Figure 5-8).



Figure 5-8: Post- World War II subdivisions now occupying land that was still vacant in 1943. (Base Map: NSW Six Maps)



## 6 PREVIOUS ARCHAEOLOGICAL INVESTIGATION

### **Parramatta River Maritime Archaeological Works Project**

The *Parramatta River Maritime Archaeological Works Project: Interim Report* (Wolf, c1992) documents archaeological excavations conducted in advance of the extension of ferry services to Parramatta.

The five selected sites were:

1. Howell's Wind and Water Mill, Parramatta
2. Queens Wharf, Parramatta
3. Rydalmere Psychiatric Hospital Boatshed, Rydalmere
4. The Industrial Wharf, Camellia
5. The Shell Oil Refinery, Silverwater (Duck River).

The closest of these to the study areas is site 5 at Duck River. Site 5 did not contain any State significant or locally significant relics. It did contain evidence of dredging from the circa 1970s both from historical research and modern artefacts (including plastics, modern bottles) at depths of 1.5 metres to two metres of sediment. The investigation also found that 'the random mix of modern material in the sediment column also suggests that the environment may have been subject to the turbulent action of floods and other water movements' (Wolf, c1992:33-34).

The investigation also conducted transects across the river at Queens Wharf, Parramatta and found that artefact deposits ran parallel to the shore adjacent to the wharf on the southern side of the river and only extended out to three metres off the shore. No artefacts were found on the northern side of the river where no wharves or other significant structures had been present. A similar pattern was observed at the site of Byrnes Cloth Factory Wall and Wharf. At the site of Howells Wind and Water Mill near Gasworks Bridge, artefacts were found past the middle pier of the bridge or along the northern shore. (Wolf, c1992:34-35).

A key finding of the report was that the substantial deposits of artefactual material were concentrated in the upper reaches of the Parramatta River above the James Ruse Drive Bridge rather than downstream (Wolf, c1992:51).



## 7 SURVEY

### 7.1 Multibeam Echo Sounder (MBES)

In bathymetric surveys, a multibeam sonar system located on the hull of the boat, sends out multiple soundwaves that bounce off the sea floor and return to the boat. The delay between sending and receiving the signal provides a measurement of sea floor depth and measurements are then used to produce a map charting the sea floor. This mapping can be interpreted to identify potential shipwrecks or other archaeological features.

A MBES survey of the area south of the Ermington Boat Ramp on the Parramatta River was conducted by hydrographers from Port Authority of New South Wales on 16 March 2022 (refer Appendix A for the survey report). The purpose of the survey was to assess any evidence of former structures or potential archaeological features on the riverbed.

The MBES survey was conducted at high tide to enable it to proceed to within a few metres from the mangroves. As shown in Figure 7-1, Figure 7-2 and Figure 7-3, no potential underwater cultural heritage features were indicated as being within the shallows or elsewhere within its span of coverage. The depths that were not covered are less than one metre of water on both the northern and southern sides of the main channel. These areas are exposed at low tide and no potential historic structures are visible.

An approximately 5x5 metre depression with a depth of 0.4 metres is shown in 1.5 metres depth of water, circled in red in Figure 7-1 and Figure 7-2, on the northern side of the main channel. This indicates the removal of an object – possibly a former mooring block or an object dislodged during recent floods. It is not considered to be a marker of an item of cultural significance.

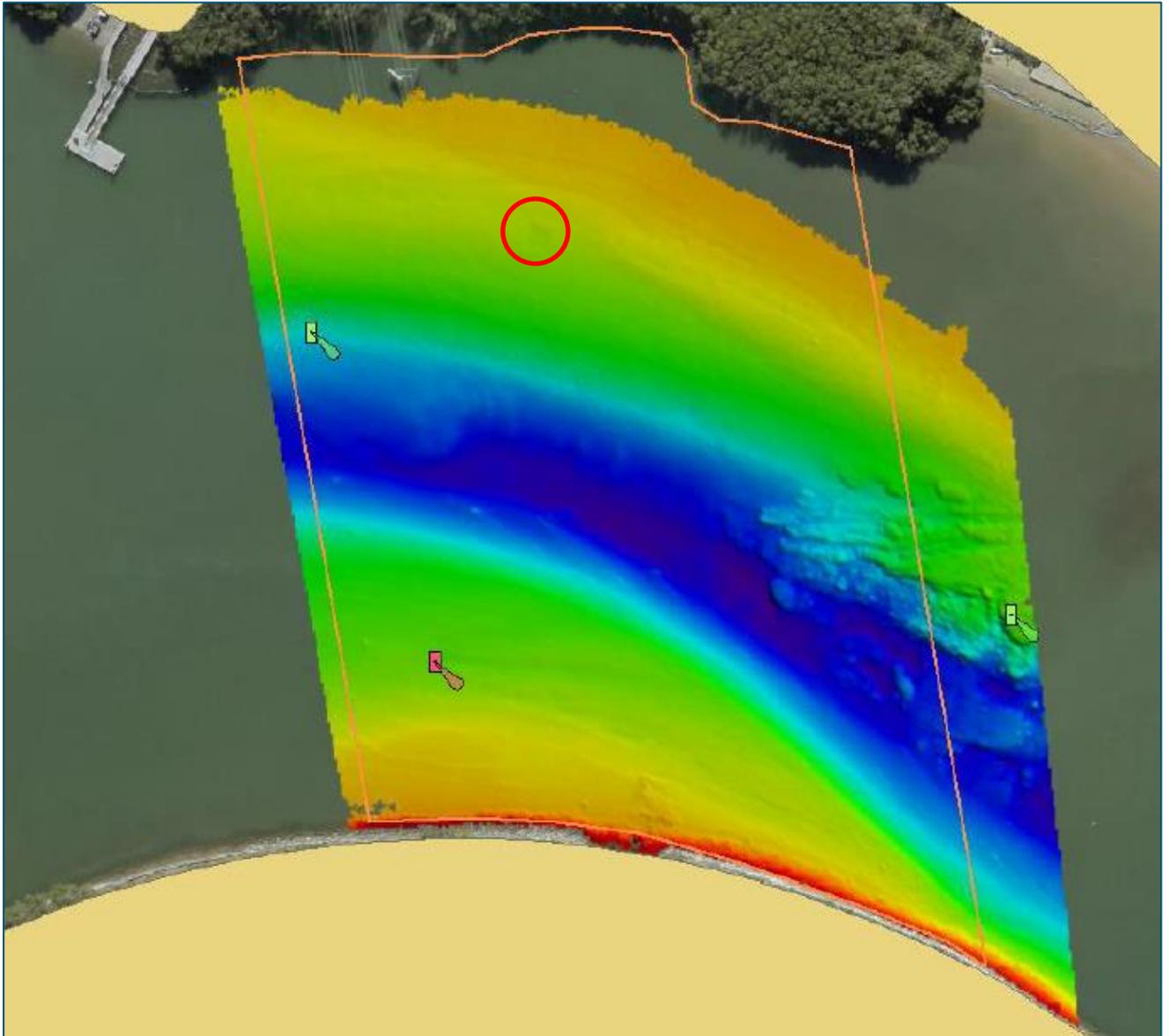


Figure 7-1: MBES image of the study area. 5 metre x 5 metre depression in the sediment circled in red. Green and red icons are Port and Starboard navigation marks (Source: Port Authority of NSW)

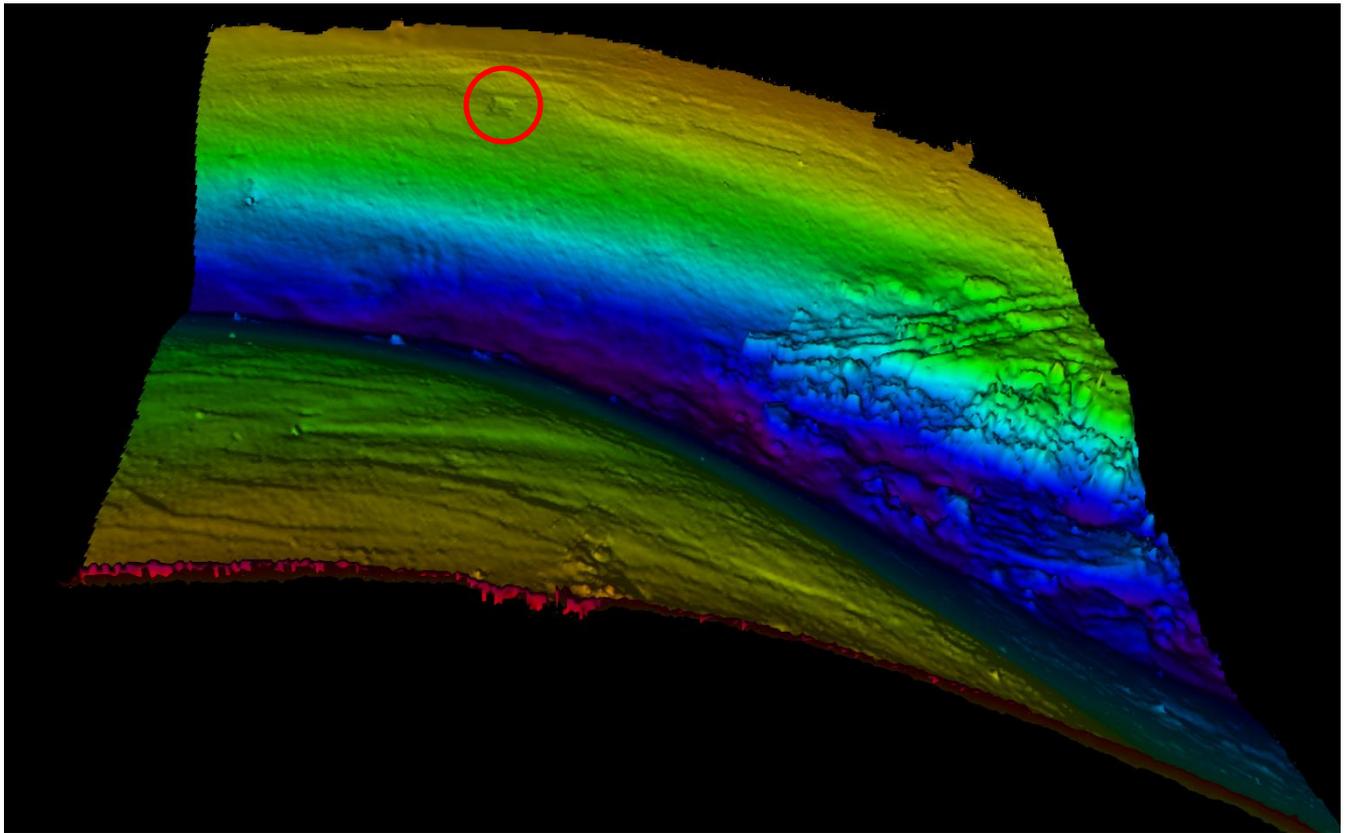


Figure 7-2: 3D rendition of multibeam survey showing rocky area on the eastern side (right side of image). Note the height of these rocks is exaggerated by the 3D rendition. (Source: Port Authority of NSW)

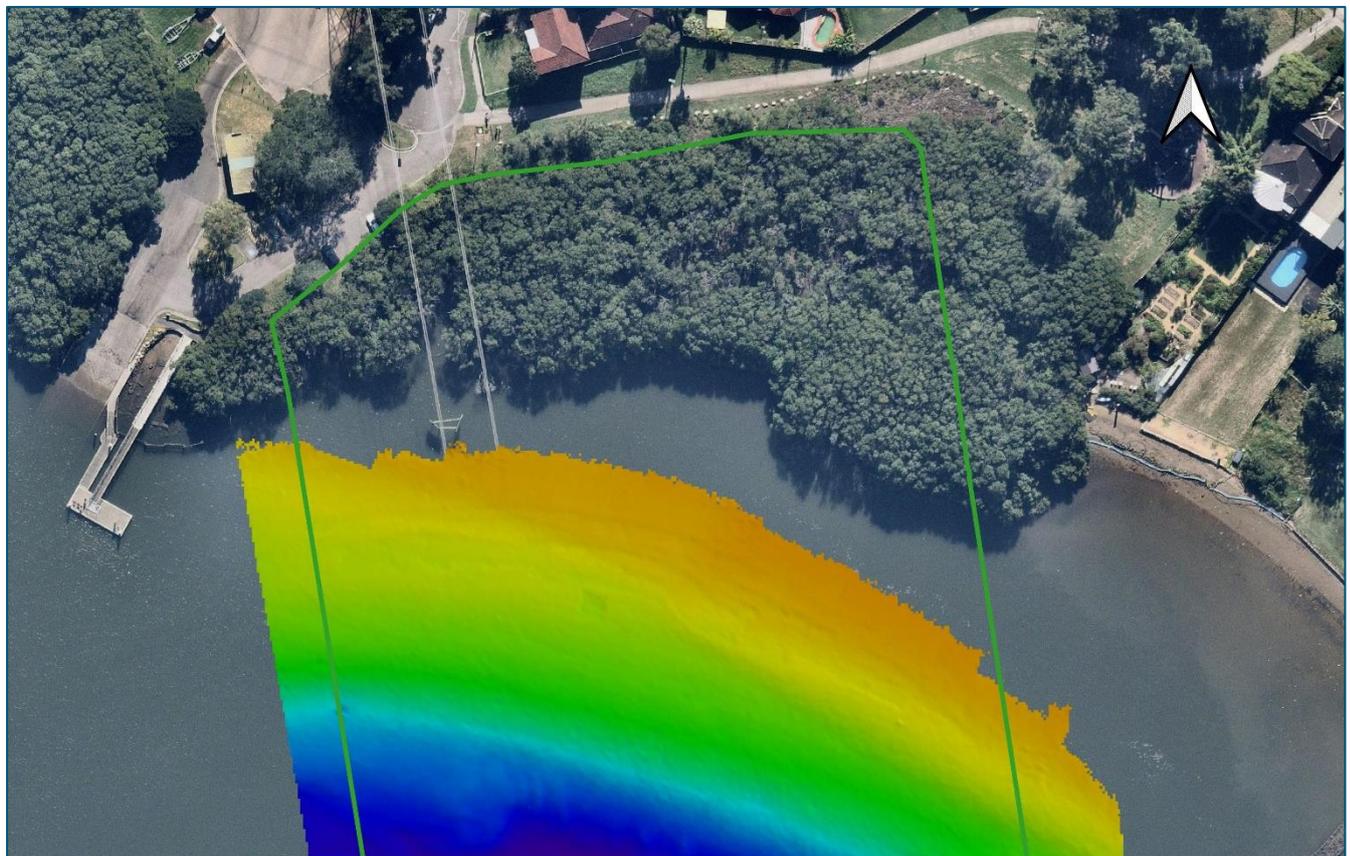


Figure 7-3: Aerial image of the northern bank mangrove area and water covering mud flats between the mangroves and the multibeam survey coverage. (Source: Nearmap)



The 2022 bathymetric survey covered and extended upon a 2017 survey along this section of Parramatta River. No data outside the designated channel was surveyed in 2017. The hydrographers noted that there had been substantial changes within the survey area since 2017, differences attributed to the dynamic nature of the river. To the south of the study area, both minimum and maximum variations had occurred. Variations in sediment heights ranged from a minimum of -0.934 metres to a maximum of 1.23 metres. These observations add to the evidence of a dynamic and aggressive river system. This, aided by human intervention in redirecting its flow and rates of flow, has altered the course of the river and minimised the opportunity for cultural material to accumulate.

## **7.2 Summary of findings**

No potential items of underwater cultural heritage were identified in the study area during the March survey.

The remains of the earlier ferry wharf adjacent to the present Ermington Boat Ramp are related to a much earlier wharf, potentially the 1820s One Tree Wharf. Further detailed archaeological investigation would be required to confirm the age and record the details of that structure. Although these remains are outside of the impact area of the project any use of the ferry wharf and boat ramp during construction needs to avoid impact or further disturbance.

## 8 PROJECT DESCRIPTION OF BRIDGE WORKS

### 8.1 Overview

This section describes those elements of construction and operation of the bridge that are relevant to the maritime archaeological assessment. Further information on the project's features and construction of the project is provided in the EIS.

### 8.2 Bridge between Melrose Park and Wentworth Point

The northern end of the bridge would be located at the southern end of Wharf Road to the east of the Ermington Boat Ramp in Melrose Park. The southern end of the bridge would be located to the west of Sanctuary Wentworth Point and Hill Road (Figure 8-1).

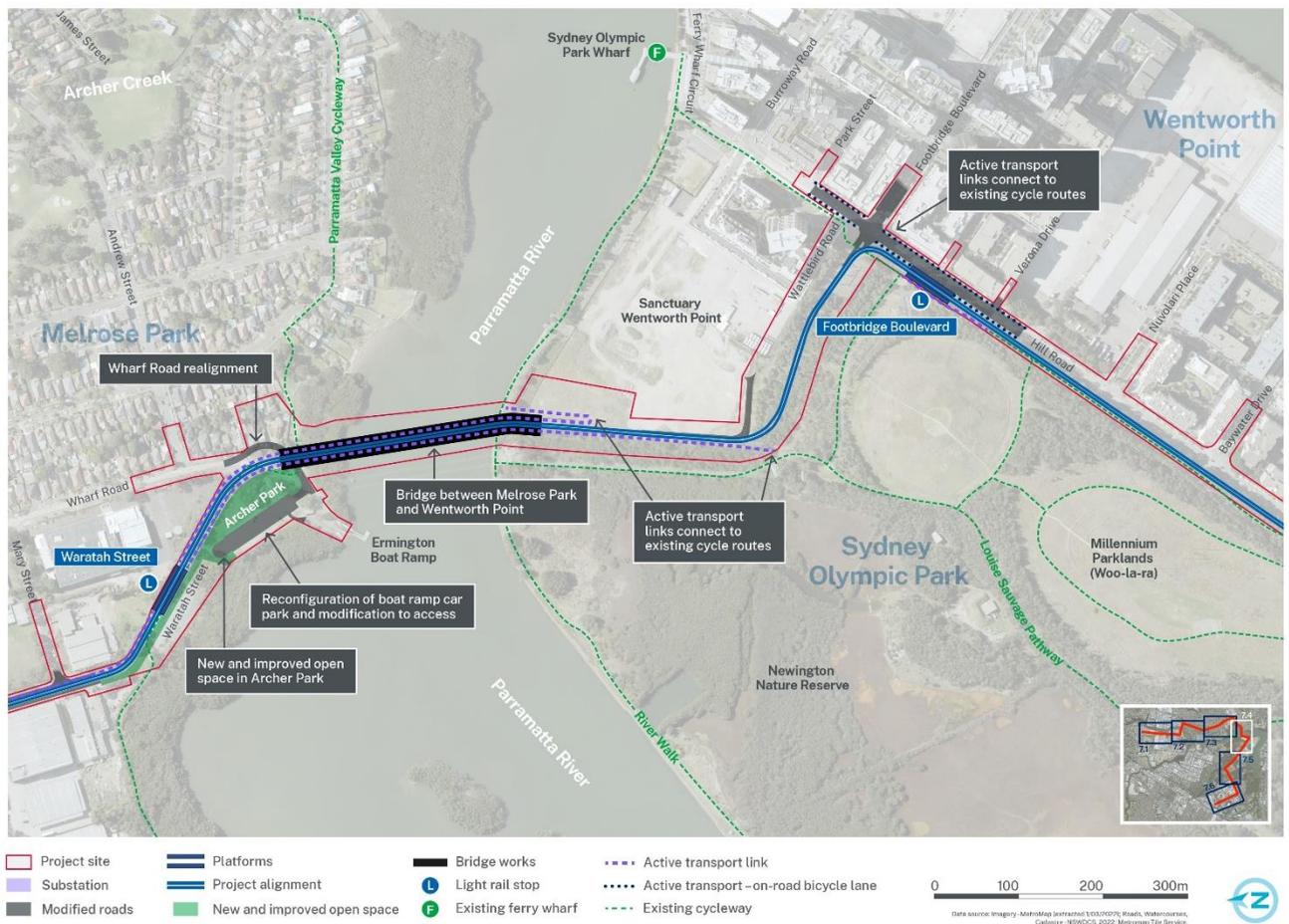


Figure 8-1: Key project infrastructure map of the bridge in the study area

The bridge would be a six-span, concrete bridge and include centrally located light rail tracks with an active transport link on either side. The bridge would also include covered rest areas on the sides of the bridge adjacent to the active transport link (Figure 8-2). The bridge would consist of a larger span over the navigational channel of the river and smaller spans over the mangrove vegetation and existing active transport infrastructure on both sides of the river. The bridge would be supported by three piers in the Parramatta River. The width of the navigable channel between bridge piers would be about 46 metres.





Figure 8-2: Indicative elevation of bridge between Melrose Park and Wentworth Point (viewed from the west)

### 8.2.1. Piling and the use of temporary work platforms

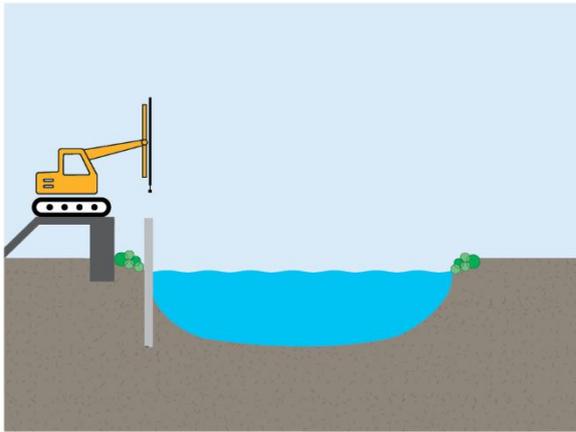
The proposed construction methods for the bridges over the Parramatta River have been refined to minimise potential impacts on environmentally sensitive areas, including contaminated land, bed sediments, and the presence of mangrove vegetation along the shoreline.

The sections of river within which the proposed bridge piers would be located are relatively shallow. It is therefore proposed to construct the bridges over the river by establishing temporary working platforms, supported by piles, on the northern and southern banks of the river, and progressively extending the platforms out into the waterway. Two temporary platforms would be established for each bridge, and the platforms would be installed in segments on top of piles within the riverbed, which would support a steel structure.

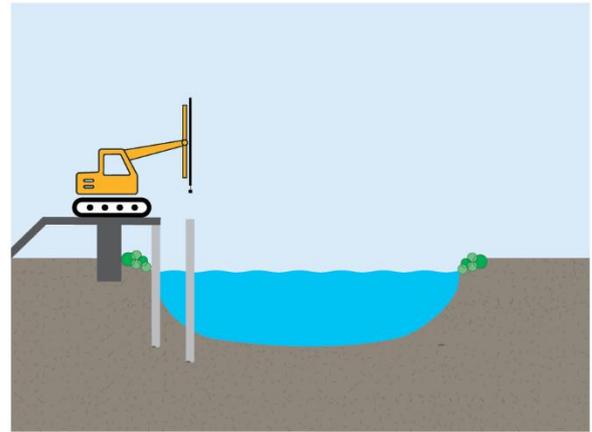
Piles for bridge piers would be installed from piling rigs located on top of the platforms or barges. Silt curtains would be installed in the location of the proposed platform and bridge piles when there is a risk of mobilising sediments. Cofferdams (or similar) would also be installed within the area protected by silt curtains, to provide a dry working environment.

Lifting and installing the precast bridge segments on top of the piers would be undertaken using cranes located on the temporary platforms or barges (depending on crane reach).

Figure 8-3 shows the typical process for constructing the bridges over the Parramatta River.



1 Install temporary working platform piles from land



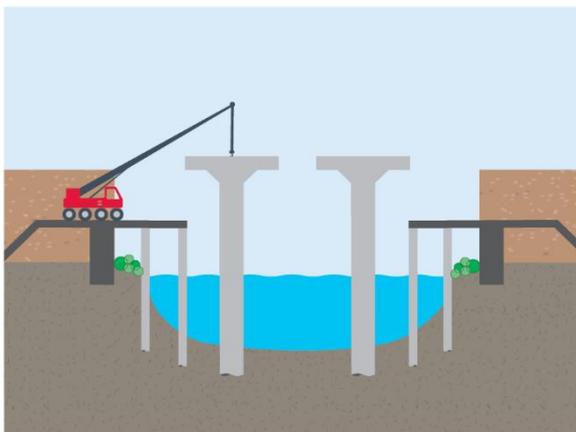
2 Install steel support onto pile then install next pile for temporary working platform



3 Drill and install piles for bridge piers. Construct pile caps and headstocks from temporary working platform



4 Construction of reinforced earth abutments



5 Bridge segments lifted into place from temporary working platforms or barge



6 Span meet at centre with final segment placed followed by bridge fitout

Figure 8-3: Typical process for bridge construction over the Parramatta River



## 9 ARCHAEOLOGICAL ASSESSMENT

### 9.1 Archaeological potential

To undertake an archaeological assessment, it is necessary to assess whether an area contains archaeological potential. For the purposes of this report “archaeological potential” is the likelihood of a site to contain significant archaeological deposits that are protected by the relics provisions of the NSW *Heritage Act 1977*.

Such an assessment is guided by an understanding of the site as revealed through historical research and a site inspection. This report contains detailed historical research and the results of the site inspection.

It is useful to identify the level of archaeological potential as low, medium or high. This indicates the level of impact on the potential archaeological resource and hence the likelihood of intact archaeological deposits remaining. The degree of archaeological potential does not necessarily equate with the identified level of significance. An area may be mostly intact but it may be assessed as having minimal heritage significance. The criteria used to determine heritage significance is discussed in Section 10.

The following definitions of high, medium and low archaeological potential will be used to assess the archaeological potential of individual items identified through the historical research.

A **high** level of archaeological potential indicates that there is a high probability that the archaeological remains of a structure or structures are reasonably intact as there have been little or no impact following the demolition of the known structures.

A **medium** level of archaeological potential indicates that there is a medium probability that the archaeological remains of a structure are partially or mostly intact but there has been some impact on its integrity through later development.

A **low** level of archaeological potential indicates that there is a low probability that the archaeological remains survive as there have been extensive impacts by known later development or works.

### 9.2 Results of the Heritage NSW Maritime Heritage Database

Searches of the Maritime Heritage Database were conducted in March 2022 and again in June 2022. No shipwrecks or other structures were identified within the study area either below water or in the intertidal zone of the mangrove stands.

### 9.3 Archaeological zones

The three zones shown in Figure 9-1 are each considered as whether they may contain potential relics of State or local significance

#### **Zone 1: Mangrove area north of 1789 shoreline**

Zone 1 occupies the area between the 1788 shoreline and the current shoreline. The present mangrove stands developed since the middle of the twentieth century.

#### **Zone 2: Mangrove area within 1789 mud flats**

Zone 2 is the portion of the 1789 mud flats on the northern side of the river that are no longer present.

#### **Zone 3: Riverbed**

This is the main channel of the river.

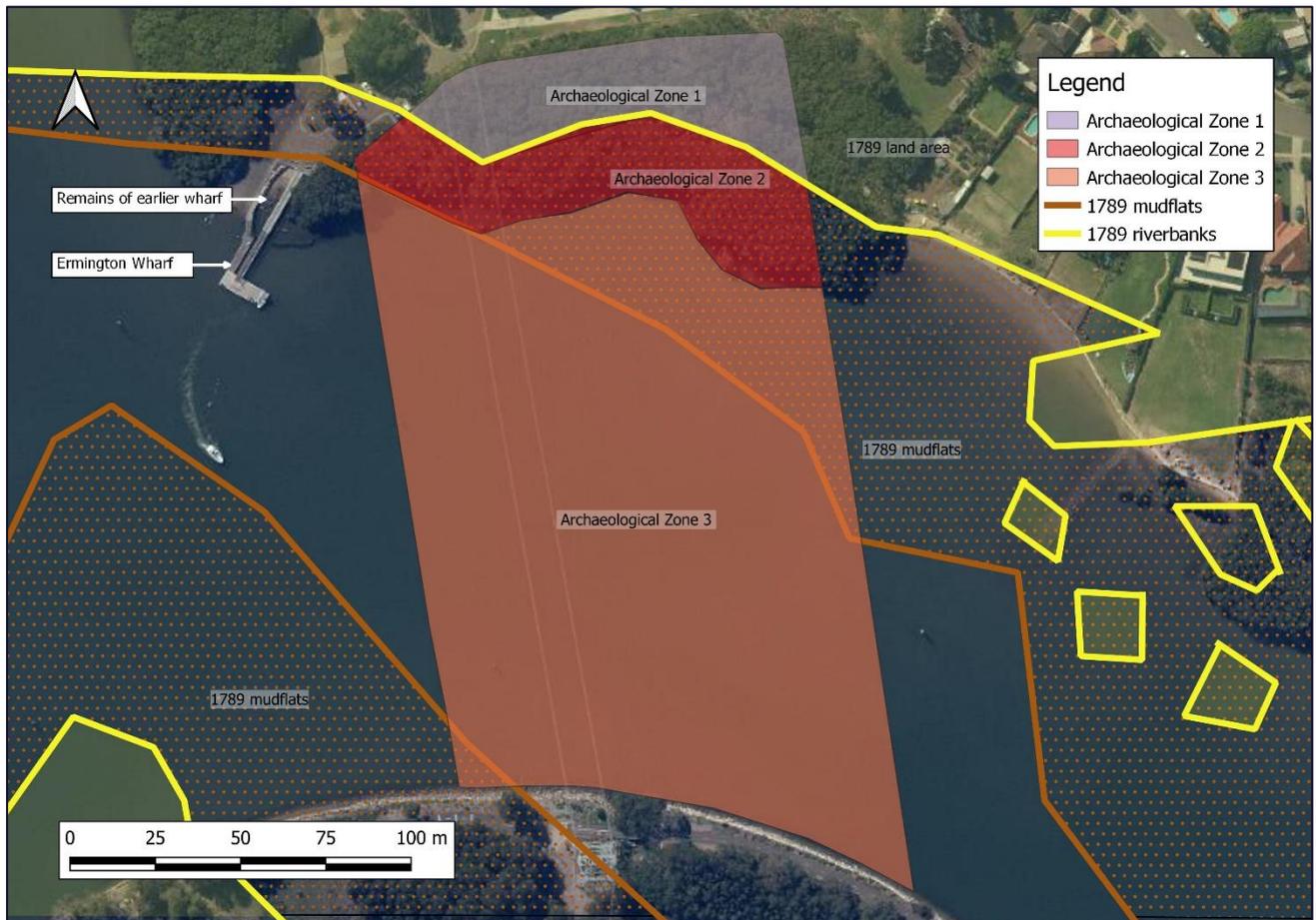


Figure 9-1: Archaeological zones in the study area

#### 9.4 Assessment of archaeological potential

All three zones for the study area have been deflated through a combination of dredging activity and increased funnelling of the river flow through the narrowed width of the river arising from land reclamation using sediments from the original mudflats.

It should be noted that while artefacts may be located, they may not be considered relics under the *Heritage Act 1977*. To be deemed relics they must be assessed to be of State or local significance (see Section 10 of this report).

- **Zone 1 – Mangrove area**

Historical mapping shows that the original shoreline has retreated 20 to 40 metres north of the 1788 riverbank and any cultural material from before the retreat of that shoreline would have been removed. However, artefacts from first half of the twentieth century may be trapped within the sediments shown in the 1943 aerial photograph at Figure 5-7. These could now be sealed beneath the subsequent growth of mangroves. The area is likely to contain more modern cultural material that has been swept down the river during floods.

Due to scouring, the archaeological potential of Zone 1 is **low** but the significance of relics from the early colonial era would be high.

Material trapped after being washed downstream during floods would have no archaeological context and low archaeological potential.

The remains of an early ferry wharf, at the end of Wharf Road and adjacent to the present Ermington Boat Ramp, are outside of the study area and are not a part of Zone 1. These are potentially those of the 1820s One Tree Wharf and are assessed in Technical Paper 6 (Historical Archaeological Assessment).



- **Zone 2 – Mangrove stands south of the 1789 shoreline**

Mangrove stands have developed downstream from Ermington Wharf and occupy part of the area where there were mud flats in 1789. The original sediments in this area are likely to have been scoured during the same processes that reconfigured the northern riverbank. It is possible that late nineteenth and early twentieth century deposits may be present, along with deposits from subsequent eras.

The archaeological potential of Zone 2 is **low** but the significance of relics from the early colonial era would be high.

Material trapped after being washed downstream during floods would have no archaeological context and low archaeological potential.

- **Zone 3 – Riverbed (excluding Zones 1 and 2)**

Zone 3 has been subject to natural scouring and dredging and has no archaeological potential. It includes a portion of the 1789 mud flats along the northern side of the river but excludes the current mangrove area. There is no prospect for cultural material to have accumulated or survived in Zone 3.



## 10 SIGNIFICANCE ASSESSMENT

The potential for artefacts that are of State or local significance in the current study area has been assessed as low. Significance assessment of any unexpected finds would be undertaken against the NSW Heritage Criteria described below. The procedure for the management of unexpected finds is discussed in Section 11.3.

Significance assessment for any artefacts would be undertaken to determine whether they are relics under the definitions in the *Heritage Act 1977* is the process whereby they are assessed to determine their value as being of State or local significance. This assessment is based on criteria that have been developed by Heritage NSW and which embody the values contained in the Burra Charter. The Burra Charter provides principles and guidelines for the conservation and management of cultural heritage places within Australia.

Artefacts are assessed on whether they meet the threshold for inclusion under each of the following criteria:

### **Historical**

*Criterion (a) – an item is important in the course, or pattern, of NSW’s cultural or natural history (or the cultural or natural history of the local area)*

### **Association**

*Criterion (b) – an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW’s cultural or natural history (or the cultural or natural history of the local area)*

### **Aesthetic/Technical**

*Criterion (c) – an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area)*

### **Social**

*Criterion (d) – an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons*

### **Research**

*Criterion (e) – an item has potential to yield information that will contribute to an understanding of NSW’s cultural or natural history (or the cultural or natural history of the local area)*

### **Rarity**

*Criterion (f) – an item possesses uncommon, rare or endangered aspects of NSW’s cultural or natural history (or the cultural or natural history of the local area)*

### **Representative**

*Criterion (g) – an item is important in demonstrating the principal characteristics of a class of NSW’s*

- *cultural or natural places; or*
- *cultural or natural environments.*

*or a class of the local area’s*

- *cultural or natural places; or*
- *cultural or natural environments*

Where an artefact is assessed as possessing values that are of State or local significance under any of the above criterion these values are then summarised into a Statement of Significance.



## 11 IMPACT AND MITIGATION

### 11.1 Impacts

The study area of this assessment is the span of the Parramatta River between Melrose Park and Wentworth Point. The river has undergone substantial reconfiguration through dredging and land reclamation in the twentieth century. Large quantities of sediments from the river have been removed and used as land fill in reclamation works on the southern shore. At Melrose Park, the current northern bank is 20-40 metres north of the original riverbank and the southern riverbank at Wentworth Park was originally 300-350 metres south of the current riverbank.

The proposed works for the bridge between Melrose Park and Wentworth Point include installation of the following:

1. Piles:

- one set of piles within the mangroves on the northern shoreline. These piles would be in Archaeological Zone 1, but would have no impact on underwater cultural heritage as this area has been assessed as having low archaeological potential
- one set of piles on the southern side of the mangrove stand in Archaeological Zone 3. This is outside the area of potential archaeological deposits in Zone 2 and would have no impact on underwater cultural heritage as this area has been assessed as having low archaeological potential
- two additional sets of piles in Archaeological Zone 3, the mainstream of the Parramatta River. This is also outside the area of potential archaeological deposits in Zone 2 and would have no impact on underwater cultural heritage as this area has been assessed as having low archaeological potential.

2. Temporary work platforms:

- Temporary work platform on the northern bank  
The temporary work platform extending from the northern shore would pass through the mangrove areas of Zones 1 and 2, shown in Figure 11-1. The temporary work platform is not in the vicinity of any known or expected items of cultural heritage. Potential for impacts on underwater cultural heritage would relate only to Zone 2. In Section 9.4 it was assessed that, while the potential for archaeological deposits to have been retained in Zone 2 is low, it is possible that significant late nineteenth and early twentieth century deposits may be present.

Details of the construction of these temporary work platforms are yet to be finalised and therefore the extent of disturbance associated with their installation is unknown. However, Zone 1 and Zone 2 are an area of low archaeological potential and potential for impacts is therefore, also low. In addition, the east-west extension of the temporary work platform is on the edge of the mangrove trees and their underlying sediments – which is an area that would have been subjected to active erosion until the mangrove stand expanded into this part of the river. Evidence of continued expansion of the mangroves as they trap additional silt is visible along the southern face.

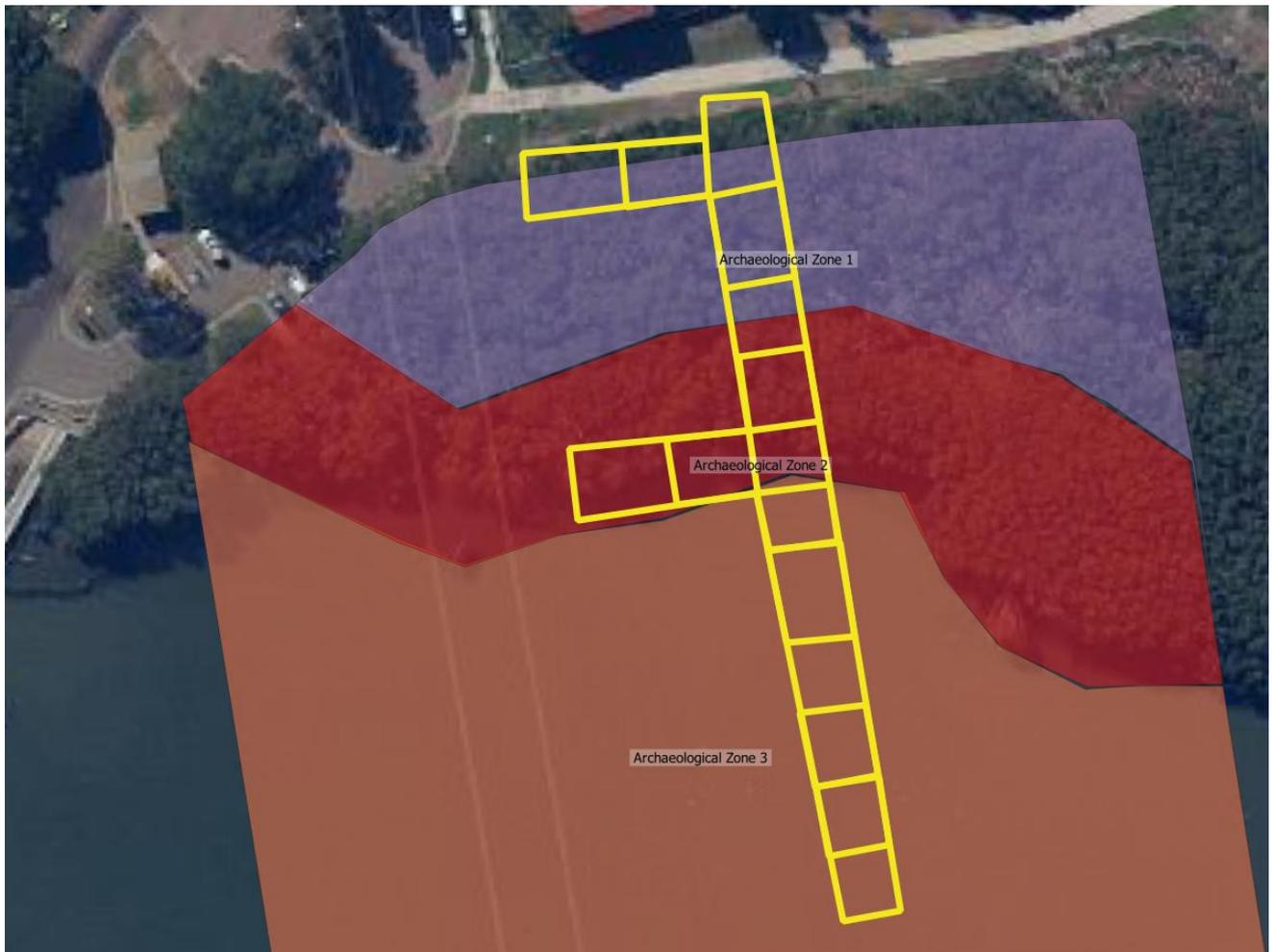


Figure 11-1: Indicative location of proposed temporary work platform and relationship to Archaeological Zones 1, 2 and 3

Temporary work platforms extending from the southern shore into Archaeological Zone 3 would have no impact on underwater cultural heritage as this area is assessed as having low archaeological potential.

No dredging or realignment of the riverbed or riverbank would be undertaken and therefore there would be no geomorphological impacts on maritime cultural heritage.

### 11.2 Recommended mitigation strategies

For the temporary work platforms in Zone 2, protocols for unexpected finds of cultural heritage should be prepared and provided to the contractors prior to commencement of those works.

For the installation of the bridge piles, and the temporary work platforms in Zones 1 and 3, there would be minimal or no impacts on historical maritime cultural heritage. No mitigation measures apart from unexpected finds protocols are required.

### 11.3 Unexpected finds

The likelihood for structural remains or archaeological deposits in the study area is low. However, if potential historical relics or other archaeological remains are detected in the marine environment, including the tidal zone, during any disturbance of sediments within the study area, contingency plans should be implemented so that a process is in place if new discoveries are made during the project. Please see Unexpected Heritage Items Procedure (Transport for NSW, 2022).

The Unexpected Finds Procedure described over the page should be included in the induction material provided to contractors involved in ground disturbance works.





**Procedure:**

1. Unexpected find uncovered.
2. Stop work and notify the project archaeologist.
3. Archaeologist to undertake an assessment of the significance of the unexpected find.
4. If not significant, the find will be recorded by the archaeologist and work can recommence.
5. If the find is significant and assessed by the archaeologist as a relic under the *Heritage Act 1977*, Transport for New South Wales and Heritage NSW are to be notified. Advice is to be sought from Heritage NSW and work cannot recommence in that area until that advice has been received.
6. Significant finds will be recorded by the archaeologist according to Heritage NSW requirements.
7. If works will not impact visually or physically on the find, the works may recommence upon approval from Heritage NSW and the archaeologist.
8. If works have the potential to impact physically or visually on the find, work must not recommence until written consent is received from Heritage NSW.
9. A Maritime Archaeological Report will then be compiled to document the item and the conservation management measures that have been implemented.



## 12 RECOMMENDATIONS

The following recommendations are made based on:

- Legal requirements under the terms of the *Heritage Act 1977*.
- The research and analysis contained in this report.
- Results of the assessment as outlined in this report.

### **Recommendation: Site induction**

Site inductions for all personnel to include:

- A brief history of the study area.
- Details of the unexpected finds protocol that requires the immediate reporting of any unexpected finds or observed impacts on cultural heritage within the river or the tidal zone to the site supervisor and to the project maritime archaeologist.



## REFERENCES

### Primary sources

Bradley, W. B., 1969. *A Voyage to New South Wales: The Journal of Lieutenant William Bradley RN of HMS Sirius – 1786-1792*. Reproduced in facsimile from the original manuscript with a portfolio of charts. The Trustees of the Public Library of New South Wales in association with Ure Smith Pty Ltd.

Collins, D. 1756-1810. *An Account of the English Colony in New South Wales [Volume 1]*. A digital text sponsored by University of Sydney Library Sydney 2003.

Tench, W (Capt), 1799. *Sydney's First Four Years being a reprint of A Narrative of the Expedition to Botany Bay and a Complete Account of the Settlement at Port Jackson*. Royal Australian Historical Society, Sydney.

Watson, F. 2009. *Historical records of Australia [electronic resources] \: series 1, Vol 1, 1788-1796*. Governors' despatches to and from England. Published by the Library Committee of the Commonwealth Parliament 1914.

### Newspapers

The Sydney Gazette and New South Wales Advertiser, Sun 26 Jun 1803. <http://nla.gov.au/nla.news-title3>. Accessed 4/3/2022.

Sydney Gazette and NSW Advertiser, Sunday 2 1807. <http://nla.gov.au/nla.news-title3>. Accessed 4/3/2022.

The Sydney Herald, Mon 25 Apr 1831 Domestic Intelligence, Page 4.

Sydney Herald 8<sup>th</sup> August 1831

Sydney Morning Herald 1888 – 13th-16th February 1888

### Secondary sources

Andrews, G., 1994. *Ferries of Sydney*. Sydney University Press.

Bower, R. 1993. Report of the maritime archaeological survey of areas of the upper Parramatta River affected by dredging for the Rivercat ferry service. Pyrmont, N.S.W.: Australian National Maritime Museum.

Cole, J. 1983. *Parramatta River Notebook*. Kangaroo Press.

Comber Consultants 2021. Sydney Olympic Park – Aboriginal Archaeological Assessment Report. Report to School Infrastructure NSW.

Department of Planning & Environment. 2014. Wentworth Point Precinct Development Control Plan 2014.

Finlay, C. and Sahni, N. 2021. *Melrose Park – Origin of Street Names*. Parramatta Heritage Centre, City of Parramatta. [Melrose Park – Origin of Street Names | Parramatta History and Heritage \(nsw.gov.au\)](https://www.parramatta.gov.au/heritage/melrose-park-origin-of-street-names). Sighted 7/3/2022.

Greater Sydney Commission, 2018. *Greater Sydney Region Plan A Metropolis of Three Cities*, Sydney.

Hardie, D. 2021 (Revised Edition). *Forgotten Fleets: Boats of Sydney in the Days of Sails and Oar*. Kindle Version. D. Hardie, Camperdown, NSW.

Hoskins, I. 2015. River Cycles – A History of the Parramatta River. Retrieved 5 March 2021 from [https://dictionaryofsydney.org/entry/river\\_cycles\\_a\\_history\\_of\\_the\\_parramatta\\_river](https://dictionaryofsydney.org/entry/river_cycles_a_history_of_the_parramatta_river)

Hunter, J. 1973. *An historical journal of the transactions at Port Jackson, and Norfolk Island Including the journals of governors Phillip and King, with an abridged account of the new discoveries in the south Seas*. Reproduction from British Library. ECCP Eighteenth Century Collections Online – Print Editions.



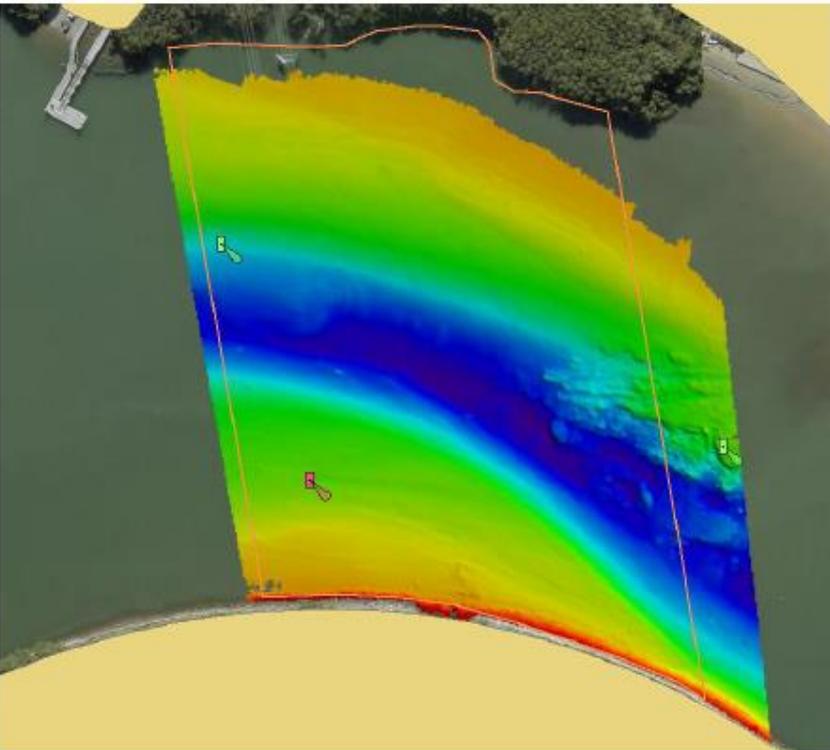
- Irish, P. 2003. Aboriginal Sites Survey of the Wanngal (Newington Woodland & Newington Armoury Precincts, Sydney Olympic Park - A report based on the findings of Stage 2 of the Aboriginal History & Connections Program at Sydney Olympic Park.
- Irish, P. 2005. Aboriginal People at Homebush Bay: From the Wann-gal to the present day. Report to the Sydney Olympic Park Authority.
- Irish, P. 2006. Sydney Olympic Park Aboriginal Archaeological Zoning Plan Report to Sydney Olympic Park Authority.
- Nutley, D. 2006. The Last Global Warming? Archaeological Survival in Australian Waters. Flinders University Maritime Archaeology Monograph Series, No. 10.
- Prescott, A. M. 1984. *Sydney Ferry Fleets*. Published by R. H. Parsons.
- SGS, 2017. *Connecting Sydney Olympic Park and GPOP with Greater Sydney- final technical report*. Prepared for Sydney Olympic Park Business Association, May 2017.
- Sydney Olympic Park, Indigenous History. Retrieved from <https://www.sopa.nsw.gov.au/About-Us/History-and-Heritage/Indigenous-History> 17 February 2022.
- Wolfe, A, 1990. An introduction to the maritime archaeological significance of ten sites on the banks of the Parramatta River. Prepared for Gutteridge Haskins and Davey Pty Ltd, Consulting Engineers Planners Surveyors Project.
- Wolfe, A, c1992. The Parramatta River Maritime Archaeological Works Project: Interim Report. Prepared for The Department of Transport New South Wales. Wolfe and Associates Consulting Maritime Archaeologists.



## **APPENDIX A: REMOTE SENSING SURVEY REPORT**

The following is the report of the Multibeam Echo Sounder (MBES) hydrographic survey was prepared by Port Authority of New South Wales conducted on 16 March 2022.



Date: 23/3/2022		Port Authority NSW Hydrographic Survey <b>SURVEY REPORT</b>	Survey Date: 16/3/2022
			
Port	Survey Area	Survey Class (Ports Australia Principles)	
SYDNEY, NSW	Parramatta River – Ermington Boat Ramp	<b>A</b>	
			
Hydrographic Surveyor - Charge		Certification	
Isaac Reeves		AHSCP level 2	
Group Survey Manager		Certification	
Venessa O'Connell		AHSCP Level 1	
<b>Purpose of Survey</b>			
Purpose of Survey	A bathymetric multibeam survey was conducted in the area South of Ermington boat ramp, within the Parramatta River. The purpose of the survey was to assess if there is any evidence of former structures on the seabed.		
Survey area Declared Depth	N/A		



Surveyor Comments											
Relevant Survey Information	<ul style="list-style-type: none"> <li>The survey was conducted between 0800 and 1030 on the 16<sup>th</sup> of March to coincide with the 0830, 1.71m high tide.</li> <li>The RESON T-50 multibeam was mounted to the vessel using the over-the-side USM. This was used to increase the distance of the multibeam off the seabed in order to maximise survey coverage within shallow areas.</li> <li>The survey was completed with the RESON T-50 sonar mounted on an angled bracket. A 30° tilt to the starboard side of the vessel was utilised outside the channel limits in order to maximise survey coverage in shallow areas.</li> <li>A small section in the SW corner was unable to be surveyed due to the undulating and shallow nature of the seabed</li> </ul>										
Shoals and Dangers											
Hazards and Shoals	<ul style="list-style-type: none"> <li>N/A</li> </ul>										
Comparison with previous Survey	<ul style="list-style-type: none"> <li>A difference surface has been computed with the previous survey, as a quality check. The previous survey was conducted in 2017 and was bound by the navigational aids. No data outside the designated channel has previously been surveyed.</li> <li>Substantial differences have occurred within the survey area, however due to the dynamic nature of the river, this is to be expected. During major flood events it is likely that sediment may be deposited in this location.</li> <li>Min and Max variations have occurred to the South of the survey area where a steep bank has formed. Other variations have occurred on the rocky outcrop to the East of the area where small differences in positional accuracy can result in larger vertical differences.</li> </ul> <table border="1"> <thead> <tr> <th></th> <th>Minimum (m)</th> <th>Maximum (m)</th> <th>Mean (m)</th> <th>Std dev (m)</th> </tr> </thead> <tbody> <tr> <td></td> <td>-0.934</td> <td>1.23</td> <td>0.082</td> <td>0.197</td> </tr> </tbody> </table>		Minimum (m)	Maximum (m)	Mean (m)	Std dev (m)		-0.934	1.23	0.082	0.197
	Minimum (m)	Maximum (m)	Mean (m)	Std dev (m)							
	-0.934	1.23	0.082	0.197							



Depth Measurement		
Survey Vessel Description (Length, Beam, Hull Type)	Survey Vessel: Port Explorer Length: 9.63m Beam: 3.50m Draught: 0.55m Hull Type: Tri Hull	
Method used to Determine Least Depths	Multibeam Echo Sounder	RESON Seabat T50-P
	Beams & Frequency	1024 Equi-Distant @ 400 kHz
	Swath Angle	120°-150°
	Mounting	Universal Sonar Mount located (with angled Bracket) on the starboard gunwale
	Positioning and VRU	Applanix POS MV Oceanmaster GNSS aided inertial navigation system V5.
	Base Station	Villawood – Used for real-time corrections
	Sound Velocity	<ul style="list-style-type: none"> <li>RESON SV70 at sonar transducer head</li> <li>AML Base X3 Sound Velocity Probe used over side during survey operations</li> </ul>
Method and Date of Echo Sounder Calibration	<ul style="list-style-type: none"> <li>MBES patch test calibration conducted: 16-3-2022 at Walsh Bay. Results incorporated into vessel file.</li> </ul>	
Method to Compensate for Vessel Motion	<ul style="list-style-type: none"> <li>Applanix POS MV Oceanmaster GNSS aided inertial navigation system</li> </ul>	
Horizontal Positioning		
Datum: GDA2020(1-1-20), Map Projection: MGA zone 56		
Connection to Horizontal Datum	<ul style="list-style-type: none"> <li>CORSnet – Villawood CORSnet station GDA2020</li> </ul>	
Methods of Obtaining Horizontal Position	<ul style="list-style-type: none"> <li>Real-time corrections transmitted in RTCM 3.2 via NTRIP. (VLWD CORSnet station)</li> <li>Differential corrections received by Applanix POSMV.</li> <li>Differential data transmitted via LAN to POS PCS</li> <li>Applanix POSMV Oceanmaster Position &amp; Orientation System with combined position solution using dual RTK &amp; Inertial navigation system.</li> </ul>	
Connection to Local Survey Control	<ul style="list-style-type: none"> <li>Site calibration of local SCIMS marks to determine horizontal accuracy of position data and determine any data shifts required.</li> <li>Data shifts only performed where Easting and Northing residuals are greater than 0.05m.</li> <li>For each survey mark raw observations are logged for 15 minutes a minimum of twice at different times of the day to account for changes in satellite configuration.</li> <li>No horizontal shifts have been applied to the data.</li> </ul>	





Vertical Datum		Datum: Australian Height Datum (AHD)
Connection to Vertical Datum	<ul style="list-style-type: none"> <li>CORSnet – Villawood Reference Station GDA2020</li> <li>Fort Denison Tide Gauge: E 335864.8 N 6252544.3</li> </ul>	
Method of Measuring Tidal Heights	<ul style="list-style-type: none"> <li>RTK tide from Applanix POS MV Oceanmaster GNSS aided inertial navigation system. GDA2020 Ellipsoidal heights are reduced to AHD using AusGeoid2020.</li> </ul>	
Comparison with Tide Gauge	<ul style="list-style-type: none"> <li>RTK tide from Applanix POS MV Oceanmaster GNSS aided inertial navigation system. GDA2020 Ellipsoidal heights are reduced to Zero Fort Denison Tide Gauge Datum.</li> <li>Comparison between 1 min Tide Gauge Data and static PPK tides (POSPac). Average Differences are ~ 70mm on average due to the locality of the survey area being 15km West (upstream) of the Fort Denison tide gauge. Tidal lag is expected. Comparison chart is available on request.</li> </ul>	
Seabed Coverage		
Process for sounding Berth and Channel Limits	<ul style="list-style-type: none"> <li>Survey lines dynamically set to ensure at least 100% overlap on each edge of swath.</li> <li>Toe lines and shorelines run twice to ensure 200% coverage.</li> <li>Multiple lines were run on the edge of the survey area. Sonar swath characteristics were altered to maximise survey coverage with the angled head.</li> </ul>	
Survey Vessel Speed	<ul style="list-style-type: none"> <li>Variable 4-7 knots</li> </ul>	
Sounding Line Spacing and Orientation	<ul style="list-style-type: none"> <li>Sounding line dynamically set to enable 200% seabed coverage.</li> <li>Sounding lines run parallel to significant batters, where not restricted by moored vessels or shoreline structures.</li> </ul>	
Feature Detection	<ul style="list-style-type: none"> <li>The feature detection capabilities of the Port Explorer exceed the specification for Class A surveys as defined by Ports Australia Principles</li> </ul>	
Sounding Reduction and Data Presentation		
Methods to Reduce Raw Data to Sounding Datum	<ul style="list-style-type: none"> <li>Soundings reduced to datum by converting post processed GDA2020 Ellipsoidal heights to AHD (Derived) using AUSGeoid2020</li> <li>AusGeoid2020 has been interpolated at 500m spacing.</li> </ul>	
Principle and Method used in Sounding Selection	<ul style="list-style-type: none"> <li>Raw soundings have been processed and a shoalest depth true position CSAR was generated. XYZ was exported in a 0.25m grid.</li> </ul>	
Data Provided to client	<ul style="list-style-type: none"> <li>XYZ in GDA2020, AHD</li> <li>SDTP CSAR surface in GDA2020, AHD. Depths are positive.</li> <li>Survey report – method statement</li> </ul>	



### Data Quality and Retention

The Method(s) used to Derive the Quality of the Data and Ability to meet the Depth Tolerance as Required in the Standards

- Multibeam data manually processed and verified.
- TPU filtering applied to reject any sounding that does not meet the following parameter's:

Order	Depth		Horizontal	
	a (m)	b	m	%
User Defined	0.15	0.0075	2	0

Total Propagated Uncertainty (TPU)

- Posteriori Total Propagated Uncertainty (TPU) statistics have been computed using CARIS Hip & SIPS for the total survey area. TPU calculation inputs include RMS approximations for lever arm offsets, calibration results, sound velocity profile and sound velocity at the sonar head, horizontal and vertical datum connections, geoid and real-time RMS data from post processed position and orientation.
- Sonar characteristics used in the calculation are applied directly from the CARIS vessel file
- A statistical analysis of the TPU calculation is given below based on a 0.5m Shoal Depth True Position surface.
- Vertical and horizontal TPU values are available as separate layers within the CSAR file provided with this report.

TPU	Minimum	Maximum	Mean	Count
Depth	0.044	0.058	0.049	112,607
Horizontal	0.062	0.213	0.092	98,848

Attached to the same folder is an AMUST TPU Approximation. This was completed in order clarify the effect SV Port Explorer has on the TPU estimations.

Priori and Posteriori TPU values have been compared at varying depths. This analysis was performed to ensure that the post process TPU values, provided by CARIS, are within the expected range of the TPU estimates made prior to the survey.

- Piori and Posteriori depth TPU comparisons compared well (<0.02)
- Comparisons in the Horizontal TPU have shown that CARIS underestimates the Horizontal TPU. This is due to CARIS HIPS not including beam width resolution in its calculation.
- From these comparisons we can conclude that this survey does meet the specification for a Ports Australia Class A survey.

The Time Frame(s) and Those Responsible for Retention of Raw Data Gathered during the Survey and the Final Results

- Raw & Final survey data will be stored locally for a minimum of 2 years by Port Authority NSW.



I certify that this Survey Report and the methods described herein conform to the hydrographic survey meeting the Survey Class.

  
..... Isaac Reeves      Hydrographic Surveyor – certified Practitioner – Level 2  
(Signature) 25/3/2022

  
..... Venessa O'Connell      Group Survey Manager – Certified Practitioner - Level 1  
(Signature)

## Appendix B

# ARCHAEOLOGICAL RESEARCH DESIGN AND EXCAVATION METHODOLOGY

# PARRAMATTA LIGHT RAIL STAGE 2

Archaeological Research Design and Excavation Methodology



PR141576  
Final  
May 2023

## RESEARCH DESIGN & EXCAVATION METHODOLOGY

Document status					
Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
	Final	G Marriner	W Thorp N.Green	N Green	04/05/23

Approval for issue		
Natalie Green		5 May 2023

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**Prepared by:**

**RPS**

**Prepared for:**

**Transport for NSW**

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## Glossary and abbreviations

Term/Acronym	Definition
<b>Aboriginal object</b>	Aboriginal object refers to any deposit, object or material evidence (other than a handicraft made for sale) relating to present or past Aboriginal habitation and includes Aboriginal remains.
<b>ACMP</b>	Artefact Conservation Management Plan
<b>Amended project</b>	The project incorporating the amendments described in the Amendment Report
<b>Archaeological monitoring</b>	Process of an archaeologist observing excavation works with the intention of identifying relics and other features. Also known as a watching brief.
<b>Archaeological profile</b>	Refers to the totality of archaeology present including artefacts, ecofacts, structure, features, stratigraphy etc.
<b>Ard marks</b>	Agricultural features made by an ard, a simple hand operated light plough
<b>AREF</b>	Archaeological Research and Excavation Framework
<b>CA&amp;FA</b>	The Cumberland Argus and Fruitgrowers Advocate
<b>CBD</b>	Central Business District
<b>Context</b>	A well-defined stratigraphic unit relating to a single depositional event, used as the primary unit for recording and analysis
<b>ED</b>	Excavation Director
<b>EIS</b>	Environmental Impact Statement
<b>EP&amp;A Act</b>	NSW <i>Environmental Planning and Assessment Act 1979</i>
<b>Exhibited project</b>	The project described in the EIS
<b>GPOP</b>	Greater Parramatta and Olympic Peninsula
<b>GPR</b>	Ground Penetrating Radar
<b>HAA</b>	Historical Archaeological Assessment
<b>HAMU</b>	Historical Archaeological Management Unit
<b>Heritage Act</b>	NSW <i>Heritage Act 1977</i>
<b>Hoe marks</b>	Agricultural features made by a hoe, a medium sized agricultural hand tool that breaks the soil
<b>MR</b>	Management Rating
<b>NSW</b>	New South Wales
<b>NSWSA</b>	New South Wales State Archives
<b>PHALMS</b>	Parramatta Historical Archaeological Landscape Management Study
<b>Photogrammetry</b>	The creation of spatial data of objects and places using 3D models created from photographs
<b>Project</b>	Construction and operation of Parramatta Light Rail Stage 2
<b>Project site</b>	Refers to the area that would be directly disturbed by construction of the project (for example, as a result of ground disturbance and the construction of foundations for structures). It includes the location of construction activities, compounds and work sites, and the location of permanent infrastructure.
<b>RAP</b>	Registered Aboriginal parties
<b>RDEM</b>	Archaeological Research Design and Excavation Methodology
<b>RLs</b>	Reduced Levels
<b>SEARs</b>	Secretary's environmental assessment requirements
<b>SLNSW</b>	State Library of New South Wales
<b>SMH</b>	Sydney Morning Herald
<b>Soil profile</b>	The various layers and strata that collective form the land surface including the topsoil

## RESEARCH DESIGN & EXCAVATION METHODOLOGY

Term/Acronym	Definition
<b>Test Pit (TP)</b>	A small trench excavated by an archaeologist usually to answer a specific question or to characterise and contextualise the nature of the archaeological resource and soil profile
<b>Transport for NSW</b>	Transport for NSW is the lead agency of the NSW Transport cluster.

# 1 INTRODUCTION

## 1.1 Project background

Parramatta Light Rail will deliver an integrated light rail service that supports the population and employment growth expected throughout the Greater Parramatta and the Olympic Peninsula area (GPOP). It will integrate with existing and future modes of transport, including buses, trains, ferries and active transport (pedestrian and cycle networks), as well as Sydney Metro West services and the existing road network. Parramatta Light Rail will be delivered in stages to keep pace with development:

- Stage 1 will connect Westmead to Carlingford via the Parramatta central business district (CBD) and Camellia. The construction and operation of Parramatta Light Rail Stage 1 was approved by the NSW Minister for Planning in May 2018. Major construction is underway, with the track installation complete and light rail stop construction in progress. Stage 1 is expected to start operating in 2024. Further information on Stage 1 is available at [Parramatta Light Rail](#)
- Transport for NSW is now proposing to construct and operate Stage 2 of Parramatta Light Rail ('the project'). Stage 2 would connect the Parramatta CBD and Stage 1 to Camellia, Rydalmere, Ermington, Melrose Park, Wentworth Point and Sydney Olympic Park.

An environmental impact statement (EIS) was prepared to assess the potential impacts of the project, and to identify the management measures to address those impacts. The EIS was exhibited by the NSW Department of Planning and Environment from 9 November 2022 to 16 December 2022.

The EIS was supported by a range of technical papers, which provided detailed assessments of the potential impacts of the project as they relate to the key environmental issues defined by the Secretary's environmental assessment requirements (SEARs). This included Technical Paper 6 (Historical Archaeological Assessment) which was supported by an Archaeological Research and Excavation Framework (AREF) in Appendix B to guide the test excavation program. Testing commenced in November 2022 but was not able to be completed safely, or in accordance with the Aboriginal test excavation methodology (which was required to be completed prior to historical excavations) due to the presence of asbestos or deep levels of fill.

Additional assessment of the potential historical archaeological impacts of construction and operating the project has been undertaken since exhibition of the EIS. This additional assessment has been undertaken to assist with considering and responding to issues raised in submissions and during consultation with stakeholders, assessing the impacts of the proposed amendments and to further progress commitments made in the EIS.

The Historical Archaeological Assessment (HAA), originally prepared to support the EIS, has been updated based on the additional assessment undertaken and the limited findings of the test excavation program. It also includes this document (Archaeological Research Design and Excavation Methodology) as Appendix B, which has been prepared to meet the SEARs (see section 1.2 below).

## 1.2 Planning Secretary's Environmental Assessment Requirements (SEARs)

An EIS was prepared and exhibited to support an application for approval of the project in accordance with Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). It addressed the environmental assessment requirements of the Secretary of the Department of Planning and Environment (the SEARs).

The Heritage – non-Aboriginal SEAR (7.3) included the preparation of an historical archaeological assessment (HAA) which must:

- a) identify relics likely to be present*
- b) assess their significance*
- c) consider the impacts from the proposal on this resource*

*d) include an appropriate mitigation strategy and Research Design and Excavation Methodology where harm cannot be avoided*

*Test excavation may be required to clarify significance, extent and integrity of deposits, particularly where sites of State significance are anticipated.*

Technical Paper 6 (Historical Archaeological Assessment) was prepared to inform the non-Aboriginal archaeological requirements for the project addressing items a, b and c listed above. This Archaeological Research Design and Excavation Methodology has been prepared as Appendix B to the Updated Historical Archaeological Assessment to meet item d of SEAR 7.3.

Other parts of the Heritage – non-Aboriginal SEARs are addressed in a maritime archaeological assessment (Appendix A of the Updated Historical Archaeological Assessment) and in the Updated Statement of Heritage Impact (Built Heritage).

### 1.3 Project site

The Parramatta Light Rail Stage 2 project site stretches across both banks of the Parramatta River and crosses multiple different modern suburbs and archaeological landscapes (Figure 1-1). It begins in Camellia on the south bank of the Parramatta River where it runs from west to east largely following the route of the former freight rail (Sandown Line) corridor. It crosses the river to Rydalmere at the end of Park Road, extends along Eric Primrose Reserve, traverses north along John Street before continuing eastward along South Street. Here the project site crosses Silverwater Road into Ermington and heads through Ken Newman Park and northeast along Boronia Street and Hope Street into Melrose Park. At the junction of Hope Street and Waratah Street, the project site heads southwards towards Ermington Boat Ramp, crossing the Parramatta river again, and arriving east of the Louise Sauvage Pathway in Wentworth Point. The project site then extends east toward Hill Road, then south along Hill Road until the intersection with the Holker Busway. From here, the project site enters Sydney Olympic Park and it heads southeast again along Holker Busway before turning southwest along Dawn Fraser Avenue and Murray Rose Avenue. The project site terminates at the junction of Uhrig Road and Carter Street in Lidcombe. In total it traverses about 10 kilometres and also includes numerous side roads, construction compounds and additional areas along the route. There is also a small area of the Parramatta CBD within the project site boundary, primarily along Macquarie Street.

This RDEM applies to all areas of the project site where there may be an impact to the historical archaeological resource. As such it covers all areas that could be directly disturbed by construction of the project (for example, due to ground disturbance and the construction of foundations for structures). It includes the location of construction activities, compounds and work sites, and the location of permanent infrastructure. Historically the project site covers many of the significant 19<sup>th</sup> century Estates of Sydney that belonged to prominent figures including John Macarthur's Elizabeth Farm Estate, Hannibal Macarthur's Vineyard Estate, John Blaxland's Newington Estate and D'arcy Wentworth's Homebush Estate (Figure 1-2).

### 1.4 Report structure

This report has been prepared in accordance with section 6 of *Archaeological Assessment Guidelines* (Heritage Office, 1996) and is separated into five sections:

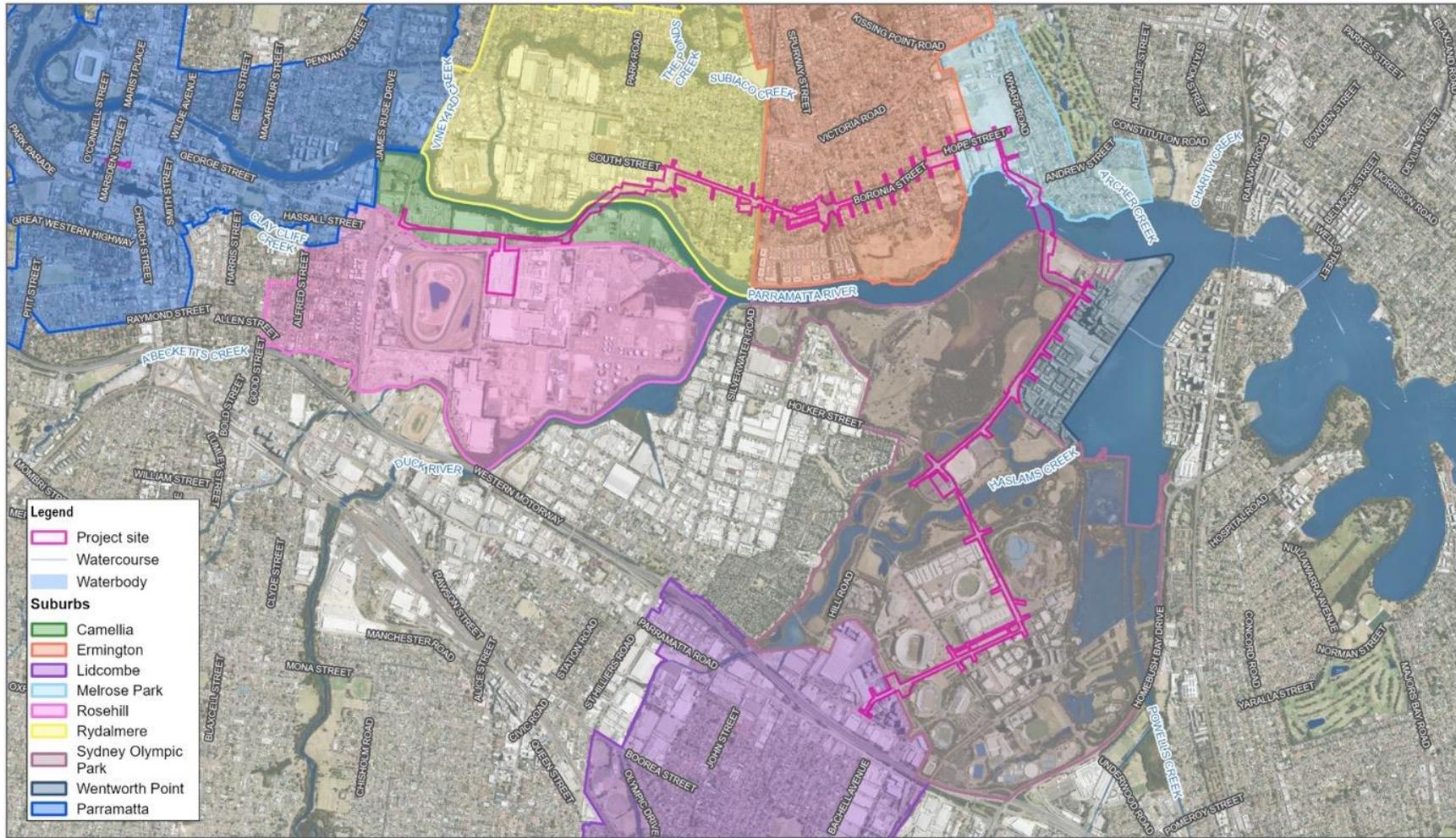
- This section (Section 1) introduces and contextualises the project site, purpose and aims of this report.
- Section 2 provides an overview of the approach taken in the Updated HAA in defining areas of the project site, and also to the approach taken in this RDEM to presenting an excavation methodology and research design.
- Section 3 contains detailed site specific context for the areas of the project site that have the highest archaeological potential and so require the most archaeological investigation and management.
- Section 4 is a comprehensive archaeological methodology, including an excavation methodology (where appropriate). This section also contains mitigation measures for each of the Management Ratings used to categorise the historical archaeological management units (HAMUs) of the project.
- Section 5 is a research design that provides a discussion of the relevant historical and research themes for the project and locates this discussion in line with that from Parramatta Light Rail Stage 1. It then

provides a cohesive and considered series of research questions, both broad and specific that should be addressed through any archaeological investigation program.

### 1.5 Authorship

Dr Gary Marriner (Senior Heritage Consultant, RPS) prepared this report. Dr Marriner is a suitably qualified heritage consultant and archaeologist. He holds a PhD in archaeology, has 13 years' experience and has been a nominated secondary excavation director on multiple State and locally significant archaeological excavations. Wendy Thorp (Principal, CRM) has reviewed this report. She has over 30 years' experience and has been nominated as primary excavation director on numerous State and locally significant archaeological excavations.

# RESEARCH DESIGN & EXCAVATION METHODOLOGY



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 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



Transport for NSW  
 Parramatta Light Rail Stage 2 EIS  
 Non-Aboriginal Archaeological Assessment

Project No. 12557728  
 Revision No. B  
 Date 10/03/2023

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Data source: Roads, Rail, Watercourses, Waterbodies, Precincts - NSWOGS, 2022; Heritage - Dairi, LPIE, 2022; Imagery: Metromap; File Service: Created by: dclatman

Figure 1-1: Overall project site assessed for historical archaeological potential and significance





## 2 METHODOLOGY

### 2.1 Overview

This RDEM has been prepared as part of the Updated HAA. Specifically, it corresponds to SEAR 7.3.d which states the project HAA must:

*d) include an appropriate mitigation strategy and Research Design and Excavation Methodology where harm cannot be avoided*

To manage the project site, which is over 10 kilometres long, a number of strategies have been employed to divide the space and also present widely applicable management strategies. Discussed below, these have included dividing the project site up into individual management units (HAMUs) and assessing the significance, potential and project impact in each HAMU individually. Following this, a management rating, which defines the appropriate level of archaeological investigation has been applied to each of the HAMUs noting that these units do not exist in isolation and are part of a detailed and complex interrelated cultural landscape.

### 2.2 Management units

To facilitate the assessment, the project site was divided into individual Historical Archaeological Management Units (HAMUs) and Maritime Archaeology Management Units (MAMUs). This approach is commonplace in historical archaeology in Parramatta having first been used during the PHALMS study in 2000 and later for Parramatta Light Rail Stage 1 (Artefact 2019, GML 2020). The division of the project site into individual units ensures that the assessment of a larger area can still be focused on the individual environment of specific sites.

There is a degree of variety regarding the form of the HAMUs which are all a different size and shape. Each unit is individually defined and only contains land specifically within the project site. Their form has been tailored based on a variety of factors including historical land use, modern and historical land boundaries, and present land use. Each HAMU has been assigned a numerical identifier however they are not numbered consecutively as various other areas that were assessed during earlier stages of the project have subsequently been removed from the project site. Table 2-2 provides an overview of the HAMUs defined for the project. This RDEM is applicable to terrestrial HAMUs only and does not include methodologies related to management of maritime archaeology or the MAMUs defined for the project.

### 2.3 Archaeological assessment

The historical archaeological assessment took a multi-level approach to assessing significance and archaeological potential. Initially the project site was separated into its modern suburb boundaries in order to explore the history of the areas the project will be constructed within. This approach worked well as the modern suburbs somewhat correspond to key historical estates that demarked the landscape in the late 18<sup>th</sup> and 19<sup>th</sup> century. The history of each suburb was then explored. This involved the examination of historical maps and plans, legal and administrative records, newspapers, books, and other historical resources. From this, historical phases were established for each suburb. These phases focused on the key events and changes that took place in each suburb and the major associations that the areas had with historical themes, notable individuals, or significant businesses. This historical research was then used to help define the final parameters of the individual HAMUs.

Following this, the historical archaeological assessment assessed what the significance of the potential archaeological evidence from each phase would be based on the established criteria (Heritage Branch, 2009). This approach allowed for the full breadth of potential archaeological evidence to be examined on a more local level and on a phase-by-phase basis. This allowed for multiple potential archaeological resources to exist in the same HAMU but for those resources to have different levels of significance.

Following the establishment of significance, the historical archaeological assessment then assessed the potential for there to be an intact archaeological resource present in general across each HAMU. This assessment was driven by two key questions:

- has the area been used in the past in such a way that will have left a recognisable archaeological resource related to the significant phases identified?
- have subsequent activities on the site removed any or all traces of these past activities?

The assessment of potential relied on the in depth historical research undertaken for the assessment which was used to provide answers for these two questions. Site visits, to examine the present conditions and identify evidence of impact that may not have been recorded, were also undertaken to enhance and refine the assessment.

### 2.4 Impact assessment

Once the significance and potential of each HAMU was understood, the impact of the project in each area was examined. As the project is still in its early stages, no specific construction plans were available to identify areas of impact. Instead general impacts were identified such as that resulting from track or bridge construction. From this, the severity of the impact was assessed in line with *Heritage NSW Material Threshold Policy* (Heritage NSW, 2020). The three categories of impact were:

- major impacts which would entirely remove any potential resource
- moderate impacts which would disturb a portion, but not all, of the potential resource
- minor impacts which would remove only little of the potential resource or where impacts are related to compression or vibration (discussed in Section 3.5 of the Updated Noise and Vibration Report).

When assessing impact, these three ratings apply to all HAMUs that have potential for an archaeological resource, irrespective of how high the potential is. Likewise, the level of significance (local or State) is not considered as any archaeological resource that meets, or may meet, the threshold of local significance is protected. In addition to the three categories above, the project is considered to have no impact in HAMUs that have no potential for a significant archaeological resource. This approach has been taken to ensure that the impact to any area with a potential archaeological resource has been appropriately assessed and so the results can be effectively integrated into future mitigation and design consideration.

### 2.5 Management ratings

Once the significance, potential, and impact of each HAMU was understood, the assessment was used to assign each HAMU a Management Ratings (MR). The purpose of the MR is to provide different approaches to the management of the potential archaeological resource that can be applied to all areas of the project site ensuring a homogenous and considered approach. Each HAMU was given a rating between 1 and 3 scaled on their significance, archaeological potential and project impact. In addition, some HAMUs were rated as N/A. This occurred in two circumstances – firstly, where the HAMU had no significance at any phase, as only archaeological resources that have, or may have, significance are protected under legislation. Secondly, if a HAMU was assessed as having nil archaeological potential it was also rated as N/A as it is not possible to manage a non-existent resource. Although rated N/A there still exists the small possibility of unexpected archaeological evidence to be present in HAMUs with this rating, therefore mitigation measures are still provided for these areas in the sections below.

As with the HAMU process, this management rating system (Table 2-1) has been based on a similar approach undertaken for Parramatta Light Rail Stage 1 (GML, 2019). It has been designed to facilitate a widely applicable methodological approaches to managing the archaeological resource across the entire project site.

The rating system is scaled so that recommended mitigation measures are appropriate to the level of significance, degree of archaeological potential and anticipated impact of the project. The key components of each MR are listed below.

- MR3: high potential for a State significant archaeological resource. They are coloured green on figures that relate to MRs below.
- MR2: either medium or low potential for State significant archaeological resources or high potential for locally significant archaeological resources. They are coloured yellow on figures that relate to MRs below.

- MR1: have low or medium potential for locally significant archaeological resources. They are coloured red on figures that relate to MRs below.
- N/A: no potential for a significant archaeological resource. They are coloured grey on figures that relate to MRs below.

**Table 2-1: Key to Management Ratings**

	<b>Significance</b>	<b>Potential</b>	<b>Impact</b>
MR3	State	High	Any
MR2	Local	High	Any
	State	Medium	Any
MR1	Local	Medium or Low	Major
	State	Low	Major
N/A	N/A	Nil	No

Section 4 provides detailed and specific methodologies of each MR and the MRs for each HAMU are shown in Figure 2-1 to Figure 2-8.

## **2.6 Additional site specific context**

The historical archaeological assessment undertook extensive historical research that focused on highlighting the key historical themes and phases for each area of the project site at a suburb level. This process successfully provided an overview that allowed for an accurate assessment of the significance for any potential archaeological resource that may be encountered in each HAMU. Section 3 of the RDEM includes further research on those HAMUs that have a MR of 2 or higher meaning they have at least moderate potential for an archaeological resource of either local or State significance.

This additional research is specifically focused on characterising the nature of the potential archaeological resource and includes additional historical research, a discussion of the potential archaeological evidence, known later impacts and the soil profile. This allows the management of the potential archaeological resource in these areas to be specifically designed to the archaeological evidence likely to be encountered.

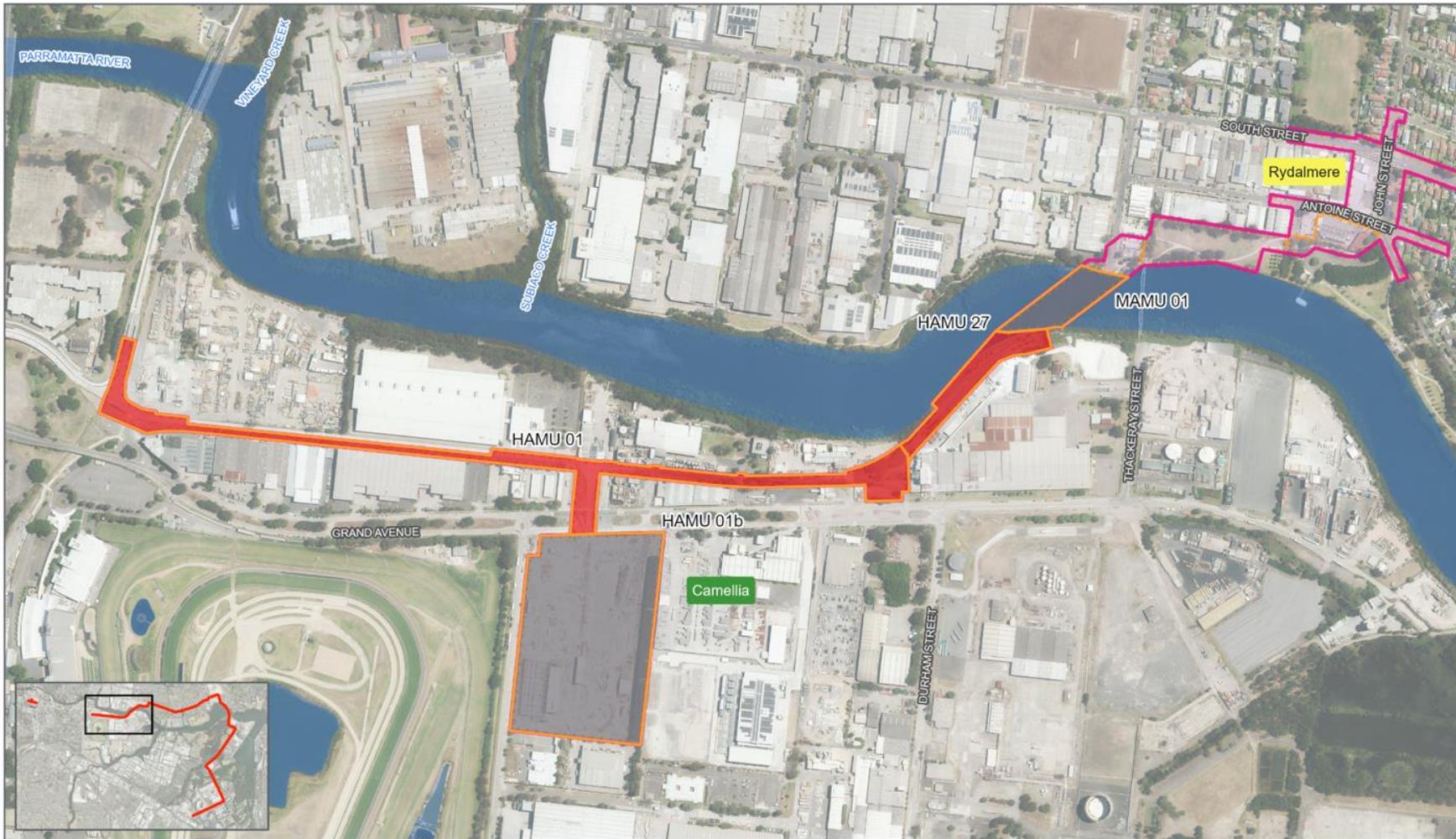
## RESEARCH DESIGN & EXCAVATION METHODOLOGY

**Table 2-2: Summary of management units assessed for the project**

HAMU Name	Suburb	Phases	Significance	Potential Impact	MR	
01 Industrial Railway north of Grand Avenue & 2 Grand Avenue	Camellia	1 – Elizabeth Farm Estate (1793–1881)	State	Low	Major	1
		4 – Industrialisation (1881 onwards)	Local	Low		
27 Sandown Line	Camellia	1 – Elizabeth Farm Estate (1793–1881)	State	Low	Major	1
		4 – Industrialisation (1881 onwards)	Local	Low		
28 Park Road	Rydalmere	1 –The Vineyard Estate (1791-1849)	State	Low	Major	1
29 Western Eric Primrose Reserve	Rydalmere	1 –The Vineyard Estate (1791-1849)	State	Medium	Major	2
		3 – Postwar housing estate (1945 onwards)	None	Low		
05 Rydalmere Wharf and Park	Rydalmere	1 –The Vineyard Estate (1791-1849)	State	Low	Major	1
		3 – Postwar housing estate (1945 onwards)	None	Low		
06 John Street, South Street, Antoine Street & Fallon Street	Rydalmere	1 –The Vineyard Estate (1791-1849)	State	Low	Major	1
		3 – Postwar housing estate (1945 onwards)	None	Low		
07 Broadoaks Park	Rydalmere	1 –The Vineyard Estate (1791-1849)	State	Medium	Minor	2
		3 – Post-war housing estate (1945 onwards)	None	Medium		
08 South Street & River Road	Ermington	1 – Early Farming (1792–1871)	State	Low	Major	1
		3 – Post-war housing estate (1945 onwards)	None	Low		
09 Corridor between River Road & Hilder Road	Ermington	1 – Early Farming (1792–1871)	State	Low	Major	1
		3 – Post-war housing estate (1945 onwards)	None	Low		
10 Tristram Street, Hilder Road & Heysen Avenue	Ermington	1 – Early Farming (1792–1871)	State	Low	Major	1
		3 – Post-war housing estate (1945 onwards)	None	Low		
11 Ken Newman Park	Ermington	1 – Early Farming (1792–1871)	State	Medium	Major	2
		3 – Post-war housing estate (1945 onwards)	None	Low		
12 Boronia Street & surrounds	Ermington	1 – Early Farming (1792–1871)	State	Low	Major	1
		3 – Post-war housing estate (1945 onwards)	None	Low		
13 Atkins Road, Hughes Avenue, & Hope Street block	Ermington	1 – Early farming (1792–1871)	State	Nil	Major	1
		2 – Swane Brothers Nursery (1919–1967)	Local	Low		
		3 – Post-war housing estate (1945 onwards)	None	Nil		
14 Hope & Waratah Street	Melrose Park	3 – Subdivision, growth and post-war housing (1840s–1945, and post-1945)	None	Low	N/A	N/A
15 Ermington Wharf & Archer Park	Melrose Park	1 – Early Farming and Edmund Lockyer (1792–1827)	State	Low	Major	3
		2 – Ermington Wharf (c.1820s–c1930)	State/Local	High		

## RESEARCH DESIGN & EXCAVATION METHODOLOGY

HAMU Name	Suburb	Phases	Significance	Potential Impact	MR		
		3 – Subdivision, and growth, and post-war housing (1840s–1945, and post-1945)	None	Low			
17	Hill Road	Wentworth Point	1 – The Flats 1793-1949	None	Nil	N/A	N/A
			2 – Industrialisation 1949-2013	None	Nil		
18	East of Newington Nature Reserve	Sydney Olympic Park	1 – Early Farming (1794–1810)	None	Nil	N/A	N/A
			2a – Newington Estate (1807–1907)	None	Nil		
19	Hill Road, including compound & Holker Busway north of Haslams Creek	Sydney Olympic Park	1 – Early Farming (1794–1810)	State	Nil	N/A	N/A
			2a – Newington Estate (1807–1907)	Local	Nil		
20	Car park P5b	Sydney Olympic Park	1 – Early Farming (1794–1810)	State	Nil	N/A	N/A
			2a – Newington Estate (1807–1907)	local	Nil		
22	Holker Busway south of Haslams Creek & Australia Avenue	Sydney Olympic Park	1 – Early Farming (1794–1810)	State	Nil	N/A	N/A
			2b – Homebush Estate (1807–1907)	Local	Nil		
			4 – State works (1907–1991)	Local	Nil	N/A	N/A
23	Car Park P6	Sydney Olympic Park	1 – Early Farming (1794–1810)	State	Nil		
			2b – Homebush Estate (1807–1907)	Local	Nil	N/A	N/A
			4 – State works (1907–1991)	Local	Nil		
24	Dawn Fraser Avenue, Murry Rose Avenue, & Uhrig Road	Sydney Olympic Park	1 – Early Farming (1794–1810)	State	Nil	N/A	N/A
			2b – Homebush Estate (1807–1907)	Local	Nil		
			4 – State works (1907-1991)	Local	Nil	N/A	N/A
25	Compounds along Edwin Flack Avenue	Sydney Olympic Park	1 – Early Farming (1794–1810)	State	Nil		
			2b – Homebush Estate (1807–1907)	Local	Nil	N/A	N/A
			4 – State works (1907–1991)	Local	Nil		
26	Parramatta CBD	Parramatta	1 – Early land leases (c1790s-1814)	State	Low	Major	1
			2 – 19 <sup>th</sup> century residential/commercial frontages	Local	Low		
			2 – 19 <sup>th</sup> century road infrastructure	Local	Medium		



<p><b>Legend</b></p> <p><span style="border: 1px solid magenta; display: inline-block; width: 15px; height: 10px;"></span> Project site</p> <p><span style="border-bottom: 1px solid blue; display: inline-block; width: 20px;"></span> Watercourse</p>	<p><b>Management Rating</b></p> <p><span style="border: 1px solid orange; display: inline-block; width: 15px; height: 10px;"></span> MR1</p> <p><span style="border: 1px solid grey; display: inline-block; width: 15px; height: 10px;"></span> NA</p>	<p>Paper Size ISO A4</p> <p>0 50 100 150 200 250 300</p> <p>Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56</p>			<p>Transport for NSW Parramatta Light Rail Stage 2 EIS Non-Aboriginal Archaeological Assessment</p>	<p>Project No. 12557728 Revision No. C Date 09/03/2023</p>
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Figure 2-1: MRs for the HAMUs in Camellia



<p><b>Legend</b></p> <p> Project site</p> <p> Watercourse</p>	<p><b>Management Rating</b></p> <p> MR1</p> <p> MR2</p>	<p>Paper Size ISO A4</p> <p>0 50 100 150</p> <p>Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56</p>	<p>MAKING COMPLEX EASY</p>	<p>Transport for NSW Parramatta Light Rail Stage 2 EIS Non-Aboriginal Archaeological Assessment</p>	<p>Project No. 12557728 Revision No. C Date 09/03/2023</p>
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Figure 2-2: MRs for the HAMUs in Rydalmere

RESEARCH DESIGN & EXCAVATION METHODOLOGY



<p><b>Legend</b></p> <p>Project site</p>	<p><b>Management Rating</b></p> <p>MR1</p> <p>MR2</p>	<p>Paper Size ISO A4</p> <p>0 50 100 150 200</p> <p>Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56</p>		<p>Transport for NSW Parramatta Light Rail Stage 2 EIS Non-Aboriginal Archaeological Assessment</p>	<p>Project No. 12557728 Revision No. C Date 09/03/2023</p>
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Data source: Heritage - Dept 2022; Roads, Rail, Water - NSWDCS, 2022; Metmap 1:6 Scale - Created by doordmat

Figure 2-3: MRs for the HAMUs in Ermington





**Legend**

- Project site
- Watercourse
- Management Rating**
- MR3
- NA

Paper Size ISO A4

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



Transport for NSW  
Parramatta Light Rail Stage 2 EIS  
Non-Aboriginal Archaeological Assessment

Project No. 12557728  
Revision No. C  
Date 09/03/2023

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**Figure 2-4: MRs for the HAMUs in Melrose Park**

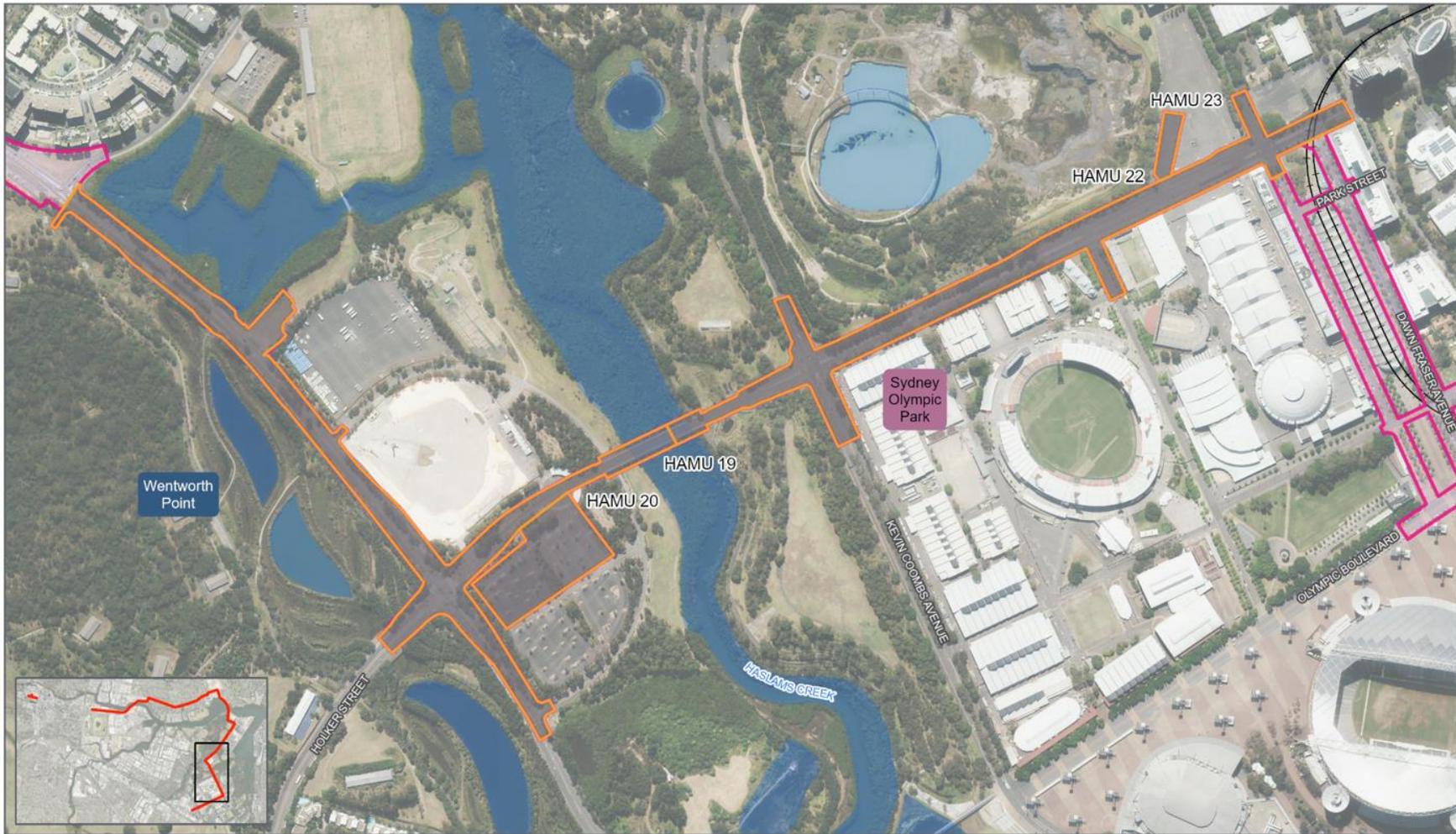


<b>Legend</b> Project site Watercourse <b>Management Rating</b> NA		Paper Size ISO A4  Metres Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56	 MAKING COMPLEX EASY	Transport for NSW Parramatta Light Rail Stage 2 EIS Non-Aboriginal Archaeological Assessment	Project No. 12557728 Revision No. C Date 09/03/2023
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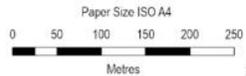
Data source: Heritage - DdH 2022, Roads, Rail, Water - 12557728, 2022, Metmap File Service - Created by: archdred

Figure 2-5: MRs for the HAMUs in Wentworth Point



**Legend**  
 [Pink outline] Project site  
 [Orange outline] Railway  
 [Blue line] Watercourse

**Management Rating**  
 [Orange outline] NA



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



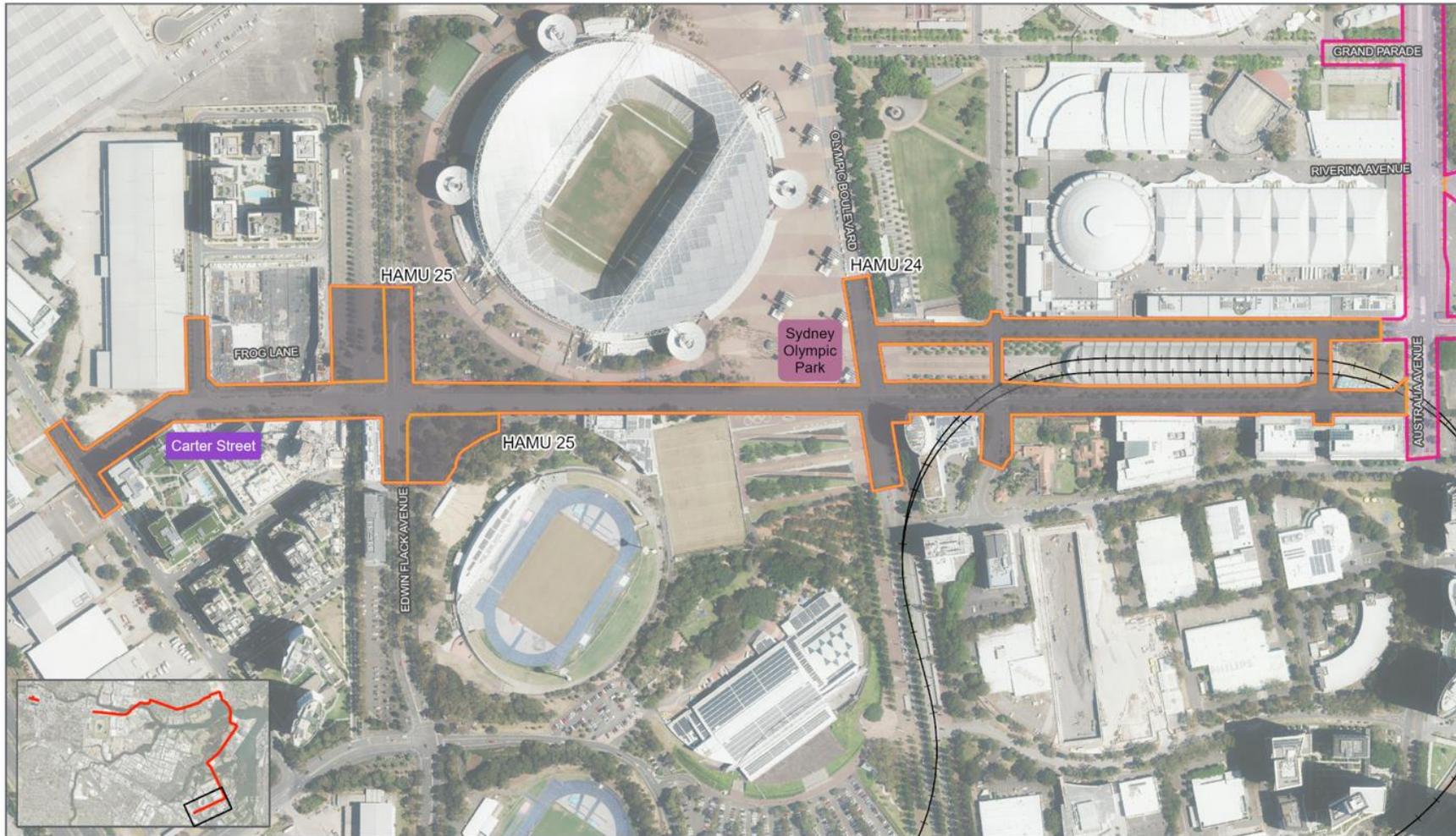
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 Non-Aboriginal Archaeological Assessment

Project No. 12557728  
 Revision No. C  
 Date 09/03/2023

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 File date: 09 Mar 2023 - 15:50

Data source: Heritage - DdH, 2022; Roads, Rail, Water - 16/WD/CS, 2022; Metremap Tile Service - Created by: dsmith

Figure 2-6: MRs for the HAMUs in the north of Sydney Olympic Park

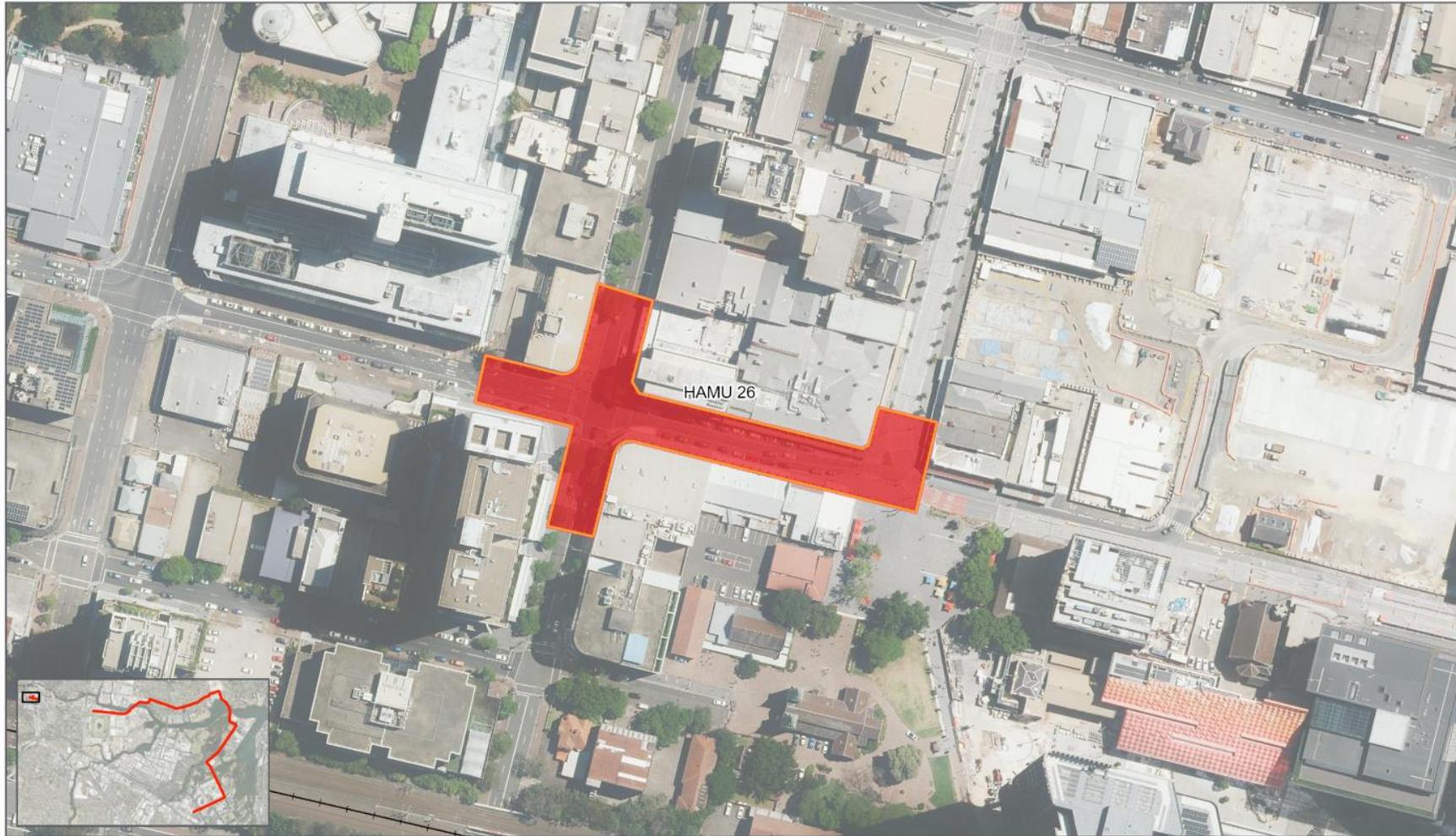


<b>Legend</b> [Pink Outline] Project site [Orange Outline] Management Rating [Black Line] Railway [NA] NA		Paper Size ISO A4 0 50 100 150 Metres Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56		Transport for NSW Parramatta Light Rail Stage 2 EIS Non-Aboriginal Archaeological Assessment	Project No. 12557728 Revision No. C Date 09/03/2023
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 Print date: 01 Mar 2023 - 15:50

Data source: Heritage - DoH, 2022; Roads, Rail, Water - NSWDCS, 2022; Metromap File Service - Created by itzhmmt

Figure 2-7: MRs for the HAMUs in the south of Sydney Olympic Park and Lidcombe



**Legend**

- Project site
- Railway

- Management Rating**
- MR1

Paper Size ISO A4  
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 Metres  
 Map Projection: Transverso Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



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 Print date: 09 Mar 2023 - 15:51

Data source: Heritage - Doh, 2022; Roads, Rail, Water - ISWDKCS, 2022; Metromap File Service - Created by dshmett

**Figure 2-8: MRs for the HAMU in the Paramatta CBD**

## 3 SITE SPECIFIC CONTEXT

### 3.1 HAMU 29 Western Eric Primrose Reserve

#### 3.1.1 Background

HAMU 29 is an approximately rectangular 215-metre-long, 75-metre wide area of parkland on the northern bank of the Parramatta River in Rydalmere. It covers the western half of Lot 1 DP 23579, most of Lot 968 DP 752028, and all of Lot 969 DP 752028. The western edge of the HAMU is bounded by Thackeray Street and the northern boundary is occupied with light industrial buildings. Both the northern and western edges are tree lined. To the east is further parkland including the present Rydalmere Wharf and associated infrastructure such as car park and amenities building. The southern boundary of the HAMU is the riverbank, along which there is a sandstone levee. A concrete footpath runs across the HAMU from southwest to northeast with the surrounding area being grassland. The HAMU gently slopes from the north to the south (Figure 3-1).

The HAMU is assessed as having **medium** archaeological potential for a **State** significant archaeological resource related to The Vineyard Estate (1791-1849). The project would have a **major** impact on this resource and the MR for this HAMU is 2.

#### 3.1.2 Historical context

A broad historical background for Rydalmere is included in Section 4.4 of the Updated HAA. The specific context of this HAMU is summarised in Table 3-1.

HAMU 29 was included in the grant of land (Portion 123 of Parish Field of Mars) made to John Carver on 3 January 1792. Carver's grant was managed by James Manning from at least 1809 and both were in the possession of Alex McDonald by 1814. McDonald sold Carver's former grant (including HAMU 29) to Hannibal Macarthur for inclusion into the Vineyard Estate (NSW LRS PASB 13445) on 10 December 1814. Macarthur remained in possession of the land until it sequestrated in 1848 and was subsequently sold. No specific evidence of the use of HAMU 29 has been identified for this period but generally all of the owners used the area for farming.

The Vineyard Estate was purchased by Reverend John Bede Polding in October 1848 and passed to Rodger Bede Vaughn on 25 February 1874. Following this it was leased to various individuals, including multiple members of the Shepherd family, although no specific evidence of the use of HAMU 29 has been located. A sketch plan of the area from around 1882 labels the land within and surrounding HAMU 29 as a "salt swamp" which would suggest that it was not particularly suitable for farming (Figure 3-2). A post-1925 subdivision plan for the Fairmount Estate lists the area as a recreation reserve indicating that no development had occurred by this time and that it was seen as being unsuitable for development.

Analysis of the aerial imagery available for this HAMU shows that in 1943 the area was undeveloped with no structures (Figure 3-3). A north to south pathway is present along the western boundary of the HAMU that runs from the Thackeray Street pedestrian and utility bridge towards Antoine Street, along the alignment of Thackeray Street. The riverbank appears to be unshored, lightly forested, and the river protrudes further inland in the centre of the HAMU. In the 1955 aerial the landform is largely similar but more heavily forested along the riverbank. However, by 1970, the riverbank had been formalised and curved, the central protrusion had been infilled and all foliage removed along the riverbank. This is likely around the time that the levee wall along the river was built. The 1986 aerial shows the area with no development although a few trees have grown along the northern and southern edges. The footpath was constructed between 1991 and 1994, likely around the same time the wharf and car park were built to the east.

**Table 3-1: Historical summary for HAMU 29**

Date	Events
1792	Land granted to John Carver
By 1814	Land in possession of Alex McDonald
1814	Sold to Hannibal Macarthur and incorporated into The Vineyard Estate
1848	Purchased by Reverend John Bede Polding
1874	Passes to Rev Rodger Bede Vaughn
c.1870-1920	Land leased to various individuals including members of the Shepherd family
1943	Land undeveloped
c.1970	Riverbank shored with small area of reclamation in centre

### 3.1.3 Potential archaeological evidence

As part of the initial farming landscape in the 18<sup>th</sup> and early 19<sup>th</sup> century, HAMU 29 has the potential to contain evidence relating to the agricultural land use from this period. This may include evidence of original landscape clearance and preparation such as burning, ditches, postholes, embankments, and fencelines. Evidence of the farming itself may include markers of the methods used, such as ard marks and plough lines, which in turn have the potential to contain palaeobotanical evidence such as seeds and pollen. The location of the HAMU, adjacent to the riverbank, means there is the potential for permanently waterlogged archaeological deposits. This would create an anerobic environment which is beneficial to the preservation of organic materials. The location also means there is the possibility of evidence of riverine activities which may include piers, wharfs and jetties.

### 3.1.4 Later impacts

No evidence of any substantial 19<sup>th</sup> or 20<sup>th</sup> century occupation or impact in this HAMU has been found. The area appears to have been largely unused until the mid-20<sup>th</sup> century when it was formalised for a public recreation space.

### 3.1.5 Known soil profile

Three boreholes were excavated and recorded within this HAMU in 2022 by WSP Golder as part of the waste classification process for the project (WSP Golder, 2022). The locations of the boreholes are shown in Figure 3-4. BH354, in the northwest corner of the HAMU, encountered a concrete slab 200 millimetres below the surface and was ceased at that point. The topsoil was noted as being a dark brown silty clay.

Approximately 67 metres east of this, BH355 was excavated in the centre of HAMU 29. Here the first 1.5 metres below the surface consisted of three layers of fill, all of which contain modern inclusion such as glass, Styrofoam, fabric and plastic, indicating that this substantial fill deposit relates to a relatively recent event. Beneath this fill was an intact alluvial soil profile consisting of one metre of brownish grey clayey silty sand with wood fragment, then 0.5 metres of grey with yellow orange clayey silty sand, followed by 0.5 metres of grey brown clayey silty sand. The presence of wood fragments in this soil indicates high organic preservation which would be favourable to evidence of early farming in this vicinity. The borehole continued for a further 11.4 metres below this through the geological stratigraphy that is highly unlikely to contain any archaeological evidence.

A further 80 metres east, in the northeastern corner of HAMU 29, LDBH356 was excavated. This borehole again encountered a fill event, 1.2 metres thick in total, which consisted of around 100 millimetres of silty sand, beneath which was around 200 millimetres of fine to coarse brown and grey clayey silty sand with brick and glass fragments. Below this was around 900 millimetres of pale grey silty sand. This fill deposit sat atop an alluvial soil profile that consisted of at least 1.8 metres of brown-black silty clay with organic particles. Collectively this shows a widespread fill event across HAMU 29 with good potential for organic preservation beneath.



Legend

-  HAMU
-  Project site
-  Local Heritage
-  Item - General
-  Railway
-  Waterbody
-  Watercourse

Paper Size ISO A4  
 0 10 20 30  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



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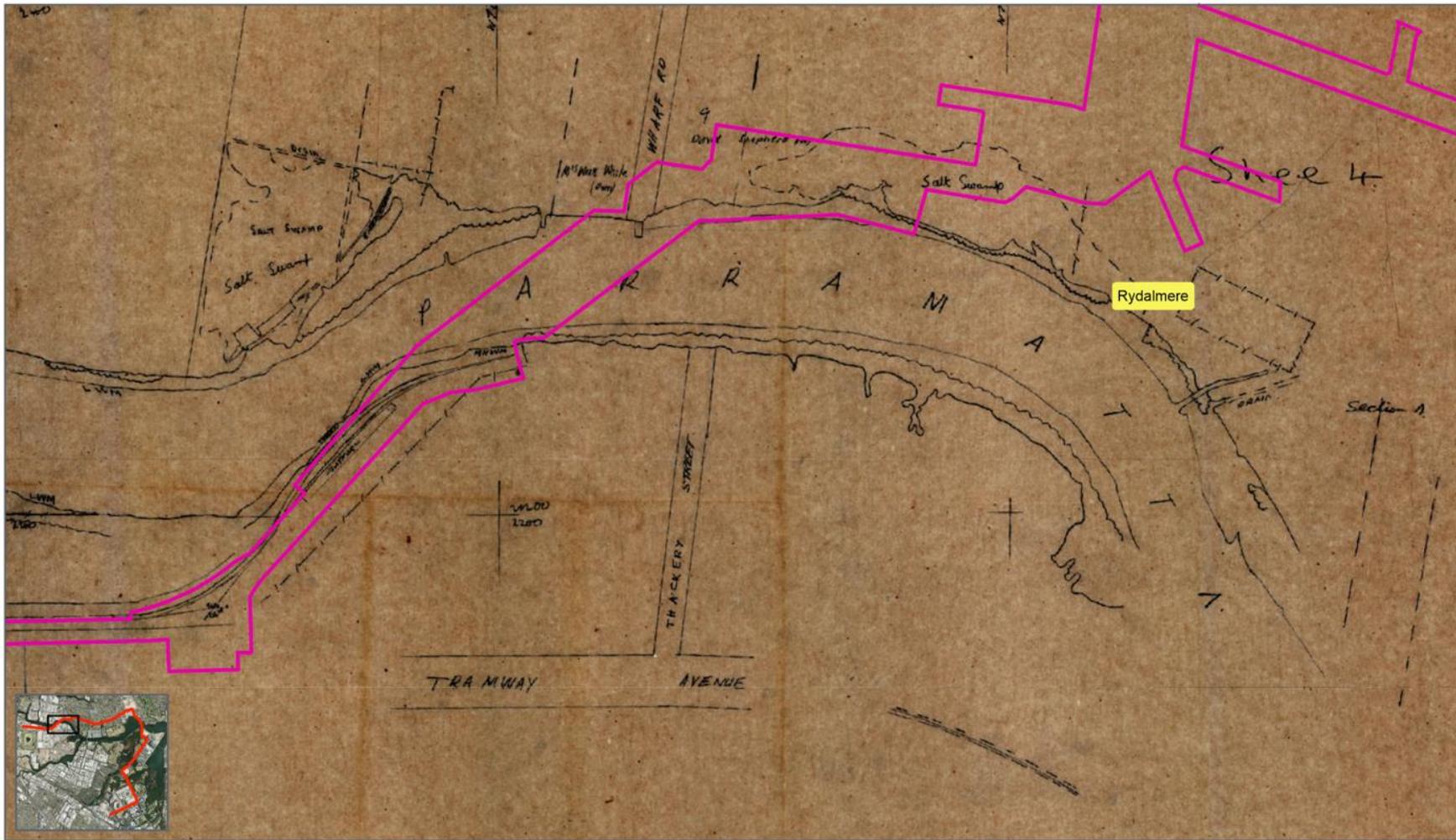
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 Print date: 09-Mar-2023 - 15:47

Data source: Heritage - DdH, 2022; Roads, Rail, Water - NSWDCS, 2022; Metronap Tie Service - Created by: d.doherty

Figure 3-1: The location of HAMU 29 in the present landscape with surrounding heritage listed items





Legend

Project site



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



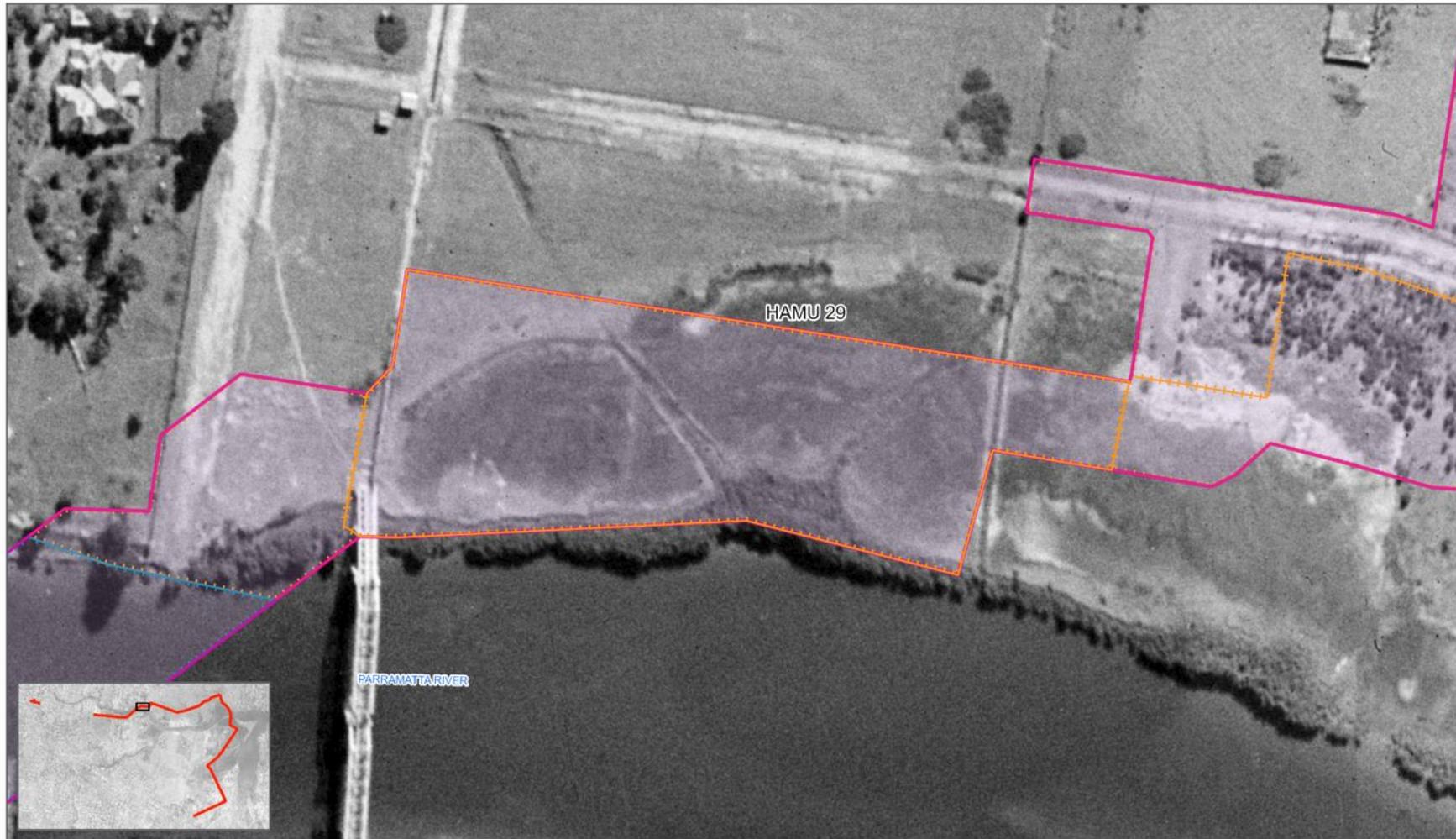
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 Print date: 10 Mar 2023 - 08:53

Data source: Roads, Rail, Water - NSWDCS, 2022; Metromap file Service - Created by dschmidt

Figure 3-2: Project site in Rydalmere post 1882. Most of HAMU 29 is labelled as Salt Swamp at this time. (Sketch plan of Rydalmere (Sheet 4))



Legend

- HAMU
- Project site

Paper Size ISO A4  
 0 10 20 30  
 Metres

Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



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Data source: itmmaps\_sydney/1943. Created by: ddb/mal

Figure 3-3: The location of HAMU 29 on the 1943 aerial photograph showing the landscape of the time including the wooded and shored river bank

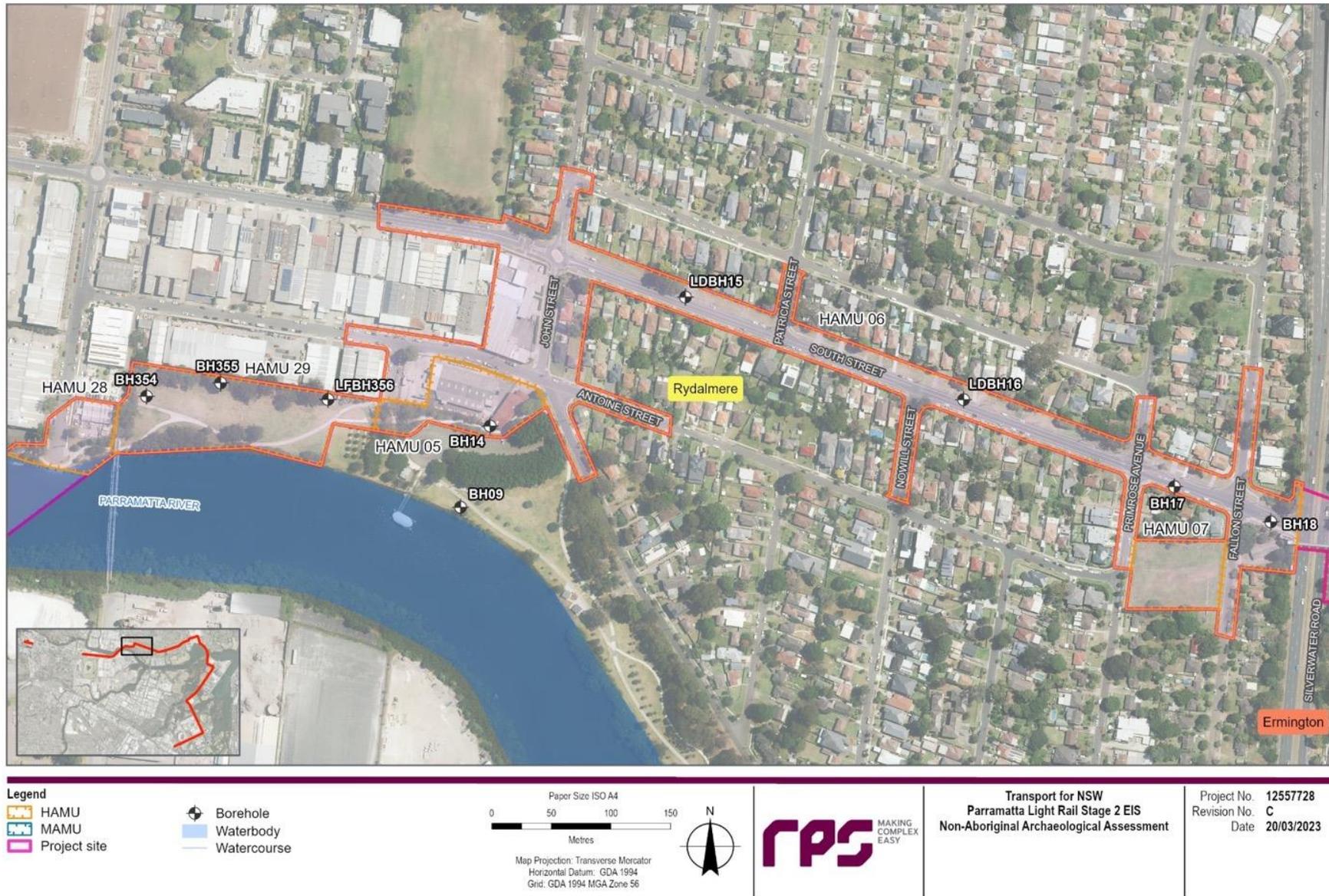


Figure 3-4: Location of boreholes excavated in Rydalmere including those within HAMU 29 in 2022

## 3.2 HAMU 07 Broadoaks Park

### 3.2.1 Background

HAMU 07 is an approximately parallelogram shaped area of public parkland in the centre of residential development in the southeastern corner of Rydalmere. The HAMU measures 83 metres long and 55 metres wide, and is approximately 500 metres north of the Parramatta River. The HAMU entirely covers Lot H DP 36567. The western boundary of the HAMU is Primrose Avenue, and the eastern boundary is Fallon Street. The northern and southern boundaries are marked by residential properties. The HAMU is presently grassland with rows of newly planted trees along the northern and southern boundaries. It is largely flat with a slight slope from east to west (Figure 3-5).

The HAMU has **medium** potential for a **State** significant archaeological resource related to The Vineyard Estate (1791-1849). The proposed works as part of the project will have a **minor** impact on the resource and based on this the MR for HAMU is 2.

### 3.2.2 Historical context

A broad historical background for Rydalmere is included in Section 4.4 of the Updated HAA. The context specific to this HAMU is summarised in Table 3-2.

HAMU 07 is part of the land grant (Portion 167 of Field of Mars Parish) initially made to Phillip Schaffer on 19 November 1794 and was incorporated into The Vineyard Estate by Hannibal Macarthur in August 1817. In October 1843, it went to the Australian Trust Company, eventually ending up in possession of Polding in October 1848 and subsequently Vaughn in February 1874. Vaughn sold the land in July 1874 with it ultimately ending up in the possession of the Savings Bank in August 1883 after the bankruptcy of the previous owners Palinlina Goold and Samuel Goold. By the early 20<sup>th</sup> century the land was in the possession of the Bank of New South Wales who leased it to various tenants including James Ingham, who as a dairyman may have used the land for grazing.

The area was included in various subdivisions throughout the later stages of the 19th century, and was included in the map drawn by Edward Hallen in 1878 but no detail is shown (Figure 3-6). By 1943, the area remained undeveloped and a tree lined creek traversed the HAMU from northeast to southwest (Figure 3-7). Examination of the aerial photography from that date indicated a large number of plough marks across the HAMU and surrounding landscape. By 1955, the surrounding environment had been developed into a large residential estate. At this time the southwest of the HAMU was occupied by four small rectangular buildings and an open yard. These were likely irregular housing or a small support site for the construction works occurring in the vicinity. The buildings had been cleared by 1965, at which time the present form of the park was well established with only a vague indication of the previous creek line still visible. By 1986, the area was completely cleared and grassed. The name Broadoaks Park was officially designated in June 1991 under the *Geographical Names Act 1966*.

**Table 3-2: Historical summary for HAMU 07**

Date	Events
1791	HAMU 07 in Philip Schaffer's grant
1817	Land incorporated into The Vineyard Estate by Macarthur
1848	Land owned by Polding
1878	HAMU 07 included in Hallen's subdivision
1943	No construction within the project site
By 1955	Irregular structures southwest corner of HAMU 07
By 1965	Demolition of structures southwest corner of HAMU 07
1971	Parkland established
1991	Name of Broadoaks Park formally gazetted

### 3.2.3 Potential archaeological evidence

As part of the initial farming landscape in the 18<sup>th</sup> and early 19<sup>th</sup> century, HAMU 07 has the potential to contain evidence relating to the agricultural land use from this period. Several of the first grants were actively cultivated with crops and other produce grown for private use and contribution to the public stores. Evidence of this widespread activity could encompass works for land preparation and management such as post-hole lines from fences, channels and ditches to manage water; cultivation in the form of tool marks or planting rows and evidence of the crops themselves identified through seeds or pollen. Associating this evidence with a particular farm or period of occupation would require identifying the location of the evidence within the 18<sup>th</sup> century property boundaries and stratigraphic evidence to provide a timeframe.

### 3.2.4 Later impacts

No evidence of any substantial 19<sup>th</sup> century occupation or impact in this HAMU has been found. The small cluster of irregular buildings in the southwest corner, present in the 1950s, likely had a minor impact in that area.

### 3.2.5 Known soil profile

A single borehole was excavated and recorded in the vicinity HAMU 07 in 2022 by WSP Golder as part of the waste classification process for the project (WSP Golder, 2022). The location of the borehole is shown in Figure 3-8. One borehole (BH17) was excavated 50 metres north of HAMU 07, in South Street, and this can partially help to provide an indication of the nature of the soil profile. However, as it is located in the street and not the parkland, it is unlikely to be fully representative. At BH17, the extant surface was 50 millimetres of asphalt, below which was around 1.4 metres of fine to coarse grained brown clayey sand with fine to coarse gravel. This was interpreted as fill and may relate to road construction. Beneath this was a 0.9 metre layer of brown to pale brown gravelly clay with fine to medium grained gravel, followed by 0.8 metres of brown, grey silty clay. These later two layers may relate to a residual soil that has the potential to contain archaeological evidence of early farming.

Test excavation undertaken in 2022 indicated that the southeastern corner of the HAMU has been stripped of its original topsoil and replaced with imported soil, likely after the 1940s. This change in topsoil is evidenced by the collection of mid-20<sup>th</sup> century building materials at the base of the modern topsoil. It is likely that this occurred during the formalisation of the HAMU as a public park.



Legend

- HAMU
- Project site
- Railway
- Waterbody
- Watercourse



Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



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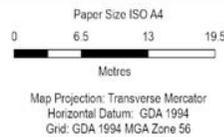
Figure 3-5: The location of HAMU 07 in the present landscape





Legend

-  HAMU
-  Project site



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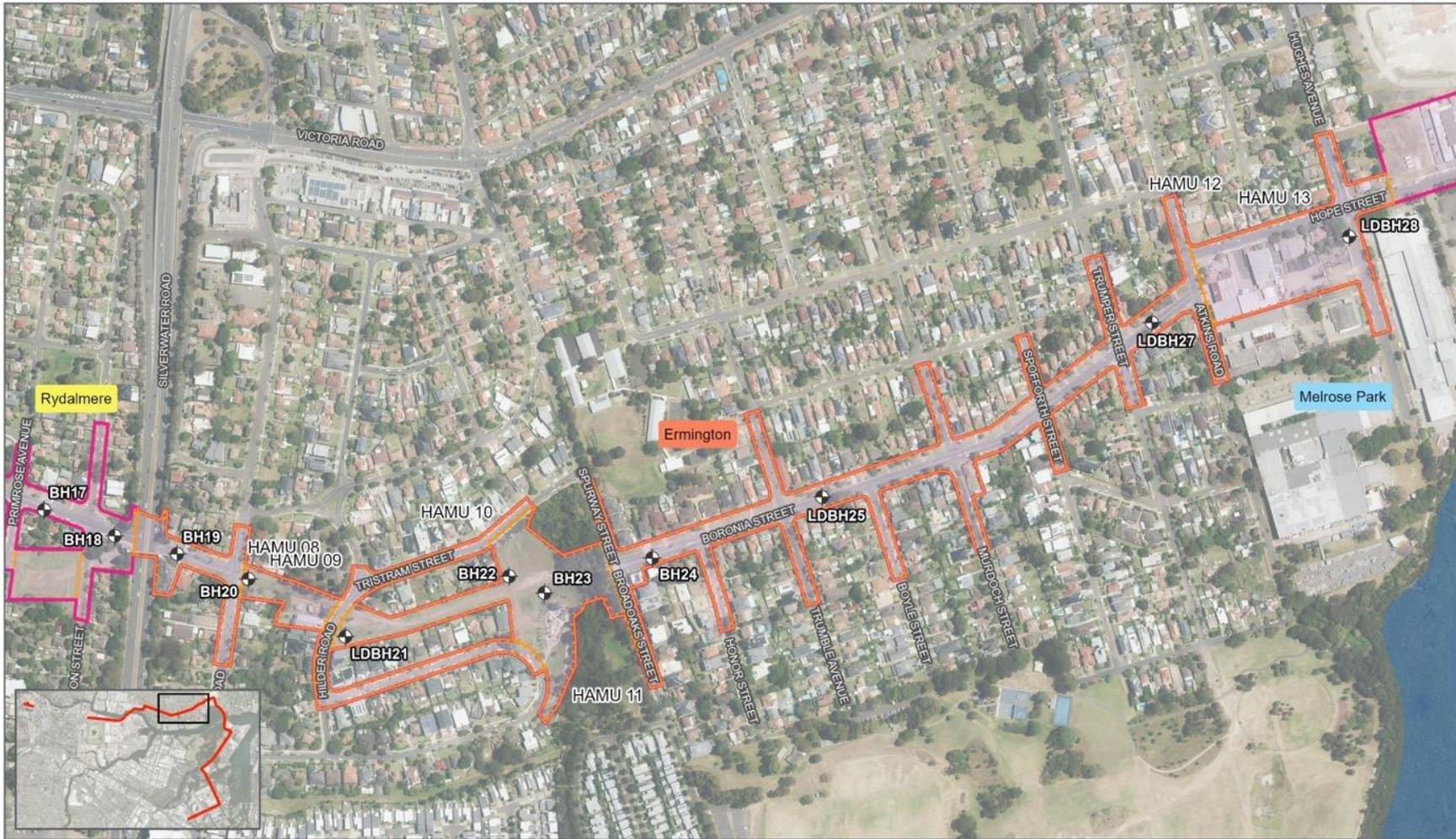
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Data source: aemaps\_sydney1943 Created by: dudmell

Figure 3-7: The location of HAMU 07 on the 1943 aerial photograph showing the landscape of the time including the east to west flowing creek





**Legend**  
 HAMU  
 MAMU  
 Project site

Borehole  
 Waterbody



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



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Data source: Heritage : Dull 2002; Roads, Rail, Water : NSWDCS, 2002; Metronsp Tile Service - Created by: dchamdi

Figure 3-8: Location of boreholes excavated across Ermington, including within HAMU 07 and HAMU 11 in 2022

### 3.3 HAMU 11 Ken Newman Park

#### 3.3.1 Background

HAMU 11 is an irregular cross shape in the centre of Ken Newman Park, a public park in the southwest of Ermington. At its largest extent it is around 340 metres east to west, and 230 metres north to south. It is located around 360 metres north of the Parramatta River. The HAMU is contained entirely within Lot A DP 36566. The western edge of the HAMU is bounded by Tristram Street, with the northern boundary running behind residential properties, a section of Tristram Street, and an area of parkland external to the project site. The eastern boundary is a combination of Tristram Street and external parkland. The southern boundary is parkland, Heysen Avenue and the rear of further residential properties. In the centre of the HAMU is a large playground with toilets and other amenities including numerous paths. A small creek runs along the eastern edge of the HAMU, there is a pond in the southwest, and the HAMU slopes steeply from north to south (Figure 3-9).

The HAMU has **medium** potential for a **State** significant archaeological resource related to Early Farming (1792-1871). The proposed works as part of the project will have a **major** impact on the resource and based on this the MR for HAMU is 2.

#### 3.3.2 Historical context

A broad historical background for Ermington is included in Section 4.5 of the Updated HAA. The context specific to this HAMU is summarised in Table 3-3.

HAMU 11 straddles the boundary of two early grants, with the western half being in the land granted to Isaac Tarr in 1799, and the eastern part in land granted to Alex McDonald in 1792 both of whom were former marines. McDonald was one of the more successful ex-marine farmers and established Rose Farm on the land and had built a mill by December 1792 and was selling flour. McDonald's grant passed to George McDonald who sold it in 1833 to Henry Harvey for £1,500. Harvey, a former convict, became one of the first aldermen of Parramatta Municipal Council in 1861. Rose Farm House was placed up for auction in 1872 (SMH 26 Feb 1872) at which time the sale included the 130 acres originally granted. The estate at the time is described as having an orangery of upwards of 1,000 trees, an orchard with apple, pear, and stone fruit trees and well grassed and watered paddocks. The main farm buildings were all southeast of the project site. The area was included in various subdivisions throughout the later stages of the 19<sup>th</sup> century, included in the map drawn by Edward Hallen in 1878, but no detail regarding construction or land use is shown (Figure 3-6).

In the 1943 aerials HAMU 11 is shown as largely cleared, with clear plough lines across much of the area and scattered trees (Figure 3-10). The route of Heysen Avenue continues straight across the HAMU at this time, rather than the current semi-circular alignment. There are various trackways across the HAMU and the creek is clearly visible flowing into the pond. By 1955, little had changed except for the curving of Heysen Avenue, but by 1965 the land had once again been largely cleared with most trees removed, and the creek appears diminished. By this time the number of trackways had increased, with clear routes along the centre of the HAMU running west to east, and a second route connecting Heysen Avenue with Broadoaks Street. The surrounding area was near fully developed by this time with residential properties along most surrounding streets. By 1986, little had changed although a few more trees had once again began to grow especially along the northern and eastern boundaries, and the southern section of the HAMU underwent extensive remodelling from 2004 to 2005, including increasing the size of the pond and building the toilets.

**Table 3-3: Historical summary for HAMU 11**

Date	Events
1792	Lands granted Isaac Tarr and Alex McDonald. HAMU 11 straddles the two grants.
c.1820	McDonald erects Rose Farm House east of HAMU 11
1872	Rose Farm House and surrounds placed for auction
By 1943	Subdivision and creation of surrounding roads
By 1965	Substantial residential construction surrounding the HAMU and more advanced informal trackways
c.2005	Extensive landscape remodelling in the south of the HAMU

### 3.3.3 Potential archaeological evidence

All of the early 19<sup>th</sup> century grants were farmed, with the crops likely to be similar to those found across the rest of the project site, being wheat and other grain crops, fruit and vegetables both for private use, and for contribution to the public stores. One property, McDonald's, had a mill for grinding wheat to flour. The location of the site of the mill is unknown but is presumably near a watercourse. In addition, as with other properties along this part of the Parramatta River, there is the potential for evidence of early farming. This could include works for land preparation and management such as post-hole lines from fences, channels and ditches to manage water; cultivation in the form of tool marks or planting rows, and evidence of the crops themselves identified through seeds or pollen. Associating this evidence with a particular farm or period of occupation would require identifying the location of the evidence within the 18<sup>th</sup> century property boundaries and stratigraphic evidence to provide a timeframe.

### 3.3.4 Later impacts

No evidence of any substantial occupation or impact during the 19<sup>th</sup> century in this HAMU has been found. Analysis of the historical aerials from 1943 onwards show no indication of 20<sup>th</sup> century construction in the northern part of the area where testing is proposed. There is a large water main running through the centre of the HAMU from west to east, the construction of which will have removed all potential archaeological evidence. The southern part of the HAMU was extensively landscaped, including the creation of an artificial pond around 2005 and it is likely that this activity would have had an impact on the archaeological resource in this area.

### 3.3.5 Known soil profile

Two boreholes were excavated and recorded within this HAMU in 2022 by WSP Golder as part of the waste classification process for the project (WSP Golder, 2022). The locations of the boreholes are shown in Figure 3-8. BH22 had a dark brown-grey clayey silt topsoil which was around 300 millimetres thick. This was above 1.3 metres of brown to dark brown clay that included iron indurated gravel in the lower part. This brown clay may be a residual soil that contains archaeological evidence. This overlies brown-red-grey gravelly clay and weathered natural shale. A similar profile was seen at BH23 where the topsoil was a dark brown clayey silt and around 250 millimetres thick. Below this was around 450 millimetres of brown silty clay that likely was a residual soil that may contain archaeological evidence. This was on top of extremely weathered shale natural consisting of grey-brown gravels with weathered shale fragments.



Legend

-  HAMU
-  Project site
- Local Heritage**
-  Item - General
-  Railway
-  Waterbody
-  Watercourse



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



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Data source: Heritage - EoH, 2022; Roads, Rail, Water - NSWDCS, 2022; Metronom File Service. Created by: dshmidt

Figure 3-9: The location of HAMU 11 in the present landscape with surrounding heritage listed items



Legend

- HAMU
- Project site



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Revision No. C  
Date 09/03/2023

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Print date: 09 Mar 2023 - 15:25

Data source: osmaps\_sydney1943 Created by: dachmed

Figure 3-10: The location of HAMU 11 on the 1943 aerial photograph showing the landscape of the time including the plough marks to the north and continuation of Heysen Avenue

## 3.4 HAMU 15 Ermington Wharf & Archer Park

### 3.4.1 Background

HAMU 15 is a loosely rectangular area of land focused around Archer Park in the south of Melrose Park. It is 295 metres long northwest to southeast and 75 metres wide southwest to northeast. The HAMU contains the northern sections of Lots 34 and 35 of DP 86234, and all of Lot 1 DP 528878. In addition to Archer Park, it includes a stretch of Waratah Street, Wharf Road and the extant Ermington Boat Ramp structure. It is bounded by Waratah Street to the north, industrial units to the northeast, residential properties along Wharf Road to the east and the mangroves of the Parramatta River to the south and west. Much of the HAMU is open parkland ringed by the road network. The stretch between Waratah Street and the Parramatta River in the northwest of the HAMU is forested, as is part of the central park section. Also within the central park is a large high voltage transmission tower. The centre west part of the HAMU contains a car park and to the south is a public toilet block in addition to the current Ermington Wharf. The HAMU is generally flat with a slight slope southwest towards the river (Figure 3-11).

The HAMU has **low** potential for a **State** significant archaeological resource related to Early Farming and Edmund Lockyer (1792–1827) and **high** potential for a **State/locally** significant archaeological resource relating to Ermington Wharf (c.1820s–c.1930). The proposed works as part of the project will have a **major** impact on the resource and based on this the MR for HAMU is 3.

### 3.4.2 Historical context

A broad historical background for Melrose Park is included in Section 4.6 of the Updated HAA. The context specific to this HAMU is summarised in Table 3-4.

HAMU 15 was originally part of John Colethread's January 1792 grant. Colethread died around August 1802 and by 1805 the land was in the possession of Samuel Marsden who leased the property rather than use it himself, with leases being registered first to William Barns, then Edward New, and Pieter L Campbelltown. When Samuel died in 1838 the land was inherited by his daughter Elizabeth Mary Marsden who, following her marriage to Henry Hodgkinson Bobart, took her husbands' name and became commonly known in the colony as Mrs Bobart. Elizabeth subdivided the land and had multiple tenants, with the area gradually becoming known as the Village of Ermington. The area of HAMU 15 was not included in the early subdivisions, being shown as separate in the 1841 subdivision plan (Figure 3-12), but was included by 1858 (Figure 3-13).

Although not included in the subdivision, the 1841 plan does show a farm complex within HAMU 15. This consists of a rectangular paddock with a smaller enclosure and structure attached to its northwestern side and two larger buildings to the southeast, one of which is named as "Mr Eyre's Cottage". Also at this time, the first structure of Ermington Wharf had been established, being roughly rectangular and extending around 70 metres from the shore and with a small building at the riverbank on the eastern side. By 1858, only the cottage and wharf structure remained with the rest of the area divided into small lots.

By the early 20<sup>th</sup> century, John Woodcock was in possession of the land between the foreshore and Waratah Street. John Woodcock was a pioneer of the district. He was born in 1840 (CA&FA, 23 Aug 1919) and worked as a fruit commission agent. He resided in Ermington for over 50 years prior to his death in 1919. He lived on Wharf Road (CA&FA, 20 Jun 1908). In 1943, the southern part of the HAMU, where the 19<sup>th</sup> century occupation was focused, appears to have been entirely cleared (Figure 3-14). By this time Waratah Street had been established and there are two square properties in roughly rectangular lots at the junction of Wharf Road and Waratah Street, northwest of these another lot appears under cultivation. There does not appear to be any buildings in the vicinity of Ermington Wharf. The two square buildings are still present in 1971 but are gone by 1986. By 1986, the current arrangement of the area had been established with the car park, toilet block and high voltage transmission tower all built. The extant wharf was constructed around 1995 and upgraded in 2010.

See section 4.6.3.1 of the Updated HAA for a detailed history of Ermington Wharf.

**Table 3-4: Historical summary for HAMU 15**

Date	Events
1792	Land granted to Isaac Archer and John Colethread
By 1805	Samuel Marsden in possession of land in the area
By 1828	Ermington Wharf established
1838	Land passes from Samuel Marsden to Mrs Bobart
By 1841	Multiple buildings along the river west of Ermington Wharf; a large rectangular paddock, barn, and Mr Eyre's Cottage
1858	Eyre's Cottages still present
1919	Ermington baths established
1943	Few buildings but numerous cropmarks indicating rural activities. Baths no longer present.
1971-1986	Modification of the foreshore including artificial peninsular

### 3.4.3 Potential archaeological evidence

All of the early 19<sup>th</sup> century grants were farmed, with the crops likely to be similar to those found across the rest of the project site, being wheat and other grain crops, fruit, and vegetables both for private use and contribution to the public stores. The scope of evidence discussed for other agricultural properties within the project site is likely to be the same for this area. This could include works for land preparation and management such as post-hole lines from fences, channels and ditches to manage water; cultivation in the form of tool marks or planting rows and evidence of the crops themselves identified through seeds or pollen. Associating this evidence with a particular farm or period of occupation would require identifying the location of the evidence within the 18<sup>th</sup> century property boundaries and stratigraphic evidence to provide a timeframe.

There is potential for structural evidence of the many older iterations of the Ermington Wharf to survive within the project site and in the adjacent land. Additionally, examination of historical plans show that a small structure was built on the land end of the wharf which may be identified through archaeological evidence.

Eyre's Cottage and all its identified improvements are included in the project site; the cottage survived into the second half of the 19<sup>th</sup> century in an extended form but the other recorded improvements of the 1840s did not. There may be evidence of the cottage and other structures as well as the garden and cultivated areas around this location. There is a large stone well or cistern visible in bushland in the vicinity of Eyre's Cottage that may relate to this period. Archaeological evidence could encompass structural evidence, landscape works, planting patterns, water management and artefact assemblages amongst others.

### 3.4.4 Later impacts

During the 19<sup>th</sup> century the area remained largely rural with only occasional buildings. Mr Eyre's Cottage is still present in 1858 but no direct evidence of it beyond this date has been found. Later 19<sup>th</sup> century photographs show that numerous smaller structures and fences had been built within the HAMU, the construction of which may have had a small impact.

By 1943, the area was still being farmed with small fields evident. Towards Wharf Road a cluster of three buildings are present, all of which may have left a minor impact. These buildings are still present into the 1970s but were demolished by 1986 by which time the extant car park had been built. The construction of the car park may have had a minor impact on the potential archaeological resource if extensive ground levelling occurred as part of the work.

### 3.4.5 Known soil profile

Five boreholes were excavated and recorded within this area in 2022 by WSP Golder as part of the waste classification process for the project (WSP Golder, 2022). The locations of the boreholes are shown in Figure 3-15. Two were located in HAMU 14 (BH29a and BH30) and the remaining three are in HAMU 15. Those in HAMU 14 provide a useful proxy for areas of HAMU 15 that were not included. Both of those in HAMU 14 show an 80 to 90 millimetre layer of asphalt atop gravelly clayey sand fill. At BH29a, this fill layer was over

three metres deep, indicating ground leveling activities took place. This borehole was excavated in a car park, the construction of which may account for the depth of fill. At BH30, dug in Waratah Street, the gravelly fill is road base and only around 300 millimetres thick. Beneath it around 900 millimetres of brown clay, which may be old buried soil; it has the potential to contain archaeological evidence.

Three boreholes were excavated in the vicinity of Archer Park in HAMU 15 (LDBH31, BH32, and BH37). LDBH31 was excavated adjacent to Waratah Street where beneath 100 millimetres of gravelly sand fill there was a 500 millimetres thick layer of brown grey clay which may be an old land surface that contains historical archaeological evidence. The borehole depth did not extend any further than this. BH32 showed a similar profile to BH30 and was also located in Waratah Street. At this borehole there was 60 millimetres of asphalt, above 300 millimetres of road base, which was found directly atop the natural siltstone. BH37 was excavated within the car park close to the riverbank. Here there was around 200 millimetres of modern car park related fill, beneath which was one metre of red brown clay which became browner towards its base. This was laid upon around 700 millimetres of alluvial silty clay before sandstone bedrock was reached close to two metres down. Both the fill and alluvium in this area have the potential for historical archaeological evidence.





Legend

-  HAMU
-  Project site
- Local Heritage**
-  Item - General
-  Railway
-  Waterbody
-  Watercourse



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



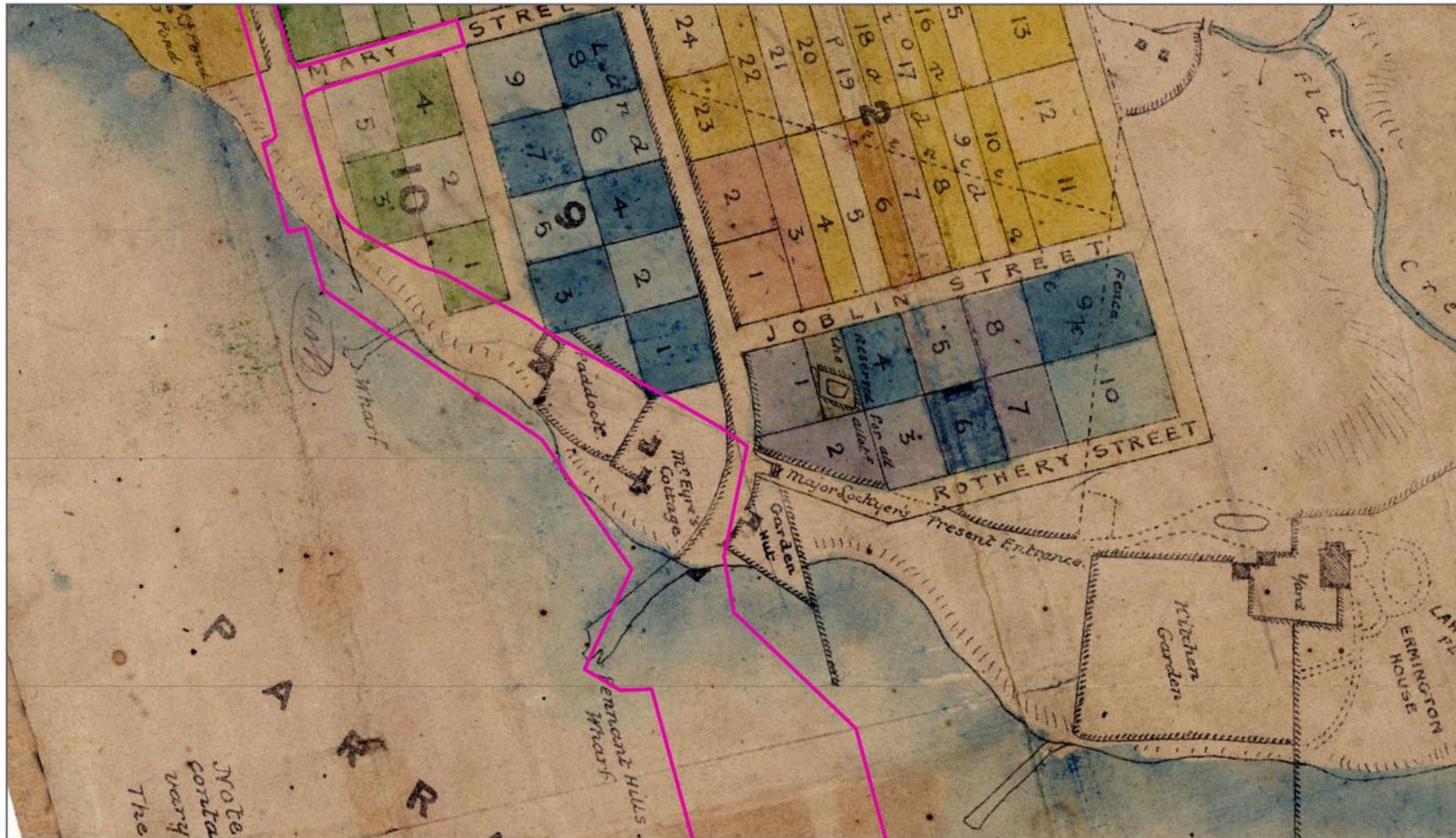
Transport for NSW  
 Parramatta Light Rail Stage 2 EIS  
 Non-Aboriginal Archaeological Assessment

Project No. 12557728  
 Revision No. C  
 Date 09/03/2023

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 Print date: 09 Mar 2023 - 15:42

Data source: Heritage - DoI, 2022; Roads, Rail, Water - NSWDCS, 2022; Metronom Tile Service - Created by: dschmidt

Figure 3-11: The location of HAMU 15 in the present landscape with surrounding heritage listed items.



**Legend**  
 Project site

Paper Size ISO A4  
 0 75  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



Transport for NSW  
 Parramatta Light Rail Stage 2 EIS  
 Non-Aboriginal Archaeological Assessment

Project No. 12557728  
 Revision No. C  
 Date 10/03/2023

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 Print date: 10 Mar 2023 08:54

Data source: Roads, Rail, Water - NSWDCS, 2022; Metronap Tile Service. Created by: dschmidt

Figure 3-12: The project site in 1841 during subdivision. The arrangement of buildings within HAMU 15 can be clearly seen (SLNSW, FL3712001).



<p><b>Legend</b></p> <p><span style="border: 2px solid pink; display: inline-block; width: 20px; height: 10px;"></span> Project site</p>	<p>Paper Size ISO A4</p> <p>0 100 Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56</p>	 	<p>Transport for NSW Parramatta Light Rail Stage 2 EIS Non-Aboriginal Archaeological Assessment</p>	<p>Project No. 12557728 Revision No. C Date 10/03/2023</p>
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Data source: Roads, Rail, Water - NSWDCS, 2022; Metmap Tile Service - Created by d:\dram

**Figure 3-13: The project site in 1858 by which time much of the previous farming features have been removed with only the cottage remaining (SLNSW, 017-Z/SP/E11/17, FL8942741)**

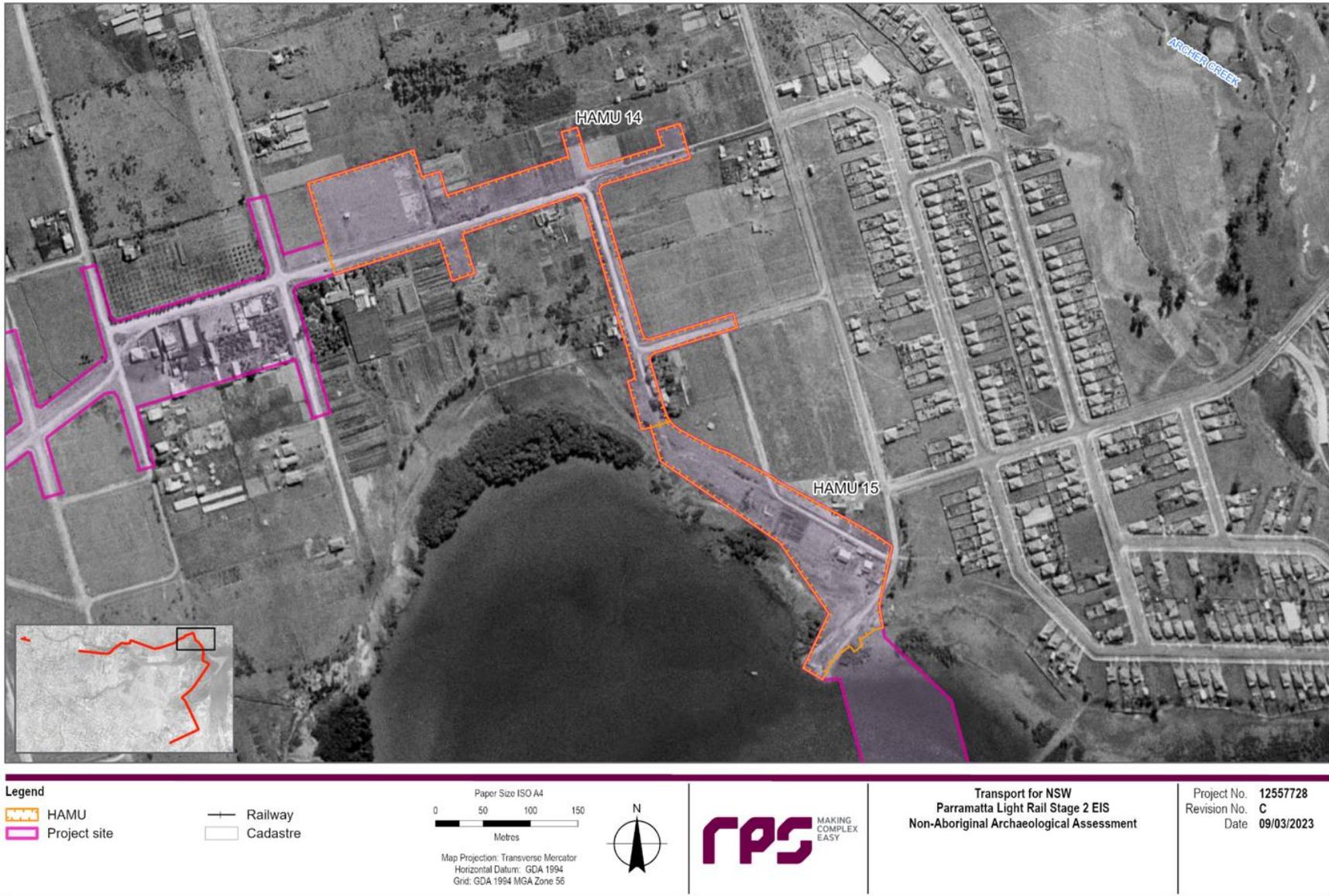


Figure 3-14: The location of HAMU 15 on the 1943 aerial photograph showing the landscape of the time including the structures along Waratah Street



Figure 3-15: Location of boreholes excavated in Melrose Park, including within HAMU 15 in 2022

## 4 ARCHAEOLOGICAL EXCAVATION METHODOLOGY

### 4.1 Overview

Each individual HAMU within the project site has been assigned a MR including those areas for where currently there is no assessed archaeological potential. The following archaeological methodologies apply to all areas that have been assigned the corresponding MR.

### 4.2 General provisions

#### 4.2.1 Heritage induction

For all areas of the project site that include a subsurface component or works in close proximity to a heritage listed item a comprehensive induction for all workers should take place. Only workers who have completed the induction should be allowed to undertake works in these areas. The heritage induction will include:

- an explanation of the historical context of the site including its archaeological potential and level of assessed significance
- an explanation of the types of likely archaeological evidence to be present including brick and sandstone walls, pits postholes and other dug features, and artefacts
- a description of what to do if heritage items are found
- clear guidance on what areas cannot be impacted and where works should be avoided (“no-go areas”)
- a reminder of their legal obligations under both the *Heritage Act 1977* and *National Parks and Wildlife Act 1974*.

#### 4.2.2 Staging of works

##### 4.2.2.1 Early works

During early and enabling works, the option for archaeological monitoring should be provided in all HAMUs that have an MR of 1 or higher. Archaeological monitoring is the process of a suitably qualified and experienced archaeologist supervising ground disturbance works undertaken for a non-archaeological purpose. This may include utilities investigations, soil contamination testing and other pre-construction activities. Should this monitoring work encounter an intact archaeological resource, this may necessitate a reassessment of archaeological potential for the area, and subsequently a change in MR. The decision to monitor would be made by the Excavation Directors in consultation with the project team. Primarily the decision will be based on:

- the size and depth of the subsurface impact
- the location of the impact noting that the level of disturbance can vary greatly within a relatively small area such as beneath a road (high disturbance) as opposed to the road verges (low disturbance)
- the method of excavation proposed for the works. Some methods such as vacuum excavation can make archaeological monitoring complex and challenging; and this would influence the decision to monitor.

For areas which have an MR which is N/A, unexpected finds protocols apply to all works including early works as detailed in Section 4.3.

##### 4.2.2.2 Main works

All test excavation (HAMUs with MR2) should be undertaken prior to main works so that sufficient time is allowed for should the need to escalate the scale of the excavation arise. The salvage excavation required for HAMUs with MR3 should be undertaken prior to mains works allowing for enough time to fully complete the archaeological excavation, noting the possibility of escalations explained below in Section 4.2.3

### 4.2.3 Escalation

The MR system used in this RDEM is designed so that the scale of archaeological work in each HAMU can be increased or decreased if required. For example, if during monitoring in a HAMU rated MR1 an intact archaeological resource is found then it can be escalated to MR2 which would facilitate testing under the methodology proposed here. If during the subsequent testing it was then found that salvage excavation would be appropriate, it can be escalated again to MR3 and this methodology followed. All escalations would be at the discretion of the Excavation Director in collaboration with the project team, and where necessary following consultation with Heritage NSW. Likewise if during test excavations, in an area graded MR2, no evidence of an intact archaeological resource is found, or the resource is highly fragmentary, it may be suitable to deescalate the HAMU to MR1.

The demarcation of individual HAMUs was based on commonalities in previous land use in areas. This enabled a broad MR to be applied to the entire HAMU. Where applicable testing and monitoring may enable a refinement of the MRs within HAMUs so that some areas within the HAMU are subjected to more rigorous mitigation than others should impact to resources found to be unavoidable.

### 4.2.4 Notification to Heritage NSW

If at any time a State significant archaeological resource is encountered Heritage NSW must be notified by the project team. The significance of an archaeological resource is somewhat linked to its intactness and can change once found based on how intact it is found to be. In all instances the primary approach to State significant archaeological resources is design alteration for the project to allow for *in situ* preservation. If a locally significant archaeological resource that contains relics is found then Heritage NSW must be notified under s146 of the *Heritage Act 1977*.

### 4.2.5 Triggers for design review

There is the possibility of *in situ* State significant archaeological resources across the project site. Given the scarcity and importance of these resources all attempts should be made to avoid disturbing or excavating these deposits. The finite nature of the archaeological resource means that once disturbed, even through archaeological excavation, the resource is irrevocably destroyed. As such, if State significant archaeological resources are found, following notification to Heritage NSW, design review should take place. Design review should also be considered if extensive structural remains such as building footings, wells, or cesspits are encountered, irrespective of their level of significance, as these substantial remains can often be well utilised in later site interpretation especially in areas that won't be directly built upon such as parks and grass verges.

### 4.2.6 Interface with Aboriginal archaeological program

Aboriginal archaeology is addressed in the project Aboriginal Cultural Heritage Assessment Report that contains a project specific methodology. Due to the buried nature of archaeological evidence, there is likely to be a physical interaction between historical archaeological artefacts and Aboriginal objects within the ground. This means an integrated and considered approach needs to be taken to ensure an appropriate outcome that meets the requirements of both the *Heritage Act 1977* and the *National Parks and Wildlife Act 1974*. The approach taken here is designed to be flexible and adaptable so that it can change based on consultation with Registered Aboriginal Parties (RAPs) during works. Specific provisions for each MR regarding Aboriginal archaeological are included where relevant below.

### 4.2.7 Artefact management

An Artefact Conservation Management Plan (ACMP) must be prepared to provide clear guidance on the management of artefacts during excavation, post-excavation analysis, and in perpetuity. The ACMP should clearly establish guidance for when artefacts should be retained to ensure that those with serious research potential are available, and also provide guidance on what information needs to be gathered prior to discard. Likewise, the ACMP should identify other characteristics, such as display value that may influence retention, and indicate what data is required of artefacts prior to discard.

## 4.3 Management rating for HAMUs that do not meet the threshold of significance

### 4.3.1 Archaeological methodology

There are nine HAMUs that have been assessed as not likely to have an historical archaeological resource that meets the threshold of significance (the MR is N/A). In these areas it is not necessary for archaeological investigations to take place prior to works commencing. An unexpected finds protocol must apply to all of these areas as despite this assessment as the small possibility of significant archaeological evidence being present does remain. There is also the possibility of escalation as outlined in Section 4.2.3. Transport for NSW has a comprehensive unexpected finds protocol in place (Transport for NSW Unexpected Heritage Items Procedure July 2022) which covers historical and Aboriginal archaeology, and human skeletal remains. This protocol must apply to all areas of the project, including those where the MR is N/A.

### 4.3.2 Artefacts

It is not anticipated that areas rated N/A will contain any artefacts that require further work. Should artefacts be present then they must be assessed to ascertain whether they are *relics* as defined by the *Heritage Act 1977* and be managed in accordance with any unexpected finds protocols that are in place.

### 4.3.3 Post investigation reporting

Any unexpected finds that are investigated must be reported on irrespective of whether the objects or site examined have significance or form part of an archaeological resource. The Transport for NSW Unexpected Heritage Items Procedure July 2022 must be followed in these instances. The specific protocols outlined in the document that instruct reporting include:

- Step 1.8 – *“Inform relevant Transport Environment and Sustainability staff of item by providing them with the completed Appendix B.”*
- Step 3.7 – *“The regulator can be notified informally by telephone at this stage by the archaeologist, Project Manager (or delegate) or Works Supervisor – RM. Any verbal conversations with regulators must be noted on the project file for future reference.”*
- Step 5 – *“Notify the regulator, if required”.*

### 4.3.4 Application

This MR applies to all areas of the project site that have been assessed as not likely having a historical archaeological resource that meets the threshold of significance. At present these are HAMUs:

- 14 – Hope & Waratah Street, Melrose Park
- 17 – Hill Road, Wentworth Point
- 18 – East of Newington Nature Reserve, Sydney Olympic Park
- 19 – Hill Road, including compound & Holker Busway north of Haslams Creek, Sydney Olympic Park
- 20 – Car park P5b, Sydney Olympic Park
- 22 – Holker Busway south of Haslams Creek & Australia Avenue, Sydney Olympic Park
- 23 – Car Park P6, Sydney Olympic Park
- 24 – Dawn Fraser Avenue, Murry Rose Avenue, & Uhrig Road, Sydney Olympic Park
- 25 – Compounds along Edwin Flack Avenue, Sydney Olympic Park.



### 4.4 MR1

#### 4.4.1 Archaeological methodology

There are currently 11 HAMUs to which MR1 applies, all of which have either low potential for a local or State significant archaeological resource, or medium potential for a locally significant archaeological resource. Most of these HAMUs are along roads, many of which were laid out during the mid-20<sup>th</sup> century residential growth across the project site. Many are also contained within areas that were used for early farming in the first decades of the new colony. As such, important and useful archaeological evidence may have been present in the past but a degree of disturbance has likely occurred since. The following methodology applies:

- All contractors and other staff involved in subsurface works will need to undertake the heritage induction.
- Any program of archaeological investigations should be overseen by an archaeologist who is suitably qualified and experienced in managing locally significant archaeological sites.
- The option to monitor subsurface impacts in these areas should be provided especially in instances where there are likely areas of lesser impact. The purpose of the monitoring is to ensure that if potential archaeological evidence is exposed it can be effectively and appropriately managed. The decision of whether to monitor will be undertaken by the Excavation Directors in consultation with the project team.
- Should a suspected archaeological artefact, feature, or resource be identified all works should cease to allow for full investigation of the item.
- If the archaeological evidence is of local significance and redesign is not found to be a viable option, then it may be necessary to salvage the archaeological resource as per the methodology outlined in Section 4.6. The decision to salvage will be made by the Excavation Directors in consultation with the project team and consider the research potential of the encountered resource and the impacts to it. If it is found to be of State significance, then Heritage NSW must be consulted.
- All monitoring works should be recorded including photographs, detailed notes and sketch plans. If a locally significant archaeological resource is found it should be recorded through single context recording and include digital survey with RLs.
- All monitoring should be undertaken in collaboration with the Aboriginal archaeology program and follow any guidance contained therein such as the presence of registered Aboriginal parties (RAPs) on site during works.

#### 4.4.2 Artefacts

All policies regarding artefacts would follow the guidance provided in the ACMP as outlined in Section 4.2.7. Artefacts would not usually be recovered from regular monitoring activities where an archaeological resource is not present. Isolated historical items such as bottles or ceramics do not necessarily indicate an archaeological resource that meets the threshold of significance.

Should substantial volumes of artefacts, that may have research potential, be encountered during the monitoring then works must stop in the location. Once ceased, the area must be assessed for its significance and depending on the results of the assessment the appropriate methodology in Section 4.5.2 or Section 4.6.2 undertaken.

#### 4.4.3 Post investigation reporting

Following the completion of monitoring a report that details all work undertaken should be produced. Any finds that are investigated should be reported on irrespective of whether the objects or site examined have significance or form part of an archaeological resource. If locally significant archaeological resources are found then the reporting requirements outlined in Section 4.5.3 should be followed.

### 4.4.4 Application

This MR applies to all areas that have either medium or low potential for a locally significant archaeological resource. At present these are HAMUs:

- 1 – Industrial Railway north of Grand Avenue & 2 Grand Avenue, Camellia
- 27 – Sandown Line, Camellia
- 28 – Park Road, Rydalmere
- 5 – Rydalmere Wharf and Park, Rydalmere
- 6 – John Street, South Street, Antoine Street & Fallon Street, Rydalmere
- 8 – South Street & River Road, Ermington
- 9 – Corridor between River Road & Hilder Road, Ermington
- 10 – Tristram Street, Hilder Road & Heysen Avenue, Ermington
- 12 – Boronia Street & surrounds, Ermington
- 13 – Atkins Road, Hughes Avenue, & Hope Street block, Ermington
- 26 – Parramatta CBD, Parramatta.

## 4.5 MR2

### 4.5.1 Archaeological methodology

This MR applies currently to three HAMUs in the project site. All three have medium potential for a State significant archaeological resource. All three are in parklands which were part of 18<sup>th</sup> century farms and have never been subjected to major development. This means subsequent impacts to the archaeological record are likely to be low and, conversely, preservation of archaeological evidence high. A strategy of test excavation applies in these areas which is an appropriate sampling strategy for resources with this level of significance as it intends to confirm the presence of archaeological evidence first so that design review can occur if required. The following methodology applies:

- All contractors and other staff involved in subsurface works will need to undertake the heritage induction.
- The program of archaeological investigations should be overseen by an archaeologist who is suitably qualified and experienced and who meets the criteria of a State significant Excavation Director as defined by the Heritage Council of NSW.
- A program of test excavation should be undertaken at each location to investigate the findings of the historical archaeological assessment. This program should include:
  - a minimum of four machine excavated trenches no smaller than 15 metre x 1 metre excavated from the surface through to historical archaeological sterile deposits
  - all trenches should be supervised by the Primary Excavation Director and excavated using a flat bucket on an excavator no greater than 20 tonnes
    - If required, trenches are to be benched rather than battered as this allows for stratigraphic recording.
  - Where archaeological evidence is encountered, utilise a combination of highly targeted mechanical excavation and hand excavation to excavate spoil so that the evidence may be exposed, cleaned and recorded.
  - All trenches should be hand cleaned at the base of each stratigraphic layer or where archaeological features are encountered unless the Excavation Director deems it unnecessary.
  - Representative samples of organic materials, building materials, and soil may be taken if deemed necessary by the Excavation Director.

- Reduced levels (RLs) of stratigraphic units and features must be recorded.
- Georeferenced high resolution photogrammetric recording should be undertaken at appropriate intervals where necessary.
- A comprehensive site archive should be generated that includes: single context recording, photographs with scale and north arrows, digital survey, site plans at a scale no greater than 1:50, and section drawings of the trench and archaeological features where appropriate.
- Following excavations, the site will be made good in line with expectations and requirements of the Transport for NSW.
- This program should be planned and executed alongside the Aboriginal archaeology program as there is likely to be potential for both archaeological resources to be present in these areas. This interaction may include:
  - excavating a number of Aboriginal archaeology test pits prior to mechanical trenches
  - monitoring of historical archaeology work for Aboriginal objects
  - sieving a sample of the excavated material.

### 4.5.2 Artefacts

All policies regarding artefacts would follow guidance in the ACMP as outlined in Section 4.2.7. Artefacts found in secure (i.e. undisturbed) contexts during the test excavation will be recovered. All artefacts will be collected according to their specific contexts and placed into labelled bags or trays. Once collected the Excavation Director may, if required, engage an artefact specialist to examine the assemblage and retain any artefacts that contribute towards the research potential of the archaeological resource. The appointment of an artefact specialist would be made at the discretion of the Excavation Director and be based on the quantity and type of artefacts, and the experience of the Excavation Director. The retained artefacts would then be cleaned, dried, and stored for post-investigation analysis. Any items that require immediate care such as metal or organic finds will be managed in line with *Stabilising Stuff – A Guide for Conserving Archaeological Finds in the Field* (Heritage Council of NSW, 2012).

Not all artefacts found in unsecure contexts and unstratified fills will be retained. Instead, a representative sample that demonstrates the general nature of the assemblage will be kept. In addition, artefacts that may have display potential may also be retained for post-excavation interpretation. This will include:

- complete vessels, partial vessels with bases or rims, any artefact with unique identifiers, glass or ceramic fragments with patterns not evidenced by more intact examples
- Ferrous and copper nails that are identifiable and other identifiable metal objects
- buttons, and coins
- decorated bowls and marked stems from clay tobacco pipes
- diagnostic animal bone and shell
- all Aboriginal objects, and any object where there is reasonable suspicion that it may be an Aboriginal object.

Artefacts would be discarded on site if they were found to contribute nothing towards the research potential of the site. Examples of this include:

- small body sherds of glass and shards of ceramic vessels with types already collected
- small, unmarked clay pipe fragments
- corroded and unidentifiable ferrous objects
- brick, tile, slate and other building materials
- decayed organic material including bone, shell, leather and fabric.

Representative samples of these types of artefacts would be taken in order to characterise the assemblage and counts may be done prior to them being discarded. The discard of artefacts would only occur when the

Excavation Director and artefact specialist are in agreement and detailed notes regarding the discard would be produced.

### 4.5.3 Post investigation reporting

Following the completion of excavation, the following actions should occur:

- A Harris Matrix of the site's stratigraphic contexts should be made.
- All artefacts, not already processed, should be cleaned and dried. Following this an experienced artefact specialist or team of specialists should catalogue all retained artefacts in line with best practice.
- The cataloguing of artefacts should be used to produce a detailed artefact report that addresses chronological and research questions.
- Photographs of important artefacts should be taken, noting this may include artefacts that are important to the specific site as well as contributing to the archaeological resources' overall significance.
- All site archive paperwork, including scale drawings, should be digitise and original copies scanned.
- All digital survey should be processed and a shape file, in a commonly accessible format, should be generated.
- Using this generated data, a comprehensive Trench Report should be written that:
  - describes and contextualises the archaeological stratigraphy and features
  - places the individual test trenches in their wider context
  - uses the artefact information to address the site chronology, and individual research questions
  - interprets the site formation processes, and archaeological record to address the research questions and provide advice on future works.

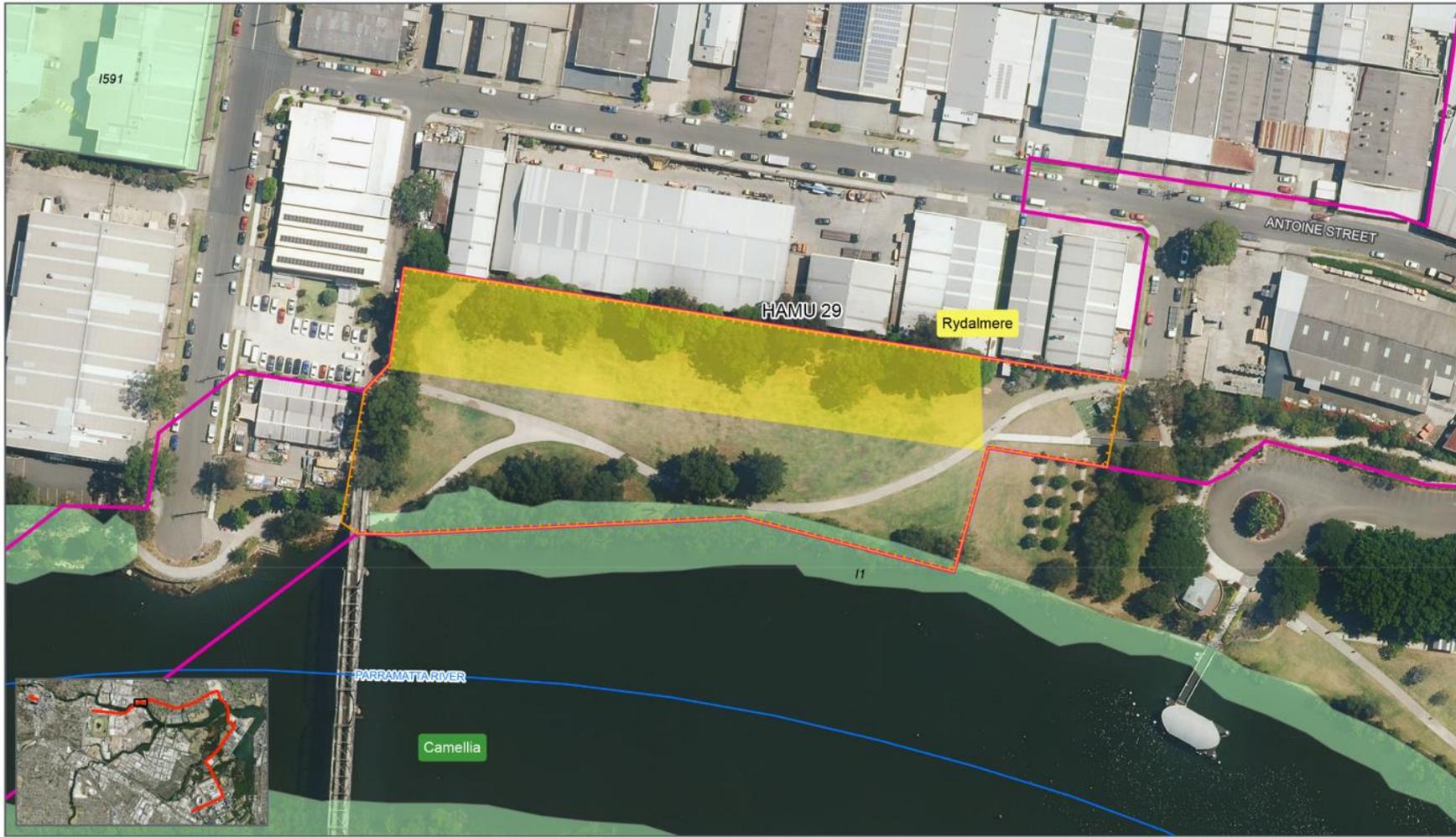
### 4.5.4 Application

This MR applies to all areas that have either medium potential for a State significant archaeological or high potential for a locally significant resource. At present these are HAMUs:

- 29 – Western Eric Primrose Reserve, Rydalmere
  - Here test trenches should focus on the northern half of the HAMU. Based on the borehole results presented in Section 3.1.5 there is likely to be an intact old land surface in this area that may contain evidence of 18<sup>th</sup> century farming. This is also the area where the project will have the greatest impact as a result of major bridge construction (Figure 4-1).
- 7 – Broadoaks Park, Rydalmere
  - Here test trenches should focus on the northwestern corner. This area has not been subjected to any investigations as yet, and may be less disturbed than elsewhere (Figure 4-2).
- 11 – Ken Newman Park, Ermington
  - Here test trenches should focus on the northern section of the park which has been less disturbed by either the installation of services or landscape remodelling (Figure 4-3).

Following the completion of the test excavation, the results would be evaluated by the Excavation Directors and it may be necessary to undertake salvage excavation in line with the methodology stated in Section 4.6. Primarily this would occur when the archaeological resource was found to be well intact and in areas where the impact to the resource would be high. Site visits with Transport for NSW staff to examine the excavation would be offered to Heritage NSW, and any other relevant stakeholders such as City of Parramatta Council.

RESEARCH DESIGN & EXCAVATION METHODOLOGY

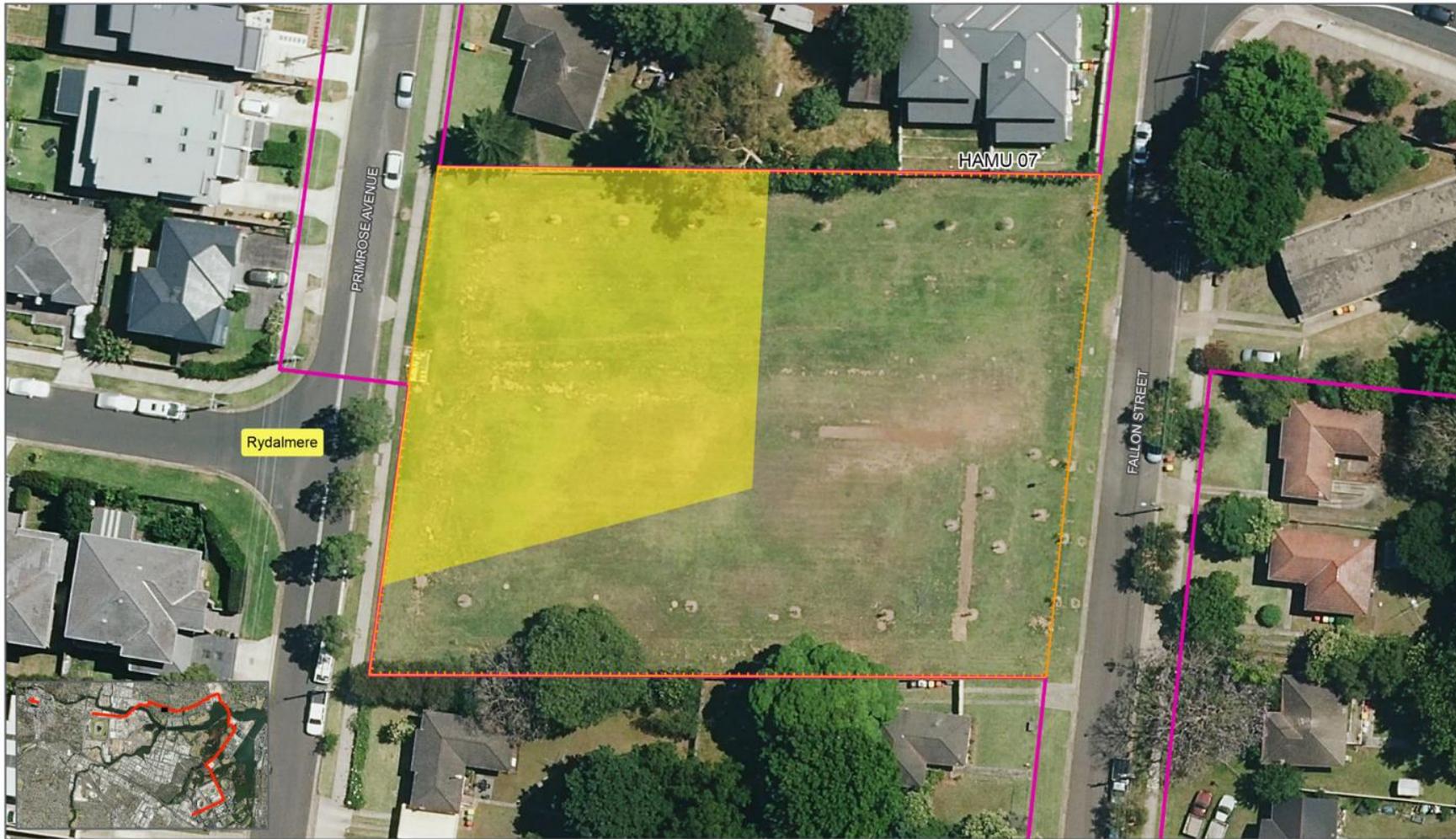


<b>Legend</b> HAMU Project site Test excavation zone		<b>Local Heritage</b> Item - General		Railway Waterbody Watercourse		Paper Size ISO A4  Metres Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56						Transport for NSW Parramatta Light Rail Stage 2 EIS Non-Aboriginal Archaeological Assessment		Project No. 12557728 Revision No. C Date 10/03/2023	
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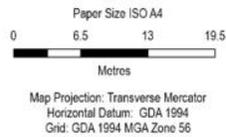
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Figure 4-1: Area for test excavation in HAMU 29



Legend

-  HAMU
-  Project site
-  Test excavation zone
-  Railway
-  Waterbody
-  Watercourse



Transport for NSW  
Parramatta Light Rail Stage 2 EIS  
Non-Aboriginal Archaeological Assessment

Project No. 12557728  
Revision No. C  
Date 10/03/2023

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Figure 4-2: Area for Test excavation in HAMU 07

# RESEARCH DESIGN & EXCAVATION METHODOLOGY



<b>Legend</b> HAMU Project site Test excavation zone		<b>Local Heritage</b> Item - General		Railway Waterbody Watercourse		Paper Size ISO A4  Metres Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56						Transport for NSW Parramatta Light Rail Stage 2 EIS Non-Aboriginal Archaeological Assessment		Project No. 12557728 Revision No. C Date 10/03/2023	
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Data source: Heritage - DofI, 2022; Roads, Rail, Water - NSWDCS, 2022; Metromap Tile Service - Created by dschmitt

Figure 4-3: Areas for test excavation in HAMU 11

## 4.6 MR3

### 4.6.1 Archaeological methodology

Only one HAMU in the project site, HAMU 15, is currently graded as MR3. This HAMU has multiple potential archaeological resources of both State and local significance. There is low potential for a State significant resource related to 18<sup>th</sup> century farming; the HAMU was part of a farming grant given to ex-marine John Colethread and then owned by Samuel Marsden but later occupation and use is likely to have heavily impacted any evidence from this initial activity. There is also high potential for archaeological resources related to farming and residential occupation from the 19th century. This includes the house and farm (Mr Eyre's Cottage) shown on multiple mid-19th century plans. From the same time, there is also high potential for evidence relating to Ermington Wharf. This evidence may include multiple iterations of the wharf itself in addition to supporting infrastructure and buildings in the surrounding area. Depending on age and integrity these archaeological resources may be of State or local significance. In general, the land within HAMU 15 has never been substantially developed and this means the preservation of archaeological evidence from the 19th century is likely to be high. The following methodology applies:

- All contractors and other staff involved in subsurface works will need to undertake the heritage induction.
- The program of archaeological investigations should be overseen by an archaeologist who is suitably qualified and experienced and who meets the criteria of a State significant Excavation Director as defined by the Heritage Council of NSW. A Secondary Excavation Director should also be appointed to ensure adequate experience across all facets of the project.
- A ground penetrating radar (GPR) survey of the HAMU should be undertaken in an attempt to identify the locations of archaeological features such as walls, wells and cess pits.
- Highly targeted test excavation should then be undertaken based on the results of the GPR survey that aims only to confirm the results. Test excavations should follow the general methodology outlined in Section 4.5.1 for MR2.
- Once confirmed, the project team must be notified, and the location of archaeological features provided to facilitate a redesign to avoid the archaeological resource where feasible. If potential evidence of State Significance is identified Heritage NSW must be notified.

If following the identification of a resource, it is found that redesign to avoid impact is not possible then it would be necessary to salvage excavate within any areas of impact.

- This salvage excavation program should include:
  - establishment of a site grid utilising the Map Grid of Australia (MGA) 2020 for geolocation reference to ensure accurate placement of heritage items.
  - systematic excavation of all areas of the HAMU that will be impacted by the project
  - all excavation should be supervised by the Primary Excavation Director or Secondary Excavation Director and excavated using a flat bucket on an excavator no greater than 20 tonnes
    - if required trenches are to be benched rather than battered as this allows for stratigraphic recording.
  - where archaeological evidence is encountered, utilise a combination of targeted mechanical excavation and hand excavation to excavate spoil so that the evidence may be exposed, cleaned and recorded
  - representative samples of organic materials, building materials, and soil and sediments should be taken to characterise the site in line with the research questions
  - all areas should be hand cleaned at the base of each stratigraphic layer or where archaeological features are encountered unless the Excavation Directors deem it unnecessary
  - RLs of all stratigraphic units and features to be recorded
  - Georeferenced high resolution photogrammetric recording undertaken at appropriate intervals



- a comprehensive site archive should be generated that includes: single context recording, photographs with scale and north arrows, digital survey, site plans at a scale no greater than 1:50, and section drawings of stratigraphy and archaeological features where appropriate.
- Following excavations, the site will be made good in line with expectations and requirements of Transport for NSW.
- The historical salvage excavation must be undertaken in consultation with Aboriginal archaeology specialists and a combined program undertaken. This may include:
  - Aboriginal archaeological test pits excavated prior to machine excavation, and at appropriate stratigraphic layers exposed during machine excavation, and following the completion of excavation of historical layers
  - the monitoring of works by RAPs and Aboriginal archaeology specialists
  - sample sieving of material for the presence of Aboriginal artefacts

The importance of the past and interest in archaeology by the local community and wider population should not be over looked and should a State significant archaeological resource be encountered appropriate engagement activities should be undertaken by the project. Public engagement activities could include:

- guided site visits and open days
- presentation of findings in-person or online to local community groups
- interaction with traditional and non-traditional media including press releases television interviews podcasts newspapers and digital publications
- where appropriate the production of articles for publication in popular, and peer-reviewed journals.

### 4.6.2 Artefacts

All policies regarding artefacts would follow guidance in the ACMP as outlined in Section 4.2.7. Artefacts found in secure contexts during the initial testing and potential salvage excavation will be recovered. All artefacts will be collected according to their specific contexts and placed into labelled bags or trays. Once collected the Excavation Director or artefact specialist will examine the assemblage and retain any artefacts that contribute towards the research potential of the archaeological resource, or that have display value. These would then be cleaned, dried, and stored for post-investigation analysis. Any items that require immediate care such as metal or organic finds will be managed in line with *Stabilising Stuff - A Guide for Conserving Archaeological Finds in the Field* (Heritage Council of NSW, 2012).

Artefacts from unsecure contexts and unstratified fills will only be sampled (i.e. only selected items that represent the whole assemblage will be kept) with the following retained:

- complete vessels, partial vessels with bases or rims, any artefact with unique identifiers, class or ceramic fragments with patterns not evidenced by more intact examples
- identifiable ferrous and copper nails and other objects
- buttons and coins
- diagnostic parts of clay tobacco pipes including decorated bowls and marked stems
- diagnostic animal bone and shell
- all Aboriginal objects, and any object where there is reasonable suspicion that it may be an Aboriginal object.
- Any items that have high display value

Artefacts would be discarded on site if they were found to contribute nothing towards the research potential of the site. Examples of this include:

- small body shards of glass and sherds ceramic vessels with types already collected
- small, unmarked clay pipe fragments

- corroded and unidentifiable ferrous objects
- brick, tile, slate, and other building materials
- decayed organic material including bone, shell, leather and fabric.

Samples of these types of artefacts would be taken in order to characterise the assemblage and counts may be done prior to discard. The discard of artefacts would only occur when the Excavation Director and artefact specialist are in agreement and detailed notes regarding the discard would be produced.

### 4.6.3 Post investigation reporting

Following the completion of excavation, the following actions should occur:

- A Harris Matrix of the site's stratigraphic contexts should be made.
- All artefacts, not already processed, should be cleaned and dried. Following this an experienced specialist or team of specialists should catalogue all retained artefacts in line with best practice.
- The cataloguing of artefacts should be used to produce a detailed artefact report that addresses chronological and research questions.
- Photographs of important artefacts should be taken, noting this may include artefacts that are important to the specific site as well as contributing to the archaeological resources' overall significance.
- All site archive paperwork, including scale drawings, should be digitised and original copies scanned.
- All digital survey should be processed and a shape file, in a commonly accessible format, should be generated.
- Using this generated data, a comprehensive Excavation Report should be written that:
  - includes an executive summary that that gives due credit to Transport for NSW
  - fully explains the archaeological program and all works that occurred including its overall aims
  - describes and contextualises the archaeological stratigraphy and features and fully encapsulates the results of the excavation
  - uses the artefact information to address the site chronology, individual research questions, and provides details on the treatment of artefacts
  - interprets the site formation processes, and archaeological record to address the research questions and provide advice on future works
  - revises the established history of the site in light of new evidence and includes if necessary new referenced historical research with a bibliography.
  - details how information regarding the archaeological program was disseminated to the public.

### 4.6.4 Application

At present this MR applies to HAMU 15 (Ermington Wharf & Archer Park, Melrose Park) only. Should other areas of the project site be reassessed as being of higher significance the same methodology can be used elsewhere. The specific areas for GPR survey, and potentially salvage excavation in HAMU 15 are shown in Figure 4-4. These are the areas with the highest potential as they are most likely to contain intact archaeological evidence such as described in Section 3.4.3. All other areas of the HAMU should be closely monitored during all works.



Figure 4-4: Areas for GPR survey and possible salvage excavation in HAMU 15. The specific locations for targeted testing will be determined following the GPR survey.

## 5 RESEARCH DESIGN

### 5.1 Overview

The need for a well-considered research framework is critical to the success of any archaeological investigation. By identifying research themes and formulating specific research questions it is possible to utilise the archaeological record to provide information not available by any other means.

Archaeological data recovered from Parramatta and its environs can be used to address a broad range of research themes specific to the area and its unique history as well as larger themes that have relevance to the occupation and development of NSW. The area was first settled during the first few months of the colony and has been continually occupied since. It has at various and often overlapping times, been a focus for habitation, industry, agriculture, governmental authority, transport, commerce, punishment, and many other life events. By utilising themes that have been developed for other parts of the Parramatta Light Rail network as a whole (including Parramatta Light Rail Stage 1 and Parramatta Light Rail Stage 2) it may be possible to develop a narrative or identify aspects that have relevance across the project site.

This archaeological research design has three sections. First, it identifies what are the key historical and interpretative themes for the project site. This is based on the themes identified for the narratives of both Australia as a whole and NSW specifically used by Heritage NSW. These themes address the objective of utilising information gained from the project for the widest lenses of analysis (national and State). It then integrates themes that have been developed for Parramatta Light Rail Stage 1 and, thus, provides a means of identifying and quantifying data across the project site. This in turn provides consistency when understanding and interpreting the data and helps to identify the relevant key themes.

Leading on from this are a series of Research Questions that all archaeological investigations on the project should seek to address. This includes questions that could be addressed by large numbers of HAMUs and that may rely on multiple instances of evidence, and also smaller scale HAMU or suburb specific questions that are more nuanced and focused.

### 5.2 Historical and interpretative themes

In 2001, the Australian Heritage Commission produced a framework for describing, quantifying and characterising heritage across Australia with a focus on the period following 1788. The framework identified nine overarching themes for research. The framework is intended to establish correlations between similar data for multiple aspects of occupation and the place at national, State and local levels. The relationship between State and national themes has been correlated in a table created by the Heritage Council of NSW. There are 36 State themes.

As part of Parramatta Light Rail Stage 1, a further 15 related historical sub-themes were identified, which again can be directly linked to a State theme (GML, 2019). This tiered system allows individual heritage items of local and State significance, to be placed in their local, State and national context. In order to maximise successful research, the relevant themes established for Parramatta Light Rail Stage 1 should also be considered and applied to the archaeological program for Parramatta Light Rail Stage 2. Of the 15 sub-themes identified nine have relevancy for Parramatta Light Rail Stage 2. These are shown in Table 5-1.

The two stages of the light rail network cover very different types of historical and present-day landscape hence why not all historical themes are applicable to both. Parramatta Light Rail Stage 1 was focused to a large extent on the urban core of Parramatta itself which began as a convict farming settlement and eventually grew to be a major city. Parramatta Light Rail Stage 2 is focused more on the historical hinterland along the Parramatta River and includes a large area of former farmland, and is presently a mixture of housing, industry and entertainment space.

**Table 5-1: Relevant historical and interpretative themes that have been identified for the Parramatta Light Rail Stage 1 and that have relevance for Parramatta Light Rail Stage 2**

National theme	NSW theme	Parramatta Light Rail Stage 1 theme	Comment
Tracing the natural evolution of Australia	Natural Environment	Cradle of Sydney	The wide flat plains on the Parramatta River were used by Aboriginal people for centuries prior to 1788. In the first few decades following colonisation commenced, the area was critical in the establishment of Australian farming which was very critical to the survival of the embryonic colony.

Discussion

The project presents the possibility of examining change and continuity of human interaction with the landscape from the very beginning of the colonial period. Comparative evidence, including the use of geoarchaeological methods can identify and demonstrate this change and continuity

Peopling Australia	Aboriginal cultures and interactions with other cultures	Always was, Always will be	The project site is part of the lands of the Darug people with cultural features including artefact scatters, middens, grinding grooves, and scar trees evidencing Aboriginal use of the landscape for generations. Aboriginal people continued to use the landscape following 1788 albeit in an increasingly marginalised way.
	Convicts	Planning for the Future; Institutions and Incarceration	Some of the farms settled along the Parramatta River, specifically in Camellia and Rydalmere, were granted to freed convicts who were relied on to supply the colony with critical food supplies.

Discussion

The project site covers the lands of the Darug people, which were then granted to a variety of colonial settlers including convicts (e.g. James Stewart in Camellia), marines (e.g. Thomas Laycock in Sydney Olympic Park) and free settlers (e.g. Philip Schaffer in Rydalmere). Evidence of the continued use of the land by Aboriginal people after colonisation is rare and has to possibility to inform and advance understanding of this period. Different uses of the land by the different classes of people likewise has the ability to demonstrate cultural practices and attitudes.

Developing local, regional, and national economies	Agriculture; Pastoralism	Agriculture to industry	Without the establishment of a successful agricultural system, it is highly unlikely that British colonisation of Australia would have succeeded. Much of the project site began as small farms with some becoming integrated into large, consolidated estates. Much of the project site remained effectively rural into the 20th century.
	Industry; Transport	Agriculture to industry	The Parramatta River was a critical component of the industrial landscape of NSW for much of the 19th and 20th centuries. This was especially true for areas along the southern bank with factories, refineries, warehouses, and private wharves constructed along the river as evidenced in Camellia and at Sydney Olympic Park.
	Cultural landscape	Cradle of Sydney; Planning for the Future; Agriculture to industry	From the first few months of colonisation the landscape of the Parramatta River and its surrounding area was irrevocably and permanently altered. This newly created cultural landscape encompasses almost all other historical themes.
	Commerce	Planning for the Future; Agriculture to Industry	Not expected to be applicable
	Health	Institutions and Incarceration	Not expected to be applicable

Discussion

The project site covers a wide variety of economic landscapes from small scale pioneering farms (e.g. Schaffer's Farm in Rydalmere or Samuel Marsden in Melrose Park), through to large managed estates (e.g. Elizabeth Farm in Camellia and Homebush in Sydney Olympic Park) and in some location's vast industrial complexes (e.g. the Goodyear in Camellia and the State brickworks in Sydney Olympic Park). At the core of much of this was the Parramatta River which operated as the principle highway for much of the 19th century. By being able to compare approaches from a variety of different farms, estates and industrial zones, a comparative analysis of the growth of the economy of greater Sydney can be undertaken.

National theme	NSW theme	Parramatta Light Rail Stage 1 theme	Comment
Building settlements, towns and cities	Towns and land tenure	Planning for the Future	The land along the Parramatta River was amongst the first subdivided and granted in Australia. Later much of the area was re-imagined following WW2 and became part of large housing estates.
	Accommodation	Planning for the Future	Not expected to be applicable
	Utilities	Planning for the Future; Agriculture to Industry	Not expected to be applicable

Discussion

The project site was part of the agricultural hinterland of both Parramatta and Sydney until the mid-20th century, since then it has been rapidly altered in two major phases. First as part of the post-WW2 housing boom that saw all of the land north of the river (Rydalmere, Ermington, and Melrose Park) become extensive housing estates. Secondly, the slower extensive industrial growth south of the river in Camellia, Wentworth Point and Sydney Olympic Park. The industrial legacy of Camellia lives on today however the former industrial zones to the east have been rapidly transformed from the 1990s onwards with the creation of the Olympic Park and this pace has quickened in the 20th century with the development of Wentworth Point. This unfettered development has largely taken place without much consideration for the archaeological landscape it now occupies and areas of archaeological potential across the project site that can demonstrate the earlier stages of development are becoming increasingly scarce.

Governing	Welfare	Institutions and Incarceration	Not expected to be applicable
Working	Labour	Planning for the Future; Migration	For the late 18th and 19th century much of the labour on the various farms was convict which is primarily understood through written sources which may not always provide the most rounded perspective. Later industrial sites have a very different but also important labour history.

Discussion

As with the development of settlements, towns and cities, the project site has seen a wider variety of different trades and labour conditions, from indentured convict farmers, through to larger estates with free workers and eventually to the factories and plants of the later 19th and 20th centuries. Evidence of the conditions for this labour force is often under-represented in the records of the time and so archaeology is well positioned to provide an alternative narrative that focuses on the conditions and working lives of people across the project site. That said, evidence of these activities is likely to be rare and difficult to identify, so targeted care must be taken.

Developing Australia's cultural life	Domestic life	Planning for the Future; Migration	As a primarily agricultural area, housing was scarce across the area until the post-war period when much of it was used for housing estates.
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Discussion

At present, evidence of post-war housing is the primary domestic evidence which is likely to be encountered and it is assessed as not being of significance. In HAMU 15 there is the possibility of domestic dwelling from the 1840s which could produce important and novel data on the domestic life of 19th century farmers in the area.

Marking the phases of life	Birth and death	Planning for the Future; Institutions and Incarceration; Migration	Not expected to be applicable
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## 5.3 Research questions

### 5.3.1 Project wide questions

Given the wide expanse of the project site and its location between two major settlement hubs, a series of wide scoped research questions are appropriate, that allow for inter-site comparative analysis. There has also been significant changes in the landscape use over time in many parts of the landscape which provides a further backdrop to key project wide questions. The Parramatta Light Rail Stage 1 ARD (GML, 2019) and the PHALMS (GML, 2001) also provide indication of ongoing research areas and, where appropriate, have

been integrated here. These large project wide questions also include a number of sub-questions that are designed to help provide more focused answers.

In addition to the historical based questions below, evidence from the project site has the ability to contribute towards emerging discussion on preservation of increasingly scarce archaeological resources in urban environments and the utility and purpose of cumulative analysis in archaeology.

### **How did the colony respond to a lack of food in the late 18th and early 19th century?**

The themes this question primarily addresses are Agriculture; Pastoralism, and Labour. It also has relevancy for Aboriginal cultures and interactions with other cultures, Cultural landscape, Domestic life, and Technology.

The key evidence to address this question would include plough, hoe and ard marks, artefacts that relate to farming, pollen, seed and other botanical remains, farming features like fencelines, and animal bones.

Archaeology may address this question by providing new information relating to farming methods and techniques, including tools and fertilisation, highlighting if the plants grown correspond to those named in the historical record, and exploring the quality and state of the historical soil. New data would contribute to the knowledge already gained from sites, such as 3 Parramatta Square, and provide a useful and informative comparison to other sites. Evidence from the project would be especially useful as a comparative case study, as the evidence here relates to private farming whereas much of the existing evidence (i.e. 3 Parramatta Square (Casey & Lowe, 2020)) is from government farms.

Sub questions include:

- What plants did the early farmers grown and how does this compare to the historical records?
- Can changes be seen following the creation of large Estates as opposed to smaller farms?
- How does this fit into larger narratives of the colonial experience?

### **What role did climate, environment, the convict system and Aboriginal land use play in early farming?**

The themes this question primarily addresses are Natural Environment, Aboriginal cultures and interactions with other cultures, and Agriculture; Pastoralism. It also has relevancy for Cultural landscape, Labour, Domestic life, and Technology.

The key evidence to address this question would include plough, hoe and ard marks, artefacts that relate to farming, Aboriginal objects in a historical context, pollen, seed, and other botanical remains, farming features like fencelines, and animal bones.

Archaeology may address this question by providing insight into the relationships between Aboriginal people and colonial farmers through the identification and use of objects. Other evidence could include channels, gullies and ditches dug to undertake water management, such as those at 101A-105 George Street (GML, 2007) and 7 Parramatta Square, and evidence of deliberate landscape clearance such as at 5 Parramatta Square where burnt patches of ground, attributed to the 18th century, were interpreted as evidence of landscape clearance prior to farming (CRM, 2021).

Sub questions include:

- What evidence is there of the Aboriginal landscape in terms of soil and plants?
- Is there evidence of failed crops or plants that were brought over from Britain?
- Can the impact of convict labour be seen on the landscape when compared to other convict environments (i.e. Tasmania – Tuffin & Gibbs, 2020)?

### **To what extent can innovations in technology and methodologies be seen in agriculture and how does this compare to the historical record?**

The themes this question primarily addresses are Agriculture; Pastoralism, Labour and Technology. It also has relevancy for Natural Environment, Aboriginal cultures and interactions with other cultures, Cultural landscape, and Domestic life.

The key evidence to address this question would include plough, hoe and ard marks, artefacts that relate to farming, pollen, seed, and other botanical remains, farming features like fencelines, animal bones, structures and buildings.

Archaeology may address this question by providing clear and chronologically-secure indications of the type of technology used which may then be compared to other sites such as those detailed above and other sites from the first half of the 19th century such as 50-52 O'Connell and 6-12 Grose Street, North Parramatta (Higginbotham, 2005).

Sub questions include:

- Can the chronology of individual sites be established and if so, is there change through time?
- Are there differences between convict, free settler, and ex-marine farms?
- How does the novel data compare to that already established?

### **What evidence is there of industrial activity and what changes can be seen through the 19th and 20th century?**

The themes this question primarily addresses are Industry, Transport, Labour, and Technology. It also has relevancy for Cultural landscape, and Towns and land tenure.

The key evidence to address this question would include factories, refineries, and other buildings and industrial features like kilns, furnaces and machinery, artefacts that related to industry including production items and final products. Also, evidence of infrastructure including trams and trains and associated features, and wharves.

Archaeology may address this question by providing examples of the types of technologies used which may then be compared to other local industrial sites (e.g., Darling wharf (Casey & Lowe, 2013), and numerous others (Birmingham, Jack, & Jeans, 1983), British industrial sites, and the historical record (e.g. trade catalogues and newspaper advertisements). This would contribute to wider discussions on Industrial archaeology covering topics such as globalisation of industry, the concept of industrial heritage as community heritage and the role of industry in identity, affiliations and social belonging (Mackay & Brassil, 2006; Symonds & Casella, 2006).

Sub questions include:

- How does the evidence compare in areas of large scale industry (i.e. Camellia) when compared to smaller industry (i.e. Wentworth Point)?
- Can evidence of industry be discerned from secondary deposition – i.e. fills that contain a large volume of industrial material?

### **How can the size of the project site help to inform discussions regarding the development of urban landscapes?**

The themes this question primarily addresses are Industry; Transport, and Cultural landscape. It also has relevancy for Towns and land tenure, and Domestic life.

The key evidence to address this question would include paths, rails, tracks and other movement based features, wharves, piers and associated infrastructure, land boundary markers including fences, embankments and walls, and evidence of landscape modification like clearance or planting.

The urban landscape is increasingly being seen as a phenomenology of human experience with the key elements of cities being imbued with symbolic and practical meaning as well as social, economic and political power (Smith, 2014). The wide breadth of the project site, and especially when included with Parramatta Light Rail Stage 1, provides the ability to examine the development of the city at a large scale and focus on its configuration.

Sub questions include:

- What evidence can be seen of deliberate movement control like formed roads and paths compared to spontaneous walking tracks?
- Is there evidence for deliberate economic landscape modification like reclamation and levelling?



### 5.3.2 Specific research questions

In addition to those broad questions above a series of questions have also been devised for each of the HAMUs that have been rated MR2 and MR3.

#### HAMU 29

- Is there any evidence of farming during the Vineyard Estate period, specifically of viticulture?
- What evidence is there of formal or informal reclamation?

#### HAMU 07

- Is there any evidence of farming during the Vineyard Estate period, specifically of viticulture?
- Does any evidence of the original creek remain and does it have evidence of being used during the early farming period e.g. dams or irrigation?

#### HAMU 11

- Is there any evidence of farming and can a difference in techniques or crops be seen across the two initial land grants?
- Does the slope of the site play a factor in the types of farming attempted?

#### HAMU 15

- Is there any evidence of a wharf structure from the 1810s or 1820s. If so how does this demonstrate the technology of the time?
- What evidence remains of Mr Eyre's Cottage and associated farm buildings?
- What is the nature, purpose and date of the cistern structure?
- What can this tell us about life in the 1840s in the city hinterland?
- What evidence is there of infrastructure associated with Ermington Wharf?

## 5.4 Local histories

When undertaking archaeological research, it is important to recognise the spatial dimension of the human experience that includes emotional, and symbolic divisions that contribute to our understanding of identity. Each area of the entire light rail network simultaneously has a shared past and a unique history. By using the themes established for Parramatta Light Rail Stage 1 as part of research for Parramatta Light Rail Stage 2 large-scale comparative analysis is possible. This large scale analysis should be supplemented through a recognition of the unique local character and history of each of the areas encountered. Archaeology inherently belongs to the place from which it came, and any research design must simultaneously contextualise the archaeological evidence in multiple spatial zones. During the research design phase of the works consideration should be given to interactions with local community groups, historical societies and other interested parties.

## 6 BIBLIOGRAPHY

- Birmingham, J., Jack, I., & Jeans. (1983). Industrial Archaeology in Australia: Rural Technology Heinemann.
- Casey & Lowe. (2013). Archaeological Investigation Darling Quarter (formerly Darling Walk), Darling Harbour, Sydney Report to Lend Lease Development:
- Casey & Lowe. (2020). 3 Parramatta Square (3PS) Archaeological Investigation. Report to Parramatta Square No.3 Property Pty Ltd & City of Parramatta:
- CRM. (2021). Report of Archaeological Investigation, World Square Parramatta, Area 5PS. Report to City of Parramatta Council:
- GML. (2007). 101A-105 George Street Parramatta, Archaeological Excavation Report. Report to Rahi Development Pty Ltd:
- GML. (2019). Parramatta Light Rail Stage 1 Historical Archaeological Research Design and Investigation Methodology. Report to CPB Downer Joint Venture
- Heritage Branch. (2009). Assessing Significance for Historical Archaeological Sites and 'Relics': NSW Department of Planning.
- NSW Heritage Office (1996), Archaeological Assessment Guidelines. Heritage Office, Department of Urban Affairs and Planning
- Higginbotham, E. (2005). Report on the archaeological excavation of 50, 50A & 52 O'Connell and 6-12 Grose Street, North Parramatta, N.S.W. Report to Order Architects Pty Ltd and Parramatta Leagues Club Ltd:
- Mackay, R., & Brassil, T. (2006). Judy Birmingham, Industrial Archaeology and the National Trust in the 1980s. *Australasian Historical Archaeology*, 24.
- Officer of Environment and Heritage (2012) Stabilising Stuff: A Guide for Conserving Archaeological Finds in the Field, Heritage Council of NSW and ICS
- Smith, M. (2014), The Archaeology of Urban Landscapes, •Annual Review of Anthropology 43(1):307-323
- Symonds, J., & Casella, E. (2006). Historical archaeology and industrialisation. In D. Hicks & M. Beaudry (Eds.), *The Cambridge Companion to Historical Archaeology* (pp. 143-167). Cambridge: Cambridge University Press.
- Tuffin, R & Gibbs, M (2020), 'uninformed and impractical'? The convict probation system and its impact upon the landscape of 1840s Van Diemen's Land, *History Australia*, February 2020
- WSP Golder (2022) Factual Contamination Report, Parramatta Light Rail Stage 2, Report to TfNSW