BESIX Watpac

NSW GOVERNMENT | sydney METRO

Barangaroo Station

Heritage Management Sub Plan

N217

BR COP

11 January 2024

Project overview

Project Site Address:
25 Hickson Road
Barangaroo
NSW 2000
Project Commencement Date:
12 March 2021

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Document Control

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B	16/06/21	Response to comments	[redacted] / Contractor's Representative
C	09/07/21	Response to comments	[redacted] / Contractor's Representative
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E	25/08/21	Response to DPIE comments	[redacted] / Contractor's Representative
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BESIX Watpac Approvals

Name	Role & Title	Signature	Date
[redacted]	R01 Author / Primary Excavation Director	[redacted]	06/09/22
[redacted]	R02/R03/R04 Revision Author / Planning and Environmental Manager	[redacted]	11/1/24
[redacted]	Reviewer / Engineering Manager	[redacted]	11/1/24
[redacted]	Approver / Contractor's Representative	[redacted]	11/1/24

Note: A controlled copy of the Heritage Management Plan (HMP) will be distributed to the Sydney Metro Principal's Representative, Independent Certifier (IC) and other nominated stakeholders, and it will be made available to all BR COP employees and subcontractors in soft copy format through the project document control system.

The HMP, when printed, will be uncontrolled and it will the responsibility of each user to confirm the currency of the plan through the project document control system.

Acronym and Definitions

Acronym	Term and/or Definitions
AARD	Archaeological Assessment Research Design Report
ACHAR	Aboriginal Cultural Heritage Assessment Report
AEO	Authorised Engineering Organisation (issued by Sydney Metro - ASA)
AFC	Approved/Endorsed/Issued For Construction documentation, NAC-3 endorsed documentation
AMS	Archaeological Method Statement
BCA	Building Code of Australia
BDA	Barangaroo Development Authority (known as iNSW)
BR-CODD	Barangaroo 'Construct Only Delivery Deed'
BR-COP	Barangaroo 'Construct Only Package' (also various documents refer to: BZZ Contractor / STME)
CSSI	Critical State Significant Infrastructure Sydney Metro City & Southwest Chatswood to Sydenham.
CCB	Configuration Control Board
CEMP	Construction Environmental Management Plan
CEMF	Construction Environmental Management Framework
CMP	Contract Management Plan (this controlled plan and associated plans)
CNVMP	Construction Noise and Vibration Management Sub-Plan
CNVIS	Construction Noise and Vibration Impact Statement
CSG	Construction Safety Group
DIS	Detailed Interface Specification
DITP	Detailed Inspection and Test Plan
DPE	Department of Planning and Environment (formerly DPIE)
DPIE	New South Wales Department of Planning, Industry and Environment (now DPE)
DRP	Design Review Panel
E&SMS	Environment and Sustainability Management System
ER	Environmental Representative
GS	General Specification
GBCAGSDABSMRT	Green Building Council of Australia Green Star Design & As Built Sydney Metro Rating Tool
HMP	Heritage Management Sub Plan
iNSW	Infrastructure NSW (https://www.infrastructure.nsw.gov.au/projects-nsw/barangaroo/)
MTS	Metro Trains Sydney, Operator of Northwest and City & Southwest (https://www.ourmetro.com.au)
NAC	Network Assurance Committee
NGERS	National Greenhouse and Energy Reporting Act 2007
NSMS	The BESIX Watpac certified National Safety Management System
ONRSR	Office of the National Rail Safety Regulator (https://www.onrsr.com.au)
PS	Particular Specification
RIM	Rail Infrastructure Maintainer (in terms of the RSNL, NSW)

Acronym	Term and/or Definitions
RIW	Rail Industry Worker (https://www.riw.net.au)
RSNL	Rail Safety National Law, NSW
RSW	Rail Safety Worker (in terms of the RSNL, NSW)
RTO	Rail Transport Operator (in terms of the RSNL, NSW), the RTO may include a RIM or number of RIM's providing railway capital works and/or railway maintenance programs. Note: the defined railway term, should not be confused with 'Registered Training Organisation'
SDPP	Station Design and Precinct Plan
SFAIRP	So Far As Is Reasonably Practicable (in terms of the RSNL, NSW)
SME	Subject Matter Expert, a person with expert knowledge and competency in a specified subject or topic matter area.
SMCSW	Sydney Metro City & Southwest (the overall program of works, which Barangaroo Station is part of)
SWMS	Safe Work Method Statement
TfNSW	Transport for New South Wales (https://www.transport.nsw.gov.au)
TfNSW - ASA	*TfNSW - Assets Standards Authority (https://www.transport.nsw.gov.au/industry/asset-standards-authority)*
TfNSW - SM	*TfNSW - Sydney Metro (https://www.sydneymetro.info)*
WHS	Work Health and Safety

Heritage Management Sub Plan

1 Plan Overview

1.1 Purpose

BESIX Watpac has prepared this Construction Heritage Management Plan (HMP) to describe how we will minimise Aboriginal and non-Aboriginal (historic) heritage impacts during the Barangaroo Construction Only Package (COP) works as part of the Sydney Metro City & Southwest Project at Barangaroo Metro Station, Barangaroo.

This Plan has been prepared to address the relevant requirements of Sydney Metro's Construction Environmental Management Framework (CEMF), the Revised Environmental Mitigation Measures (REMMs), the Project Planning Approval (CoAs), applicable legislation, and contractual requirements. Non-Aboriginal heritage mitigation measures are outlined in NAH1 to NAH 13 of the REMMs and Aboriginal heritage mitigation measures are outlined in AH1 to AH6 of the REMMs.

1.2 Background

This Plan builds on the Aboriginal and historic heritage assessments undertaken in the Environmental Impact Statement (EIS) and Submissions and Preferred Infrastructure Report (SPIR). Artefact Heritage conducted the assessments as part of the EIS, to set out the heritage context of the study area and potential impacts. As the EIS did not identify detailed mitigation strategies, additional studies including an Historical Archaeological Assessment and Research Design (AARD) and Aboriginal Cultural Heritage Assessment Report (ACHAR) were therefore included in the Submissions and Preferred Infrastructure Report (SPIR).

AMBS Ecology & Heritage (AMBS) has comprehensively reviewed the EIS and Submissions and PIR and primary historical resources in developing this Plan on behalf of BESIX Watpac. An Historical Archaeological Method Statement and Aboriginal Archaeological Method Statement have been prepared for this stage of works in accordance with the archaeological management strategies set out in the AARD and ACHAR. The Archaeological Method Statements are included in Appendix A.

1.3 Objectives

The following heritage management objectives will be applied on the Barangaroo COP Works:

- Implement measures to appropriately manage all known Aboriginal and historic heritage items and places that will be directly impacted by the COP Works activities
- Avoid accidental impacts on heritage items through use of a procedure to identify and manage unexpected heritage finds
- Maximise COP Works personnel's awareness of Aboriginal and historic heritage relevant to their work.

1.4 Approval

The HMP was reviewed by Sydney Metro, endorsed by the Environmental Representative (ER) and submitted to the Secretary of the Department of Planning, Industry and Environmental (DPIE) for approval in accordance with CoA C8. The Secretary provided approval on 8th September 2022. The HMP was submitted to DPIE along with the submission of the CEMP no later than one (1) month before commencement of Construction. Construction did not commence until the CEMP and sub-plans (including this Plan) were been approved.

2 Legal and other requirements

2.1 Legislation

As the Project is Critical State Significant Infrastructure (CSSI), the requirements of the Heritage Act 1977 and the National Parks and Wildlife Act 1974 are being assessed under Part 5.1 of the Environmental Planning and Assessment Act 1979. This is addressed in the Project Planning Approval and no separate permits will be required.

2.2 Project Compliance Requirements

Key planning requirements from the Project Planning Approval are summarised in the Compliance Matrix included in Appendix C. This matrix also includes key requirements from Sydney Metro's Construction Environmental Management Framework (CEMF) for preparation of a Heritage Management Plan.

2.3 Guidelines

Relevant guidelines include:

- NSW Heritage Council's Criteria for Assessment of Excavation Directors (2019)
- NSW Heritage Council's Assessing Significance for Historical Archaeological Sites and Relics (2009)
- NSW Heritage Office Archaeological Assessments (1996)
- Office of Environment and Heritage's Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (2011)
- Office of Environment and Heritage's Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010)
- NSW Heritage Council's Photographic Recording of Heritage Items Using Film or Digital Capture (2006) guidelines
- NSW Heritage Office Guidelines for Management of Human Skeletal Remains (1998)

2.4 Specialist Consultants

BESIX Watpac has engaged AMBS Ecology and Heritage Pty Ltd (AMBS) to prepare this Plan after comprehensively reviewing the Aboriginal and historic heritage research and planning Sydney Metro completed in finalising the EIS and Submissions, and Preferred Infrastructure Report. During delivery, AMBS will continue to lead the development and implementation of this Plan and associated documents to ensure impacts can be avoided, minimised or appropriately mitigated.

The roles and responsibilities of key AMBS personnel with respect to heritage management are outlined in Table 1. Refer to Sections 5 and 6 and Appendix B for further details.

Table 1 Roles and responsibilities of key AMBS personnel

Role	Responsibility for Heritage Management
Primary Historic Excavation Directors	• Have overall responsibility for all archaeological works • Prepare this Plan and oversee its implementation. • Preparation of Archaeological Method Statements for historical archaeological sites and review of those prepared by secondary excavation/site director. • Direction and responsibility for all historical archaeological investigations including: • implementation of Archaeological Method Statements • testing and monitoring of historical archaeological sites • historical archaeological excavations and salvage • Review and approve temporary heritage interpretation including information signage on hoardings prepared by secondary excavation/site director. • Provide expert advice to assist in planning open days on historical archaeological sites. • Implementation of the unexpected finds protocol • Prepare clearance certificates. • Prepare preliminary archaeological results reports for each site. • Prepare reporting on the results of the historical archaeological excavations. • Manage and direct historic artefact cataloguing, analysis, storage requirements and reporting. Peer review of all reports.
Secondary Historic Excavation/Site Directors	• Report to the Primary Historic Excavation Director and provide assistance in managing the relevant archaeological investigations, as instructed.
Aboriginal Heritage Excavation Director	• Prepare this Plan and oversee its implementation • Prepare Archaeological Method Statements for Aboriginal archaeological excavation areas • Direct, manage and undertake a program of Aboriginal archaeological test and salvage excavations • Manage and direct Aboriginal artefact analysis, storage requirements and reporting • Manage the preparation and implementation of the unexpected finds protocol for Aboriginal heritage • Issue clearance certificates following finalisation of all Aboriginal archaeological investigations at each relevant site • Manage and direct Aboriginal artefact analysis, storage requirements and reporting • Continue consultation and engagement with the RAPs, and participate and engage in the Aboriginal Focus Group maintained by Sydney Metro
Historic Heritage Consultant	• Manage and direct historical archaeological investigations in consultation with the Primary Excavation Director including: - implementation of Archaeological Method Statements - Managing testing and monitoring of historical archaeological sites - Managing historical archaeological excavations and salvage

Role	Responsibility for Heritage Management
	- Provide input into temporary heritage interpretation including information signage on hoardings in consultation with Primary Excavation Director for submission and approval of Sydney Metro - Preparation and implementation of unexpected finds protocol for historic heritage

2.5 Collaboration with Sydney Metro and other Stakeholders

2.5.1 Aboriginal Focus Group

Sydney Metro and Artefact initiated the Aboriginal community consultation process in 2016, in accordance with Heritage NSW, Department of Premier and Cabinet (HNSW - formerly known as Office of Environment and Heritage (OEH), Department of the Environment, Climate Change and Water NSW [DECCW]) Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010a). The following parties registered their interest in the study area through the consultation process, and will continue to be involved in the project as Registered Aboriginal Parties (RAPs):

- Metropolitan Local Aboriginal Land Council
- Darug Land Observations
- Tocomwall Pty Ltd
- Darug Aboriginal Cultural Heritage Assessments
- Kamilaroi-Yankuntjatjara Working Group
- Woronora Plateau Gungangara Elders Council
- Murra Bidgee Mullangari Aboriginal Corporation
- Aboriginal Archaeology Service Inc
- Gundungurra Tribal Technical Services
- Bilinga Cultural Heritage Technical Services
- Gunyuu Cultural Heritage Technical Services
- Mynyunga Cultural Heritage Technical Services
- Murrumbul Cultural Heritage Technical Services
- Wingikara Cultural Heritage Technical Services

Consultation and engagement in accordance with condition AH1 will continue with the established RAPs, and draft reporting, including reports produced following any archaeological excavations undertaken will be provided to all RAPs following client approval, for their review and input. Aboriginal community representatives participating in fieldwork will be drawn from these RAP organisations, based on experience, availability, and the advice of the Sydney Metro Aboriginal Focus Group.

Evidence of consultation with RAPs is included in Appendix D as required by CEMF section 10.2(a)(i).The above listed RAPS were issued the HMP on the 18th June 21 for their review and comment. Details of the comments received are detailed in Table 9 of Appendix D. Three responses accepting the plan were received from Kamilaroi-Yankuntjatjara Working Group, Murra Bidgee Mullangari Aboriginal Corporation and Tocomwall Pty Ltd within the 28 day review period provided. Follow up phone calls and emails were sent to the remaining RAPs and at the time of updating this plan the remaining RAPs have not responded.

2.5.2 Other Stakeholder Consultation

The HMP has been prepared in consultation with the Heritage Council of New South Wales and City of Sydney Council in accordance with CoA C3(g). City of Sydney responded on the 6th of July 2021 finding the plan to be satisfactory. The Heritage Council of NSW responded on the 6th August 2021 finding the HMP to be a fit for purposed document generally and provided two

comments, both of which have been addressed in the HMP. The details of the consultation undertaken with these agencies is provided in Appendix D.

2.6 Compliance Management

2.6.1 Heritage Monitoring and Inspections

Environmental compliance monitoring and inspections generally are documented in Chapter 6 of the CEMP. Heritage monitoring will be undertaken as outlined in Table 9 of chapter 6.1 of the CEMP which nominates that heritage finds, protection and recording be undertaken on a daily basis during high-risk activities. Vibration monitoring will take place as outlined in Chapter 5 of the CNVMP and where construction activities may result in impacts to heritage buildings. A review of these construction activities will be undertaken by the Planning and Environment Manager to determine the appropriate monitoring in consultation with specialist vibration and heritage consultants. The location of monitoring equipment will be documented on environmental control maps (ECMs). Independent environmental auditing will be undertaken on an annual basis for heritage finds, protection and recording.

2.6.2 Record Management

Compliance records will be maintained as outlined in Chapter 6.3 of the CEMP and will include the following in relation to heritage management:

- Documentation in relation to any unexpected finds including assessment, reporting and stop work orders
- Archival recordings undertaken of any heritage items
- Details of any human remains discovered and the exhumation process
- Inspections undertaken in relation to heritage management measures
- Vibration monitoring data for heritage items identified as being at risk of damage as outlined in the CNVMP
- Records of any impacts avoided or minimised through design or construction methods

3 Context and scope

3.1 Historic Heritage

Prior to the start of work all on-site staff will be given a historic heritage induction (see section 6.2). The induction will outline the significance and potential of the site, and the procedures in place to manage the resource.

Within the footprint of the COP Works are locations with the potential to expose evidence of early occupation and settlement, wharf building, and the infrastructure and architecture of maritime and mercantile industries at Millers Point and Darling Harbour. The TSE archaeological investigations in 2018 demonstrated that the historical archaeological resource survives with good integrity in many parts of the site. Archaeological excavations during the COP Works have the potential to provide insights into Sydney's past that are not available from other sources.

The archaeological potential at the site includes:

- Moderate to high potential for evidence of Thomas Agars' pre-1833 infilled jetty
- Moderate potential for the remains of abandoned vessels, refuse and detritus from boatbuilding activities to have been buried by the estuarine sands in areas of low water.
- Moderate potential for mid-century boat sheds and seawalls.
- Moderate potential for evidence of the early foreshore and possibly lime kilns
- High potential for Cuthbert's shipbuilding yard and wharf including a narrow dock that was constructed prior to 1863, evidence of the 1863 and 1865 stone seawalls, and moderate potential for the large timber store and the footings of several peripheral structures.
- High potential for evidence of boatbuilding activity in the form of discarded boat parts, timber offcuts and tools on Cuthbert's wharf surface.
- Moderate potential for Dibbs' modification of the wharf including changes to seawalls and fills to raise the height of the wharf, as well as Dibbs' flour shed and several peripheral structures at the rear of the wharf.

The site is significant at a local level for its ability to contribute to our understanding of development and change in Darling Harbour throughout the nineteenth century, including working conditions and day-to-day life in the shipyards, investment and change in the material culture of altered landscapes and land creation, the influence of topography as a delimiter on construction and the material manifestation of commercial ambition in wharf creation and building construction. The site has the potential to represent these changes as they occurred both through the large-scale developments of Cuthbert and Dibbs, and also through the piecemeal undertakings and modest ambitions of the small landholders on Lots 3 and 4 at the southern end of the site.

The research potential of the site is related to the adaptation and development of the eastern shore of the bay, the day-to-day working conditions of the shipyard, the scale of the undertakings in wharf-building and reclamation. The site is significant at a local level for its ability to represent these changes as they occurred in the nineteenth century development of Darling Harbour and Millers Point.

Evidence of the early nineteenth century occupation and exploitation of the resources in and around Darling Harbour would be rare and would offer a unique representation of these activities that could not be gained from other sources. If remains of Martin's lime kiln and associated contexts or structures survive with good integrity at the site they may be of State significance for their ability to represent early lime-burning technologies in Sydney and the use of naturally occurring shell beds and middens in Darling Harbour for lime burning.

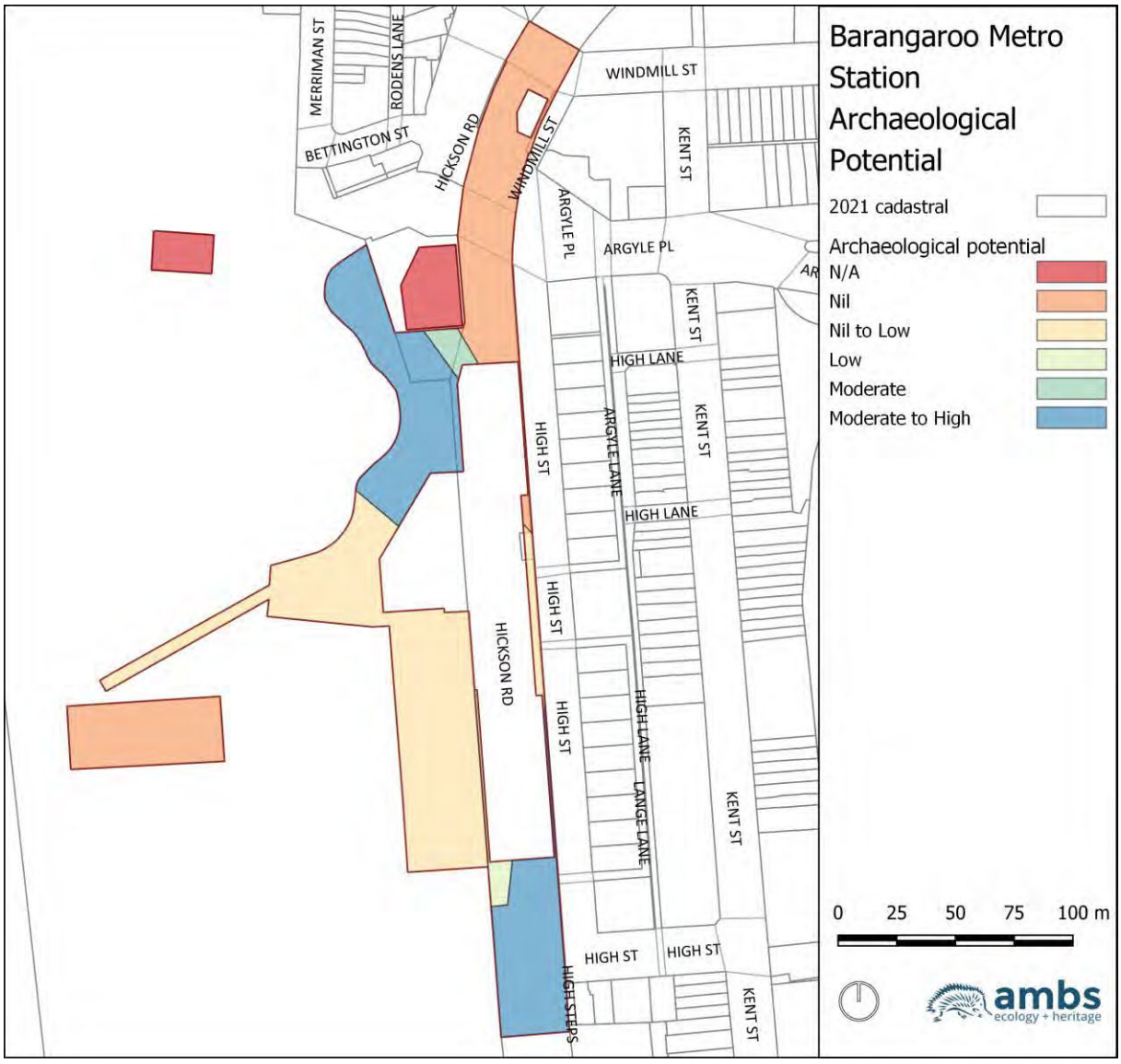

Figure 3.1: Archaeological potential at the site.

3.2 Aboriginal Heritage

Prior to the start of work all on-site staff will be given an Aboriginal heritage induction (see section 8.7). The induction will outline the significance and potential of the site, and the procedures in place to manage the resource.

The results of the TSE archaeological excavations within the Barangaroo station box confirmed that the eastern portion of Hickson Road has been extensively disturbed by the construction of the road, which required cutting into the sandstone to level the area for construction. Archaeological deposits in the eastern portion of the Hickson Road COP Works are likely to have been removed where this has occurred. Likewise, extensive wharf-building activity and the construction of substantial bond stores in the northwest of the site are expected to have had similar impacts. However, in the limited locations where the level of the shoreline was such that it required infilling prior to road construction or wharf building, Aboriginal archaeological deposits or natural sandstone surfaces with potential to retain engravings or rock art may remain relatively undisturbed beneath fill materials. If Aboriginal archaeological items are present at the site, they will be of moderate or high heritage significance.

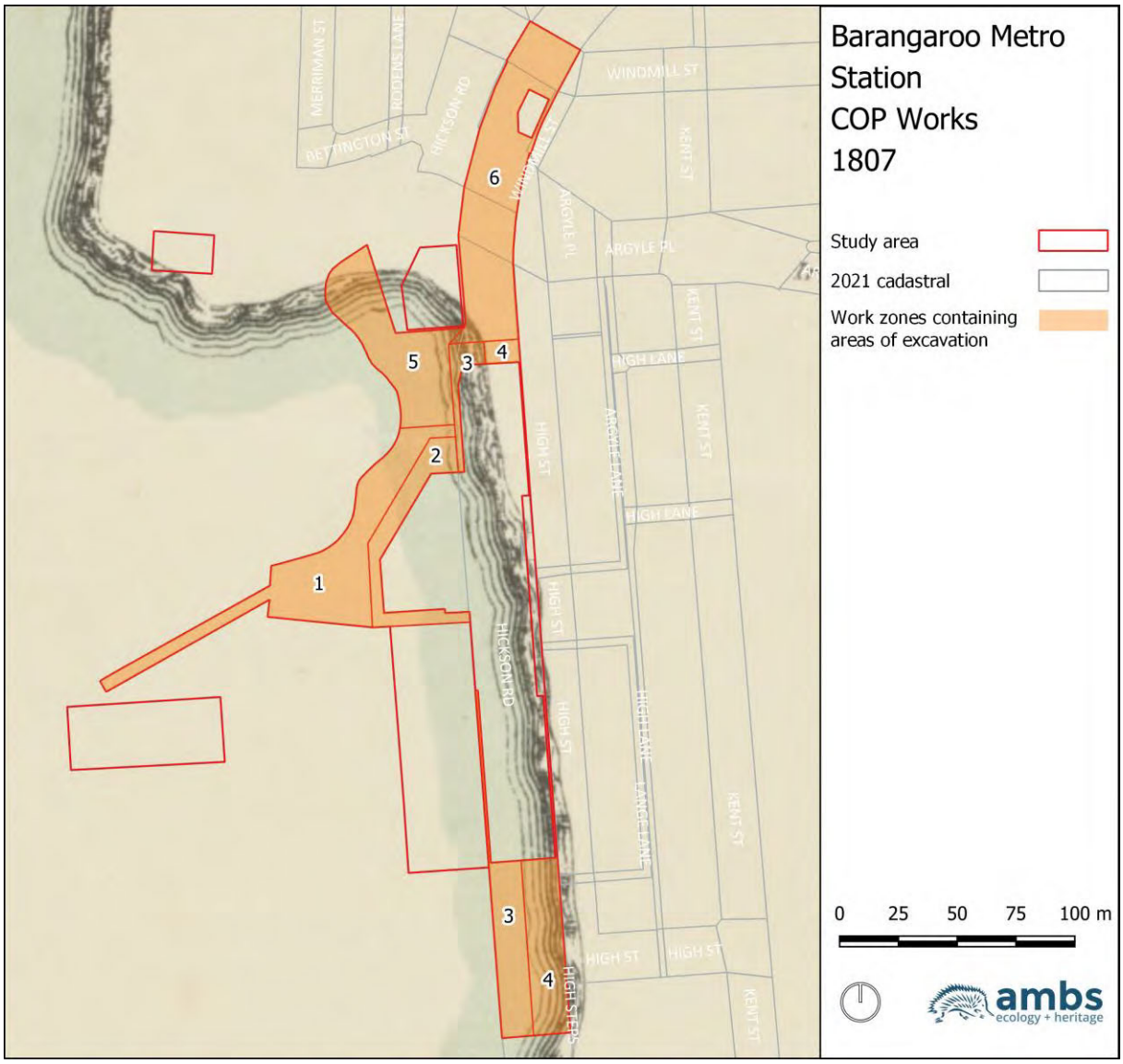

Figure 3.2: The 1807 shoreline relative to the study area, work zones, and areas of excavation.

3.2.1 Heritage investigation and management

The scope of Aboriginal and historic heritage investigation and management entails:

1. Delineating (fencing off) to protect any heritage items to be retained within the Construction Sites and installation of protection measures required to mitigate potential impacts on directly adjacent heritage items
2. Archaeological investigation strategies including:
    a. Development of an archaeological testing, investigation and salvage program for areas identified as having Potential Archaeological Deposit (PAD)
    b. Implementation of the archaeological testing, investigation and salvage program
    c. Reporting on the findings of all archaeological investigations.
    d. Implementation of an unexpected finds procedure

3.2.2 Sydney Metro's heritage scope and responsibilities

Sydney Metro will be responsible for heritage investigation and management not listed in Section 3.2.3 including:

- Archival recording of all other heritage items and streetscapes adjacent to the Construction Site (except those listed in Section 3.2.3)

- Development of the Heritage Interpretation Plans, to meet the requirements of REMM NAH8 and CoA E21. The overarching Chatswood to Sydenham Heritage Interpretation Plan (SM HIP) was submitted to the Secretary on 11th May 2017 (including details of consultation). The site-specific Heritage Interpretation Plan for Barangaroo Station (Station HIP) will be submitted to DPIE prior to the commencement of permanent above-ground works as per the Sydney Metro Chatswood to Sydenham Staging Report (Staging Report).
- Appointment of Peter Phillips who is the appropriately qualified and experienced heritage architect, as required by NAH 6, forming part of the Sydney Metro Design Review Panel and who has provided independent review periodically throughout the detailed design.

3.2.3 BESIX Watpac's COP Works Heritage Scope

The scope of the COP Works includes:

- Fencing off to protect any heritage items to be retained within Construction Sites
- Implementation of the Sydney Metro Exhumation Management Plan if historic or Aboriginal human remains will be disturbed
- Implementation of the Sydney Metro SM HIP and the site-specific Station HIP for Barangaroo Station as relevant to BESIX Watpac's construction activities as the Barangaroo Metro Station
- Site establishment
- Stormwater installation
- Waterproofing of station concrete roof, backfill and installation of landscaping and station entrance cladding, escalators and lifts
- Demolition and removal of the existing red steel girders and road deck. Relocation of services. Complete concrete structure of ventilation pods, waterproof station concrete roof, backfill, install services and relocate the road, kerb and guttering. Install street trees / landscaping and clad the station ventilation and emergency egress stair pods
- Excavation of existing carpark, removal of existing surfaces, installation of new services to the chilled water plant room under Headland Park
- Removal of the northern shaft acoustic shed, infill of the northern shaft with sand; replacement of the road, kerb and landscaping works
- Connecting up and commissioning plant and pipework

The COP Works will require the following heritage investigation and management:
Archaeological investigation strategies including:

- Preparation of Archaeological Method Statements for historical and Aboriginal archaeology
- Development of an archaeological testing, investigation and salvage program for areas identified as having historical archaeological potential and Aboriginal PADs
- Implementation of the archaeological testing, investigation and salvage program
- Processing and analysis of historical and Aboriginal archaeological artefacts
- Preparation of Archaeological Relic Management plan for the unexpected discovery of state significant relics
- Reporting on the findings of all archaeological investigations following completion of all archaeological investigations and issue of clearance certificates.
- Implementation of an unexpected heritage finds procedure
- Implementation of the Sydney Metro Exhumation Management Plan in the event of human remains being discovered.
- Compliance with the Sydney Metro Heritage Interpretation Plan (HIP) as relevant to construction activities at the Barangaroo Metro station.

3.2.4 Heritage Management System Overview

Documents for Aboriginal and historic heritage management on the COP Works are outlined in Table 2.

Table 2 Aboriginal and historic heritage documents

Document type	Aboriginal heritage	Historic heritage
Strategic Assessment	Sydney Metro Aboriginal Cultural Heritage Assessment	Sydney Metro Non-Aboriginal Heritage Impact Assessment Sydney Metro Historical Archaeological Assessment and Research Design
Management Plan	Barangaroo COP Construction Heritage Management Plan (this Plan)	
Methodology Statement	Barangaroo COP Aboriginal Archaeological Method Statement detailing archaeological strategies and methodologies for inspection, testing and salvage (Appendix A)	Barangaroo COP Historical Archaeological Method Statement which includes detailed research questions and archaeological strategies and methodologies for monitoring, testing and salvage excavation (Appendix A)
Construction Protocols	Barangaroo COP Aboriginal and Historic Heritage Management and Unexpected Finds Procedures and Archaeological Relics Management Plans if required (See Section 9.3)	
	Sydney Metro Project Wide Exhumation Management Plan (if triggered)	
Hold Point release letters	Hold Point sign-offs for each item and place recorded	Hold Point sign-offs for each item and place recorded
Certificate	Clearance Certificates for areas after completion of archaeological works	Clearance Certificates for excavation areas after completion of archaeological investigations
Reports	Preliminary archaeological findings reports (40 business days after issue of Clearance Certificates)	Preliminary archaeological findings reports (40 business days after issue of Clearance Certificates)
	Final Aboriginal archaeological report (two years after completion of the entire archaeological investigation program)	Site specific Heritage Archival Reports for each relevant item (two years after completion of recording)

Document type	Aboriginal heritage	Historic heritage
	OEH Aboriginal Heritage Information Management System registration (if required for any unexpected finds)	Final Historical Archaeological Excavation Report (two years after completion of the entire archaeological investigation program)

4 Management of Listed Historic Heritage Items

BESIX Watpac's historic heritage consultant is AMBS Ecology & Heritage. Jennie Lindbergh, AMBS' Director Historic Heritage, will be responsible for directing all aspects of built and industrial heritage within the COP scope, including:

- Provision of written and verbal heritage advice as required on all heritage aspects of the project, and
- Overall responsibility for the quality of all heritage outcomes.

Jennie, has a Master of Heritage Conservation, Architecture, University of Sydney (1998) and has been responsible for significance and impact assessments, management plans and interpretation plans for built and industrial heritage items and places since that time. Since 2017 Jennie has provided high level heritage advice and reports on the Sydney Metro City & Southwest Project for the John Holland CPB Ghella JV, and was the Primary Excavation Director on archaeological excavations at six of the new station sites.
Sydney Metro is currently managing the archival and photographic recordings of affected heritage listed buildings and associated streetscapes. An appropriately qualified and experienced heritage architect was appointed by Sydney Metro to the Design Review Panel and has been involved as part of the Design Review Panel throughout the evolution of the Barangaroo Station design process in accordance with condition NAH6.

4.1 Adjacent Historic Heritage Items

There are a number of listed heritage items that in the vicinity of the COP works requiring management during construction. These are summarised in Table 3 below and have been identified during an environmental risk assessment as requiring management during construction in accordance with CEMP item C4(d). The process for the management of environmental risks is outlined in Chapter 3 of the CEMP. The program for the ongoing analysis of key environmental risks, and a review of the environmental risk register in Appendix I of the CEMP, will take place as outlined in Chapter 3 of the CEMP. Damage to these items will be avoided in accordance with condition NAH11.
Heritage listed items in the vicinity of the COP works are detailed in the sections below.

4.1.1 Warehouses/ Munn Street Bond Stores/ Dalgety Bond Stores

The **Warehouses/Munn Street Bond Stores/ Dalgety Bond Stores (SHR 00526)** group consists of two complimentary warehouse buildings fronting onto what is now the Munn Reserve. They both feature free classical facades but illustrate two distinct phases in warehouse construction – one incorporating a timber structure, the other steel. The original detailing is largely intact , both internally and externally. The group contain a hydraulic pump and lift structure which is given an "A" class listing by the National Trust's IEA Committee. The bale lifts and overhead crane were fabricated by Babcock & Wilcox. (Anglin 1990:1042).
The former Dalgety's Bond Store is a good example of an early stone warehouse, which if retained will maintain a link with the early commercial character of the area, once the hub of Sydney's shipping activity. (M. Stapleton 1978)

4.1.2 Millers Point & Dawes Point Village Precinct

The **Millers Point & Dawes Point Village Precinct (SHR 01682)** is of state significance for its potential to yield information from its archaeological resources not readily available elsewhere. Excavation in Work Zones 3 and 4 will remove the archaeological resource from within the curtilage of the Millers Point & Dawes Point Village Precinct.
The building and archaeological fabric of the place has remained intact through community opposition to redevelopment, resulting in a large number of sites within the locale that remain

comparatively or minimally undisturbed. This physical evidence of the area's history is complemented by the wealth of oral history contained within the existing resident population, which is a rare resource that allows a greater opportunity to understand the historic role of Millers Point and its social frameworks.
Impacts to the Millers Point and Dawes Point Village Precinct include the archaeological resource beneath Hickson Road and potential indirect impacts through vibration caused by construction activities in the vicinity of the Hickson Road Retaining Wall and adjacent structures on High Street. An Historical and Aboriginal Archaeological Method Statement (AMS) have been prepared for the project by AMBS, included in Appendix A, which include mitigation strategies for the removal of the archaeological resource associated with the Millers Point and Dawes Point Village Precinct (Section 6 and Section 8.1.2). A Construction Noise and Vibration Impact Statement (CNVIS) has be prepared that addresses construction activities in the vicinity of the heritage items shown in Figure 4.1. Structures that are assessed as being potentially affected will be monitored to ensure that damage is avoided or minimised throughout the construction period in accordance with condition NAH11.
The Hickson Road Retaining Wall (Section 4.1.3 below) is an important contributory element to the Millers Point & Dawes Point Village Precinct that is within the study area. It is discussed in detail separately.

4.1.3 Retaining Wall, Palisade Fence and High Steps

The Hickson Road **Retaining Wall, Palisade Fence and High Steps (I881, I882 Sydney LEP 2012)** are a contributory element to the **Millers Point & Dawes Point Village Precinct (SHR 01682)**. In July 2017, AMBS Ecology & Heritage prepared a Statement of Heritage Impact (SoHI) for the Hickson Road Retaining Wall, also known as the High Street Cutting, High Street Wall, and the Hickson Road Wall (*High Street Cutting, Millers Point Statement of Heritage Impact*). The report identified the wall as being contributory to the significance of the Millers Point & Dawes Point Village Precinct and as having historic, aesthetic and social significance. The supporting Statement of Significance for the SoHI *Hickson Road Retaining Wall Heritage Significance Assessment Technical Report* was prepared by GML Heritage for the Sydney Metro – City & Southwest – Technical Services in February 2017. GML Heritage also provided the *Hickson Road Retaining Wall Barangaroo Conservation Policy and Guidelines* for Sydney Metro in April 2021.
The Hickson Road Retaining Wall is a significant, contributory built element within the Millers Point and Dawes Point Village Precinct and the Millers Point Conservation Area, an intact residential and maritime precinct of outstanding state significance. The retaining wall is a dominant and relatively intact component of the extensive alterations to the natural topography of Millers Point designed to facilitate the management of cargo into and out of the new two-level finger wharves. The wall incorporated steps at its northern and southern ends to provide improved access to the wharves for stevedores and wharf workers who resided in Millers Point. It provides a dramatic street edge to the eastern side of Hickson Road. The wall has landmark quality and displays an interface of fabrics, comprising the excavated rock face, cement render and masonry construction at the northern end of the wall. While there are varying degrees of erosion and deterioration to the stone/render, as well as intrusive fixtures, signage and penetrations, the retaining wall continues to define the edge of Millers Point and makes a positive contribution to the unique landscape character of Hickson Road.
The Hickson Road Retaining Wall holds social significance as it forms part of the ‘Hungry Mile’, a historic stretch of Sydney’s waterfront where men and women would walk from wharf to wharf in search of employment during the Great Depression of the 1930s. (GML 2017:22-23)
The significance of the High Street cutting and retaining wall as a contributory item of the state heritage Millers Point & Dawes Point Village Precinct should be understood by all on-site staff and construction team to ensure that no inadvertent damage is done to the wall.
Prior to works commencing, all on-site staff will be briefed on the heritage requirements of the High Street Cutting and retaining wall, its heritage significance, and the value of its fabric. There is potential for inadvertent damage to the wall during the nearby construction of the Barangaroo station and the reinstatement of Hickson Road. The CNVIS addresses construction activities in the vicinity of the wall and stipulates that vibration monitoring be undertaken to ensure that damage is avoided or minimised throughout the construction period. Monitoring will include the

use of attended vibration monitors where vibration significant plant is operating within minimum working distances in proximity of the wall. In addition to this, BESIX Watpac will comply with the *Hickson Road Retaining Wall Barangaroo Conservation Policy and Guidelines* (GML, 2021) guidelines for all relevant works and undertake conditions surveys of the wall prior to the commencement of construction on site and at the conclusion of the construction of the station.

4.1.4 Bridges Over Hickson Road

Landmark bridge structures (1869 Sydney LEP 2012) form a "tunnel", and gateway between the Darling Harbour and the Walsh Bay wharf and shipping terminus. Rock excavations and concrete walling form dramatic high walls, and the generous width of Hickson Road emphasises the scale. The structures demonstrate an early use of reinforced concrete in Sydney. The bridges are located on Munn Street, Argyle Place and Windmill Street. The CNVIS has not identified any risk of damage to the bridges due to the vibration caused by BESIX Watpac's construction activities. Notwithstanding this, there is a risk of inadvertent damage to these structures during the removal of the existing acoustic shed currently located in the void between the two bridges. BESIX Watpac will undertake pre-construction condition surveys of both bridges as well as post completion condition surveys to mitigate any direct impact of construction in accordance with REMM NAH11.

4.2 Vibration Considerations

A Construction Noise and Vibration Impact Statement (CNVIS) that addresses the heritage structures in the vicinity (Figure 4.1) has been prepared by Renzo Tonin, The CNVIS has identified that the Munn Street Bond Store / Dalgety Bond Stores (SHR 00526) and the Hickson Road heritage wall (SHR 01682) are the two heritage structures in the vicinity of the station construction activities, within minimum working distances for cosmetic damage to heritage structures (2.5mm/s ppv) if vibration significant plant is operating in the immediate vicinity of these structures. To mitigate any direct impact, in accordance with REMM NAH11, the following measures will be implemented:

- Permanent vibration monitoring equipment will be mounted on the Munn Street Bond Store / Dalgety Bond Stores (SHR 00526)
- Where vibration intensive plant is required to operate within the site-specific minimum working distances, as outlined in the CNVIS, attended vibration monitoring will be undertaken to verify that vibration levels achieve compliance with the structural damage objectives
- If the monitoring being undertaken identifies that vibration is likely to exceed, or is exceeding the structural damage objectives, the construction methodology will be reviewed and, if necessary, additional mitigation measures will be implemented
- Conditions surveys of the Munn Street Bond Store / Dalgety Bond Stores (SHR 00526) and the Hickson Road heritage wall (SHR 01682) will be undertaken in advance of, and at the conclusion of construction activities on site

In accordance with CoA E31, where noise, vibration, or movement monitoring equipment needs to be installed on a heritage structure, a heritage specialist will be consulted to advise on the method and mounting locations of such equipment.

Table 3 Historic heritage items requiring management during construction

Item	Address	Listing	Significance	Potential impact	Mitigation Measures
Warehouses/ Munn Street Bond Stores/ Dalgety Bond Stores	6-20 Munn Street, Millers Point, NSW 2000	00526 SHR	State	CNVIS has identified a risk of damage due to vibration if vibratory intensive plant is operating within minimum working distances of this building. This building will be used as an office during construction, without further modification to the building's interior or exterior.	A permanent vibration monitor will be affixed to this structure as recommended by the CNVIS. A pre and post construction condition survey will also be undertaken. Vibration levels will not be permitted to exceed CVNIS recommendations
Millers Point & Dawes Point Village Precinct	Upper Fort Street, Millers Point, NSW 2000	01682 SHR	State	Major Direct The COP works have the potential to remove the archaeological resource from areas of Hickson Road	Archaeological investigation and salvage, archaeological interpretation
Bridges Over Hickson Road	Argyle Place (And Munn and Windmill Streets), Millers Point, NSW 2000	I869 Sydney Local Environmental Plan 2012	Local	Indirect The COP Works will not have a direct impact on the heritage fabric of this item. There is a risk of inadvertent damage through movement of plant during removal of the acoustic shed.	Protect original fabric against inadvertent damage during Hickson Road replacement works and acoustic shed removal. Pre and post construction condition survey to be undertaken
Retaining Wall, Palisade Fence and High Steps	High Street, Millers Point, NSW 2000	I881 and I882 Sydney Local Environmental Plan 2012	Local	Indirect The COP Works will not have a direct impact on the heritage fabric of this item. There is a risk of inadvertent damage from tools and plant operating in the vicinity of the wall and vibratory damage as identified in the CNVIS. Potential impact during the removal of the protective mesh put in place during the TSE works.	Protect original fabric against inadvertent damage during construction activities. Vibratory intensive plant and equipment will be monitored with attended vibration monitors when operating within minimum working distances of the wall as outlined in the CNVIS An Environmental Works Method Statement (EWMS) to be prepared and issued prior to mesh removal works commence
Cuthbert's Seawall & Deadman Anchor Blocks (re-instated)	Foreshore of Nawi Cove between The Cutaway and 25 Hickson Road, Barangaroo, 2000	HP8. Barangaroo Development Authority – Heritage and Conservation register	Local	Direct The COP Works will necessitate the temporary removal, storage and then reinstatement of these items.	Protect items insitu during tree removal activities. Survey, photo-document, remove, store and re-instate following construction activities.

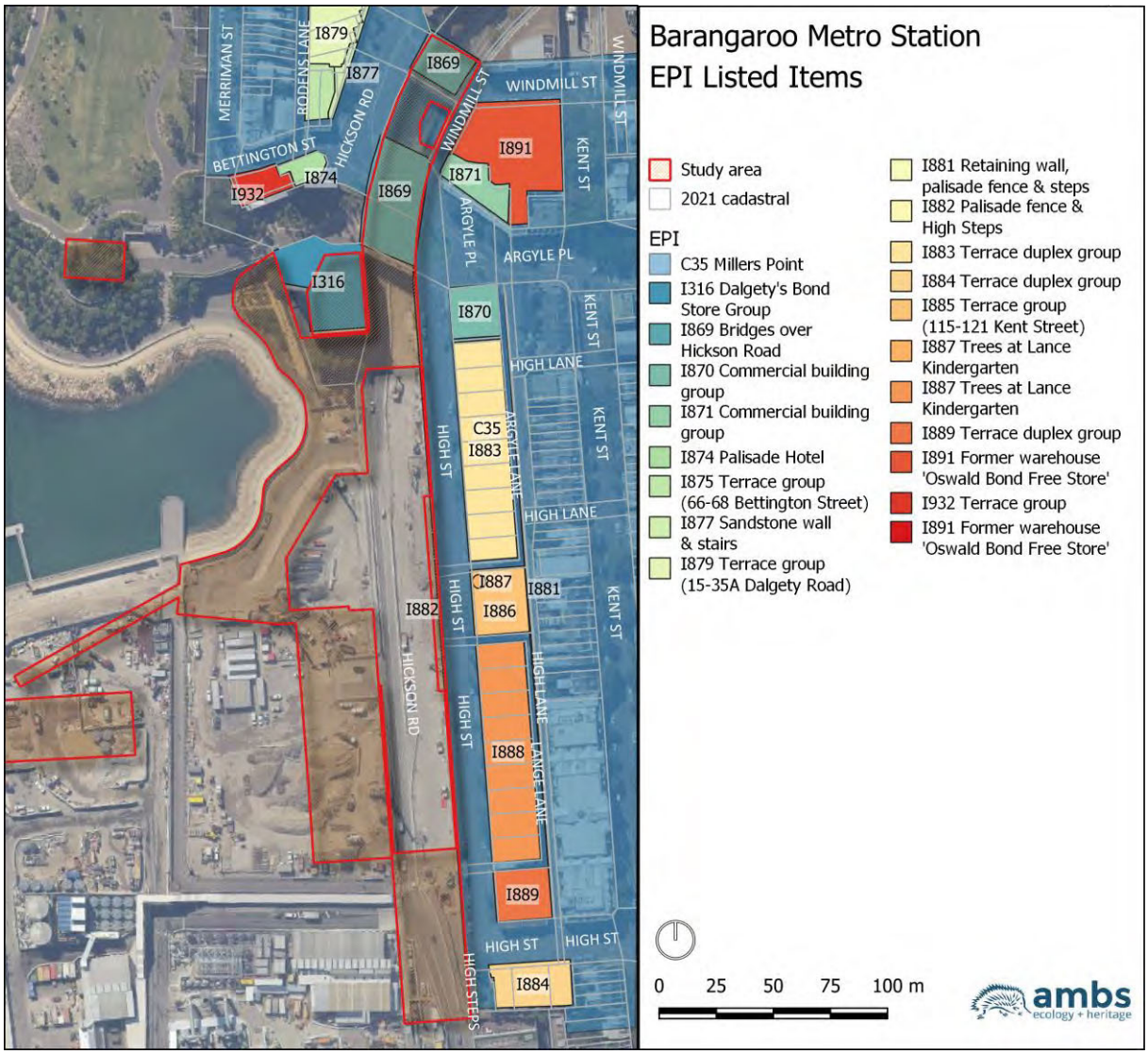

Figure 4.1: EPI listed items in the vicinity of the project area.

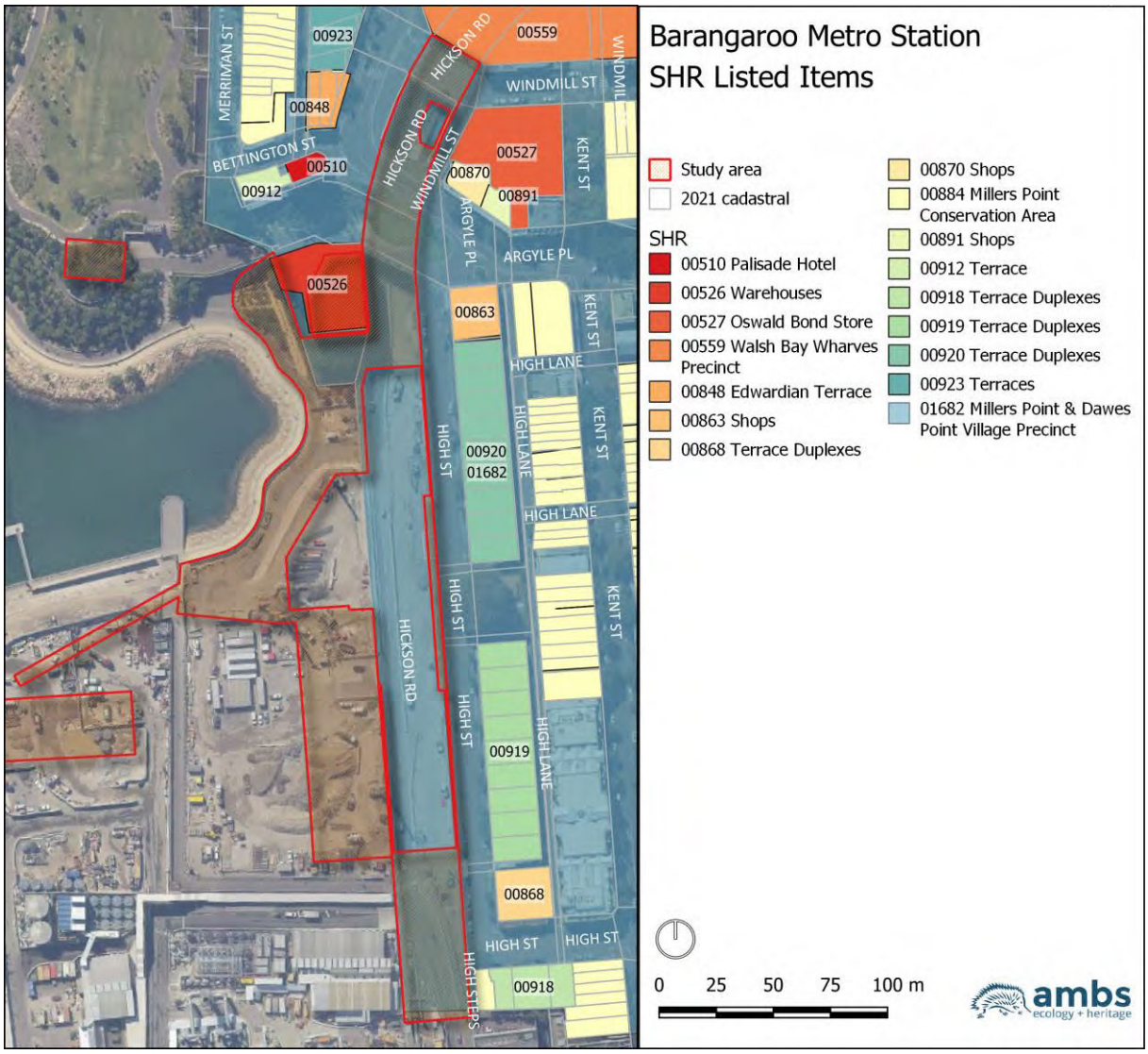

Figure 4.2: SHR listed items in the vicinity of the project area.

4.3 Photographic and archival recording

4.3.1 Overview

The Hickson Road Wall is the only heritage item that requires photographic archival recording at the Barangaroo site as required by CoA E13(b). Photographic and archival recordings of the Hickson Road Wall has already been undertaken by Sydney Metro and was submitted to DPIE on the 22nd December 2019 as part of the following reports:

- Sydney Metro – Chatswood to Sydenham Photographic Archival Recording Report (MGL, August 2019)
- Hickson Road Bridges Archival Recording (Alexander Mayes, April 2018)

4.3.2 Reporting

A memo addressing the impact of the removal of the mesh from the High Street Cutting has been prepared by AMBS however this activity is currently excluded from the scope of BESIX Watpac's construction activities on site

4.4 Protection of Historic Heritage Items to be Conserved

4.4.1 Overview

The boundary of the construction worksite will be fenced to prevent construction personnel and plant from inadvertently damaging listed heritage items or sites outside the construction footprint. As noted in Table 3, the COP Works are likely to have a potential impact on the following heritage items:

- Millers Point & Dawes Point Village Precinct (including the Hickson Road Retaining Wall)

Where works are taking place in proximity to any of the identified heritage items the heritage status of these items should be incorporated into safety planning sessions like High Risk Workshop and documented. This documentation should be updated post planning sessions to reflect the content covered and/or discussion points should be included in minutes of meetings held. Subcontractor methodology documentation should be reviewed in advance of the works and progressively updated as required to ensure all heritage risks of the works are communicated and reviewed appropriately.

Where there is a potential risk of physical impact to heritage listed items, the nominated heritage consultant for the Site should review proposed methodologies and provide advice as required to ensure the materials, equipment and techniques used are appropriate to the conservation of the heritage fabric. Special attention should be paid to methodologies where works are physically adjoining or attached to heritage items.

4.4.2 Millers Point & Dawes Point Village Precinct

Millers Point & Dawes Point Village Precinct is of state significance for its ability to demonstrate, in its physical forms, historical layering, documentary and archaeological records and social composition, the development of colonial and post-colonial settlement in Sydney and New South Wales. Millers Point & Dawes Point Village Precinct is of state significance under SHR Criterion (e) for its potential to yield information from its archaeological resources not readily available elsewhere.

The archaeological resources which may be affected by the Barangaroo COP works are located beneath Hickson Road and fall within the curtilage of the Millers Point and Dawes Point Village precinct. The SHR listing for the item notes that much of Millers Point retains high archaeological potential, as demonstrated in reports by Higginbotham et al, notably Observatory Hill, Fort Street School and its immediate environment, and under all c.1900 buildings, external spaces and asphalted areas.

Millers Point is notable for the presence of the earliest known above-ground archaeological structures relating to Fort Phillip. Archaeological significance and potential to reveal items of historical merit is considerably higher than elsewhere in the Sydney CBD.

The archaeological resources in this area have been assessed as locally significant by the AARD and historical Archaeological Method Statement (AMS), with the possible exception of an early lime kiln, the historical location of which is uncertain, but may be within the study area footprint, and would be of State significance if it survived with good integrity.

The mitigation for the impacts to the archaeological resource is archaeological salvage excavation, analysis, reporting and interpretation of finds as detailed in the project AARD and historical AMS and outlined in Section 6 and Section 8.1.2. The AMS is provided in Appendix A.

5 Historical Archaeological Investigations

5.1 Excavation Directors

5.1.1 Mike Hincks, Historical Archaeology Primary Excavation Director

AMBS Senior Historic Heritage Consultant, Mike Hincks, will lead historic heritage investigation and archaeological investigations on the COP Works. Mike takes the lead on many historic heritage projects and provides high-level advice on heritage issues for government agencies and private sector clients.

Mike is a Senior Heritage Consultant with over 15 years' experience in commercial heritage management in NSW, including over 9 years' experience as a Senior Archaeologist and Heritage Consultant in historical archaeology in Sydney and over 5 years' experience in Aboriginal archaeology across NSW. Mike has been Primary Excavation Director for locally significant projects in Sydney and Parramatta, and Secondary Excavation Director for state significant projects in Western Sydney and Parramatta including testing at the Female Factory site, Cumberland Hospital, North Parramatta, and open area excavation of the 1813 Market/Annual Feasts site at 7PS, Parramatta. Mike has managed excavations at World Heritage listed Cockatoo Island and Old Government House. He has managed large teams and multiple trenches on complex maritime industrial sites at Barangaroo and Darling Quarter. Mike has written excavation reports, assessments, SoHIs and interpretive works for many archaeological and built heritage sites in NSW.

Mike was secondary Excavation Director on the Barangaroo Station TSE Works archaeological investigations for Casey & Lowe in 2018 and has been excavation director or site director on many similar maritime sites in Sydney including Darling Quarter (2009), Cockatoo Island (2010), Barangaroo South (2010-11), and Darling Square (2016).

5.1.2 Lian Ramage, Historical Archaeology Secondary Excavation Director

Secondary Excavation Director Lian Ramage will assist with the on-site day-to day management of the excavations, as appropriate and under the direction of the Primary Excavation Director. Lian Ramage is an archaeologist with over ten year's archaeological experience and has participated in heritage projects across Australia and internationally in the UK and Italy. She has experience in the successful completion of Historical assessments, archaeological surveys, excavations, and post excavation analysis of Historical artefactual material. She has authored reports including Historical Impact Assessments, Statements of Heritage Impact, Archaeological Assessments and Historical Archaeological Excavation reports and written the artefactual analysis components for Historical Archaeological Excavation reports.

Her specialist skills include the excavation and analysis of human osteological material and analysis of Australian faunal skeletal material. She has extensive experience in archaeological surveys and historical excavations on sites dating from early colonisation to later European settlements. She is an experienced project manager and specialises in large scale historical excavations successfully running field teams and training student archaeologists in historical excavation methods. She has proven historical expertise and meets the Heritage Council's Excavation Director's Assessment Criteria for section 140 archaeological excavations. Additional detail and response to excavation director's criteria is provided in Appendix B.

5.1.3 Additional Archaeological Resources

AMBS will assemble a team of experienced archaeologists to be available to work at the Barangaroo site including Site Supervisor AMBS Historic Heritage Consultant James Cole and Historic Heritage Consultant Madeline Rodwell
AMBS will also be adding Cosmos Coroneos of Cosmos Archaeology, to the team as the maritime archaeologist, if required. Cosmos was involved in the recovery of the 180s boat (UDHB1) during the TSE Works archaeological excavations at Barangaroo in 2018 and has over 25 years experience in maritime archaeology.
Additional detail is provided in Appendix B.
In addition, AMBS will recruit recent graduates and junior archaeologists, who will be closely monitored and trained to develop their excavation and analysis skills during the excavations.
A key team member will be the archaeological surveyor who will establish site data, set out grids and provide spatial data in support of all archaeological investigations. Watpac will also provide additional personnel, plant and equipment to support the archaeological excavations.

6 Historical Archaeological Method Statement

A historical Archaeological Method Statement has been prepared for the Barangaroo COP works, in accordance with Condition E17. The historical Archaeological Method Statement is one of two AMS's prepared for the project. The Aboriginal Archaeological Method Statement is discussed in section 8.1.2. The method statements are provided in Appendix A.

AMBS has undertaken additional research to verify the findings of the EIS AARD with regard to the likely archaeological potential at the site. The research included analysis of historic maps and plans and other primary sources as well as the preliminary results of the Barangaroo TSE archaeological excavations. The archaeological potential of the site has been further refined in the Archaeological Method Statements for historical and Aboriginal archaeology. The scope of archaeological investigations will be determined by the final design and impacts for the COP works. Archaeological testing prior to the works is recommended to establish the depth and integrity of the archaeology, followed by open area salvage excavation where impacts will occur. The historical Archaeological Method Statement includes additional research and an appropriate strategy for managing the archaeological resources, in accordance with the likely significance, integrity and research potential. The method statement includes research questions and a research design to guide the archaeological methodology.

Two large-scale open area archaeological excavations have taken place within and adjacent to the study area in the last 8 years. In 2013 Austral Archaeology undertook archaeological investigations within Hickson Road and to the northwest of the study area as part of the construction of Nawi Cove. In 2018, Casey & Lowe undertook open area investigation of the station box for Barangaroo Metro station. Archaeological excavations by Austral within the Northern Cove Excavation area primarily identified remains associated with shipbuilding and maintenance and land reclamation, firstly, relating to Munn's (1824-1848) occupation of the site, then to Cuthbert's Shipbuilding Yard (1854-1875). Following this was the construction of Dibbs' Wharves (c.1875-1899), then the resumption of the land followed by the establishment of a concrete seawall (1900-1907). The investigations by Casey & Lowe encountered substantial archaeology in five areas:

In Areas R and T (immediately adjacent to Work areas 1 and 2 in the current project), the investigations found evidence of Cuthbert's shipbuilding yard and wharf (1854-1875) and Dibbs's seawalls and wharfage (c.1875-1899). The remains included timber debris, extensive evidence of woodworking and distinct areas of activity on Cuthbert's wharf surface. Cuthbert's seawalls and a slipway, and piles for suspended wharfage were also found in good condition. Modifications to the walls and slipway that were undertaken by Dibbs, and contemporary public steps and paving were found at the termination of Clyde Street. Cuthbert's wharf and shipbuilding yard, and buildings associated with Dibbs' use of the wharf are also partly located within Work Zones 1, 2 and 5 of the current project.

The remains of a rocky and sandy intertidal zone that predated the extension of Clyde Street was found beneath Hickson Road (in Area X), next to the foundations of an 1830s house. Partly buried by the beach sand was the remains of a 30ft boat that had been abandoned prior to the construction of Cuthbert's wharf. Similar intertidal environments are thought to have existed within the current study area adjacent to boatbuilding businesses in Work Zones 3 & 4 South.

In Areas Y and Z were the remains of late nineteenth century wharf structures, built on the outcropping sandstone and reclaimed land beneath Hickson Road. The truncated remains of a well or cistern associated with housing on Wentworth Street was located in Area Z adjacent to Work Zones 3 & 4 North, and Work Zone 6.

Based on the results of the excavations and further research, an updated assessment of archaeological potential was prepared for the historical AMS. The updated assessment of archaeological potential is shown in Table 4 and Figure 6.1. A mitigation strategy of archaeological excavation and recording has been developed based on the assessment of potential and is discussed in sections 6.1.1-6.1.4 and section 7 below.

Table 4 Archaeological potential at the site

Work Zone	Phases represented	Archaeological potential	Comments
3 and 4 (south)	• Early development of the foreshore (Phase 1: 1788-1830) • Mid-century boat sheds (Phase 2: 1830-1900) • Late nineteenth-century wharf construction (Phase 2: 1830-1900)	Moderate-High	This area has Moderate to high potential for evidence of Thomas Agars' pre-1833 infilled jetty including cut stone or rubble walls and working surfaces. The empty beachfront of the adjacent government land is likely to have been permissively used and may contain residential or commercial refuse or offcuts and discards from nearby boatbuilding activities. The low water and undeveloped beach in the northern part of this area is likely to have been a similar environment to that in which UDHB1 was found during the Station Box excavations. There is potential for the remains of abandoned vessels to have been buried by the estuarine sands along this stretch of beach. The mid-century boat sheds depicted on the 1865 survey were demolished prior to the construction of the filled-in wharf (c.1876). It is possible that the structural material of the sheds was used as part of the infill and highly likely that the foundational piles of these structures will remain buried beneath the wharf fills. There may be evidence of partially completed seawalls which were not finished prior to resumption in 1901.
1, 2 and 5	• Early foreshore (Phase 1: 1788-1830) • Cuthbert's shipbuilding yard (Phase 2: 1830-1900) • Dibbs' wharf and stores (Phase 2: 1830-1900) • Gibb & Bright's bond and wool stores (Phase 2: 1830-1900)	Moderate-High	This area has Moderate potential for evidence of the early foreshore including Martin's narrow jetty (it may be located further to the northeast). There is High potential for evidence of Cuthbert's shipbuilding yard and wharf including a narrow dock that was constructed prior to 1863, evidence of the 1863 and 1865 stone seawalls, and moderate potential for the large timber store and the footings of several peripheral structures. The narrow dock appears to have been short-lived, and its infill and construction methods may contain evidence of why that was so. It is also likely to contain evidence of boatbuilding such as offcuts and abandoned boat parts that found their way into the dock while it was in use. Previous excavations by Austral and Casey & Lowe suggest that there is a high potential for evidence of boatbuilding activity in the form of discarded boat parts, timber offcuts and tools on the wharf surface. There is moderate potential for evidence of Dibbs' modification of the wharf including changes to seawalls and fills to raise the height of the wharf, as well as Dibbs' flour shed and several peripheral structures at the rear of the wharf. The scale of the woolstore recorded in 1894 suggests that this is the most likely structure to have left substantial evidence.
1, 2 and 9	• Construction of Dibbs' finger wharfs	Nil-Low	This part of the study area was not infilled until the second half of the 20th century and was deep water throughout the 19th century. Although evidence of Dibbs' finger wharfs may remain, it is likely to only be in the form of cut-down timber piles, which have no research potential or significance of their own. The archaeological potential of this area is therefore considered to be Nil-Low.
8	None	Nil	This part of the study area was deep water until the second half of the twentieth century and has no archaeological potential.
10	N/A	N/A	This part of the study area is Dalgety's stores which will be used as a site office without modification. An assessment of archaeological potential for this area is not relevant to the project.

Work Zone	Phases represented	Archaeological potential	Comments
7	N/A	N/A	This part of the study area is the site of service connection works in existing service pits without modification. An assessment of archaeological potential for this area is not relevant to the project.
3	• Early development of the foreshore (Phase 1: 1788-1830) • Mid-century boat sheds (Phase 2: 1830-1900) • Late 19th century wharf construction (Phase 2: 1830-1900)	Low	This area is on the periphery of the activity associated with the foreshores of Lots 3, 4 and 5 of Section 93. However, in 1887 it was recorded as being at Low Water and may contain intertidal refuse and other peripheral evidence of activities on the shore. This area is considered to have Low potential for significant archaeology.
3 and 4 (north), 6	• Hickson Road construction	Nil	This area has no potential for pre-Hickson Road archaeology. The original landform in this area has been completely removed.
4 (north)	• Early shoreline (Phase 1: 1788-1830)	Nil-Low	1887 contours suggest that remnants of unmodified outcropping sandstone or evidence of wells or other deep features cut into it may survive. However, this is considered unlikely and the potential for this area is Nil to Low.
3 (north) and 5	• Early foreshore, Martin's jetty and buildings (Phase 1: 1788-1830)	Moderate	There is Moderate potential for evidence of the early shoreline and Martin's Jetty, limekiln or structures to survive beneath this part of Hickson Road. 1887 contours suggest that the surface of the landform prior to the construction of Hickson Road may be partially preserved in this area.

6.1 Scope of Test and Salvage Excavations

Historical archaeological test and salvage excavations will be undertaken where there is a Moderate to High potential for archaeological remains at the site. Archaeological monitoring and unexpected finds procedure will apply to other areas of the site as set out in the historical Archaeological Method Statement.
Where there is a Nil, Nil to Low or Low assessment of potential, the Sydney Metro Unexpected Heritage Finds Procedure [SM-18-00105232] will be will be in place, and no archaeological investigation will be required prior to works commencing.

6.2 Heritage Induction

Prior to the start of work all on-site staff will be given a heritage induction. In addition, regular toolbox talks will be presented when site conditions change and/or new staff join the on-site team. Each induction/toolbox will comprise an illustrated easy to understand presentation and hard copy, which will include:

- Understanding the heritage significance of the anticipated archaeological resource, including
- Repercussions of any breaches to the approved archaeological strategy

- Understanding the unexpected finds procedures
- The nature of the archaeological resource
- Maps showing location of anticipated archaeological features
- Photographs of the types of anticipated archaeological features

6.3 Archaeological Testing and Monitoring

Archaeological testing will be undertaken in areas of Moderate-high potential to establish the depth of archaeology and to confirm its integrity in those areas. If it is found that the impacts will exceed the depths of the top of the nineteenth century archaeology, then open area stratigraphic excavation would proceed to salvage all archaeological remains within areas of impact. The testing will be directed by Mike Hincks, primary excavation director for the project.

Three trenches of 10m x 2m are proposed to be excavated within areas of Moderate to High archaeological potential. If the results are ambiguous, a fourth trench may be needed in either the southern area of Work Zones 3 and 4 or in Work Zones 2 and 5. Archaeological testing under the direction of the Primary Excavation Director will verify the presence of significant archaeological resources.

If no evidence of significant archaeology is encountered in the test trenches in areas of Moderate to High potential, the works may proceed under the unexpected finds procedure. If isolated areas of significant archaeology are encountered they will be excavated and recorded archaeologically and salvaged from the areas of impact.

Archaeological monitoring will be undertaken in areas of Moderate archaeological potential. If significant archaeology is encountered then open area stratigraphic excavation would proceed to salvage all archaeological remains within areas of impact. Monitoring will be undertaken by Mike Hincks.

If there are no underlying archaeological relics, features or deposits in the areas under investigation, the Primary ED will attend the site to verify and a Clearance Certificate will be prepared by the Primary ED to inform the project team and Proponent in writing.

There is potential that unexpected relics may be exposed during site works, which will be addressed by the Primary ED (see Section 7.6 below).

Where a significant archaeological resource with good integrity is exposed, open area excavation will proceed following removal of the overburden and once the area has been made safe to salvage the archaeological remains.

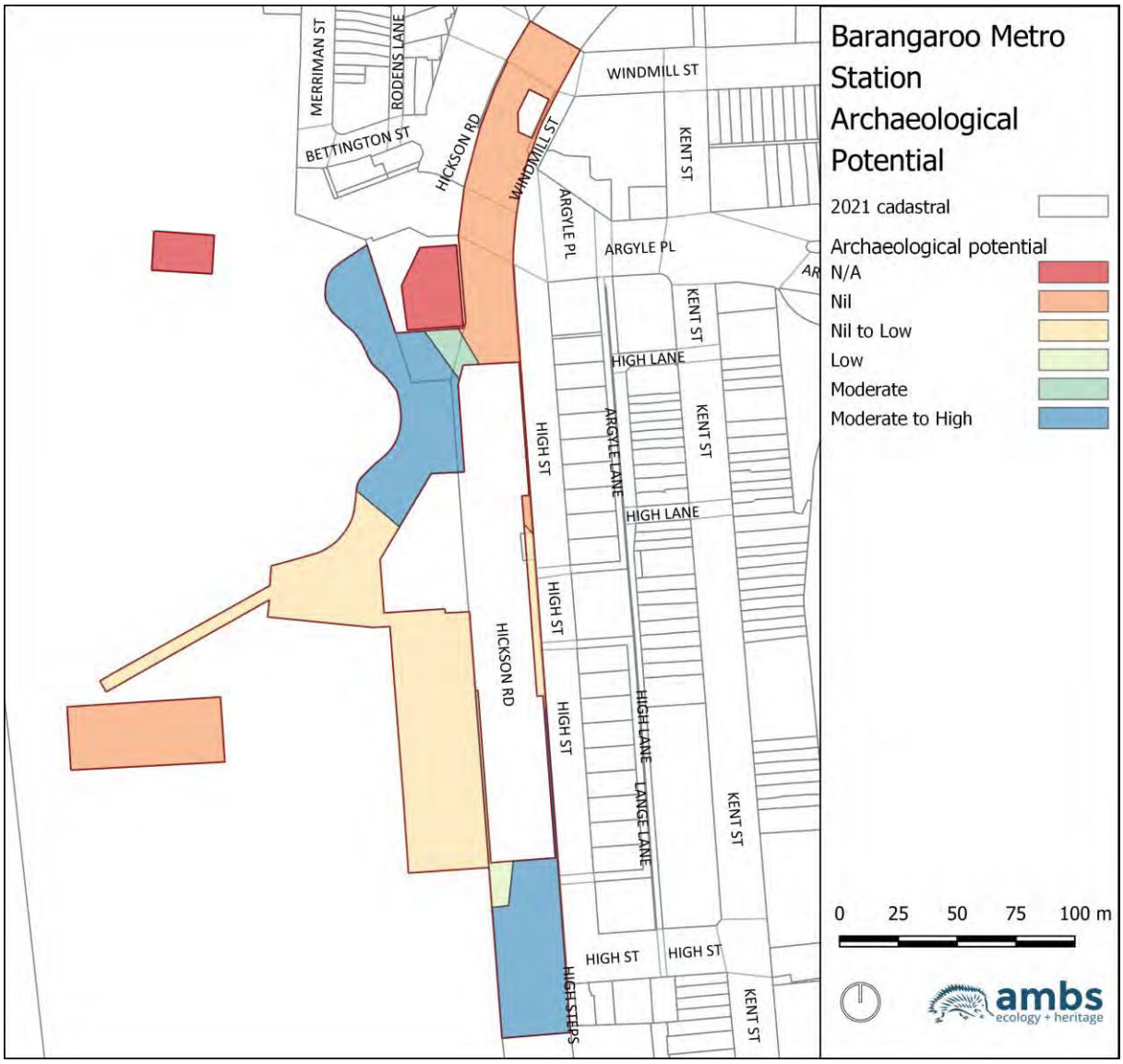

Figure 6.1: Areas of historical archaeological potential at the Barangaroo COP site.

6.4 Open Area Salvage Excavation

The extent that open area excavation will be required will not be known until the specific area of impact and the depth and nature of significant archaeology is established. Excavations will be directed by the Primary ED, Mike Hincks, assisted by Secondary ED Lian Ramage and Archaeologist James Cole. The team may comprise up to 20 archaeologists if large areas of the site are required to be salvaged, though this may increase or reduce in accordance with the site archaeology.

Excavation will be in accordance with the following methodology to ensure that all significant archaeological relics, features and deposits are appropriately managed and recorded:

- Establish a site datum and lay out a grid, relevant to the size of the site, 10m, 20m or 50m, across the site in order to record the levels of extant deposits, features and relics;
- Significant features will be recorded in detail and excavated manually under the supervision of the excavation director
- All significant archaeological deposits, features and relics that are exposed during the excavations will be recorded in accordance with heritage best practice standards.

Recording will include:

  - Cleaning features to facilitate photographic recording;
  - Scale plans;
  - Elevations of features, if relevant;
  - Digital photographs (in JPG and RAW format); and
  - Photogrammetry
  - Site survey; and
  - Detailed description of the feature, deposit or relic to ensure that a clear and comprehensive record of the archaeological resource of the site is preserved for the future.
- Sequential numbering of features and deposits to facilitate preparation of a Harris Matrix and artefact labelling;
- Preparation and development of a Harris matrix, to show stratigraphic relationships between all recorded archaeological features and deposits;
- All information regarding the location, dimensions and characteristics of all recorded archaeological features and deposits will be recorded on pro-forma context sheets;
- Collection of all significant artefacts for analysis, except from non-significant unstratified fill. Samples of bricks and mortar will be collected from each structure, as relevant;

Soil samples will be taken from topsoils, cesspits and other relevant deposits for analysis by a palynologist. The results of the analysis should provide an insight into the indigenous and introduced flora of the locality and diet of the local community.
A Clearance Certificate will be issued by the Historic Excavation Director for each site requiring archaeological testing or excavation and recording after investigations are completed at that particular location.

7 Unexpected Heritage Finds

The Project Planning Approval defines 'Unexpected heritage find' as "A potential heritage item discovered (usually during construction) but not identified in the EIS or PIR, where assessment is required to determine if the item has heritage significance, or is an Aboriginal object. Unexpected heritage finds does not include human remains."
Archaeological testing will not be needed in areas identified as having little or no potential for archaeological resources to be present and as such the Unexpected Finds Protocol outlined in the AMS applies:

- To areas which are not subject to the detailed archaeological investigations set out in the AMS
- To unexpected heritage finds uncovered in the areas that are subject to the detailed archaeological investigations set out in the but may be the relics of a previous land use that was previously unknown.

Unexpected heritage finds will be managed in accordance with the *Sydney Metro Unexpected Heritage Finds Procedure* [SM-18-00105232]. The procedure has been prepared for Sydney Metro to provide a method for managing unexpected heritage items (both Aboriginal and non-Aboriginal) that are uncovered during construction and for works subject to the NSW Heritage Act (1977). The procedure provides a simple-to-follow flowchart outlining the steps to follow if unexpected heritage items are discovered during construction and has been included in Appendix E.

7.1 Archaeological Relics Management Plan

Project Planning Approval Condition E20 requires preparation of an Archaeological Relic Management Plan if a relic is unexpectedly found during investigations or construction. Conditions E19 and E20 essentially overlap and must be considered simultaneously to determine required consultation and the need for additional management documentation. The preparation of an Archaeological Relics Management Plan will be limited to unexpected relics of State significance discovered during construction.
Locally significant unexpected heritage finds will be addressed in the Unexpected Finds Protocol contained within the AMS, without the need for any additional management documentation or consultation prior to implementation.
In the event of an unexpected State significant find, an Archaeological Relics Management Plan will be prepared and will include the appropriate management for such relics.
If unexpected finds or archaeological features are exposed, work will stop in the affected area and the Historic/Aboriginal Excavation Director(s), who will be on call during this stage of works, will be contacted to assess the integrity and significance of the exposed relics. They will then identify the appropriate management of the relics.
Human remains are not expected to be unearthed in delivering the COP Works. As such, in accordance with the note for Project Planning Approval Condition E27, it is highly likely that any human remains uncovered as part of the COP Works would be under the jurisdiction of the NSW State Coroner and must be reported to NSW Police immediately. If any human remains are located NSW Police Force will be immediately notified. If required, Sydney Metro's Exhumation Management Plan will be implemented.

7.2 Hold points to be Released by Primary Historic Excavation Director

The Excavation Director(s) will be responsible for releasing the following Hold Points:

- Historic excavation identifies Aboriginal artefacts or intact remnant soil profiles requiring Aboriginal archaeological test excavations
- Historical archaeological excavation or inspection identifies intact remnant soil profiles or Aboriginal artefacts requiring archaeological test excavations

- Historical/Aboriginal archaeological salvage excavation exposes unanticipated significant deposits requiring extended excavation or analysis
- Unexpected finds are encountered
- State significant finds are encountered and a Relics Management Plan is required

7.3 Clearance Certificates

Primary Historic/Aboriginal Excavation Director(s) will provide written advice that all archaeological investigations within an area have been completed and issue clearance certificates to allow works to commence or resume.

7.4 Analysis and Reporting

A Preliminary Archaeological Report on the archaeological investigations at each site will be finalised 40 business days after issue of Clearance Certificates and provided to Sydney Metro to assist in heritage interpretation and should also be issued to the Heritage Council for their information.
Condition E18 requires preparation of a final archaeological excavation report. The Historical Archaeological Excavation Report will be prepared in accordance with the standard requirements of an Excavation permit issued by the Heritage Council:

- An executive summary of the archaeological programme;
- Due credit to the client paying for the excavation, on the title page;
- An accurate site location and site plan (with scale and north arrow);
- Historical research, references and bibliography;
- Detailed information on the excavation, including the aim, the context for the excavation, procedures, treatment of artefacts (cleaning, conserving, sorting, cataloguing, labelling, scale photographs and/or drawings, location of repository) and analysis of the information retrieved;
- Nominated repository for the items;
- Detailed response to research questions (at minimum those stated in the approved Research Design);
- Conclusions from the archaeological programme. The information must include a reassessment of the site's heritage significance, statement(s) on how archaeological investigations at this site have contributed to the community's understanding of the site and other comparable archaeological sites in the local area and any relevant recommendations for the future management of the site information and artefacts;
- Details of how this information about this excavation has been publicly disseminated (for example provide details about Public Open Days and include copies of press releases, public brochures and/or information signs produced to explain the archaeological significance of the site).

The Historical Archaeological Excavation Reports will also include:

- Detailed catalogue of artefacts, in accordance with Best Practice and as set out in the Archaeological Research Design and Method Statement.
- Description and Analysis of artefacts from main contexts.
- Location for the repository for the storage of artefacts in perpetuity.

Artefact processing and analysis will be in accordance with the system developed by AMBS and currently in use for the other Metro sites excavated by AMBS; Crows Nest, Chatswood, Sydney Metro South and Waterloo. The database for the site will be included in the Excavation Report for the site.
Processing, analysis and storage of the artefacts for the duration of the project will be conducted at AMBS premises. However, a repository for the long-term storage of the artefacts from the Sydney Metro project will be required to be provided by Sydney Metro.

The report will be submitted to Sydney Metro, and the Heritage Council within two years following completion of all archaeological investigations for the Project, in its entirety.

7.5 Future Research

The focus of research questions changes from generation to generation. Information gained during excavations, analysis of artefacts and the archaeology would make a significant contribution to on-going and future research for students, archaeologists and historians and as such, the information should be made freely available. This would include ensuring a secure and accessible repository for the artefacts, to be available for further research.

8 Aboriginal Heritage Investigation

8.1 Chris Langeluddecke, Aboriginal Heritage Excavation Director

AMBS Director Aboriginal Heritage, Chris Langeluddecke will be the Aboriginal Heritage Excavation Director for the COP Works and responsible for Aboriginal heritage investigations at the site.
Chris has more than 16 years of experience as a consultant working in the field of Aboriginal archaeology, community consultation and heritage management planning. Before becoming a founding director of AMBS, he was engaged as an archaeologist for nine years with Australian Museum Consulting and three years with global provider Environmental Resources Management (ERM). Prior to that, for two years as a project officer with the Tasmanian Aboriginal Heritage Office he established site maintenance programs within Tasmania's World Heritage Wilderness Area. Chris has a comprehensive knowledge of current Australian Aboriginal heritage management practices and archaeological methodologies, and has extensive experience working with State and Commonwealth heritage legislation and management planning requirements.

8.2 Aboriginal Archaeological Method Statement

An Aboriginal Archaeological Method Statement (AMS) for the Works has been prepared in accordance with Condition E17, E23 and E24 and in accordance with AH2 (Appendix A). The Aboriginal AMS includes a mitigation strategy involving archaeological inspections, test excavation (when required) and salvage excavation (when required) in accordance with condition AH3. The excavation strategy is outlined in section 8.1.3 below. AMBS has undertaken additional research to verify the findings of the EIS ACHA with regard to the likely Aboriginal archaeological potential at the site. The additional research included analysis of geotechnical boreholes, maps and plans and other historical documents included in the historical Archaeological Method Statement, as well as archaeological inspections that were undertaken during the TSE historical archaeological investigations and the preliminary results of those works.
Historical archaeological excavations for the Barangaroo station box and TSE in 2018 (Casey & Lowe, 2019) exposed parts of the original shoreline beneath Hickson Road including outcropping sandstone and intertidal estuarine deposits. The outcropping bedrock had been heavily modified both by nineteenth century structures and wharfs, quarrying for land reclamation, and by the cutting down of the landform to create Hickson Road. Beach sands, where present, were found to be the product of nineteenth century deposition and contained large quantities of refuse and detritus from the adjacent shipbuilding activities. Inspections of historical archaeological excavation Areas X and Y by Aboriginal Heritage Excavation Director Chris Langeluddecke found no evidence of intact Aboriginal archaeological deposits.
The western portion of the Barangaroo Station footprint was demonstrated to be below the low-water mark prior to European occupation, and contained only evidence of wharf building and reclamation.
The historic Archaeological Method Statement for the COP works (AMBS 2021) has built on the results of the 2018 excavations which demonstrated multiple phases of development and reclamation along the shoreline. The majority of the COP study area was below the low-water mark prior to European development in the area. The approximate location of the original shoreline in relation to the study area is presented in Figure 8.1.
Reclamation and development began to encroach into the harbour from the 1830s, with wharves, jetties, warehouses and stores being established along the foreshore. A quarry was active in the south of the study area from the 1840s until at least the 1850s. During the 1950s, finger wharves were infilled, significantly expanding the land reclamation in the study area. In the northwest of the site (Work Zone 5), wharf-building and the construction of substantial woolstores and bond stores at the water's edge is expected to have had a considerable impact (Historical AMS, pp. 15-17). The northern portion of Hickson Road in Work Zone 6 was shown to have been cut down up

to 12m from 1887 levels, and Work Zone 6 was assessed as having Nil archaeological potential (Historical AMS, pp. 9, 35).
A mitigation strategy of inspections and trigger points for further investigations was considered appropriate for the level of archaeological potential at the site. The mitigation strategy is discussed in sections 8.1.3-8.1.8 and section 9 below.

8.3 Scope of Aboriginal Archaeological Investigations

Archaeological inspections will be undertaken by an AMBS archaeologist at Barangaroo, following clearance of historic materials, to determine the presence of intact remnant soil profiles or artefacts. Archaeological test excavations would be undertaken from the information provided in the projects Aboriginal Cultural Heritage Assessment Report (ACHAR).Inspection results will guide the need for Stage 1 archaeological test excavations in accordance with AH3. Inspections will be triggered by the historical archaeologist during monitoring or excavation, or through the Sydney Metro Unexpected Heritage Finds Procedure [SM-18-00105232] in accordance with CoA E25.
A program of archaeological excavations will be required where:

- Identified areas have the potential to retain subsurface Aboriginal archaeological deposits
- Clearance inspections or historic archaeological excavations identify Aboriginal artefacts or intact remnant soil profiles

Intact soil profiles are most likely to be located in the east of the site, wherever the pre-colonial shoreline has not been dramatically disturbed (Figure 8.1).

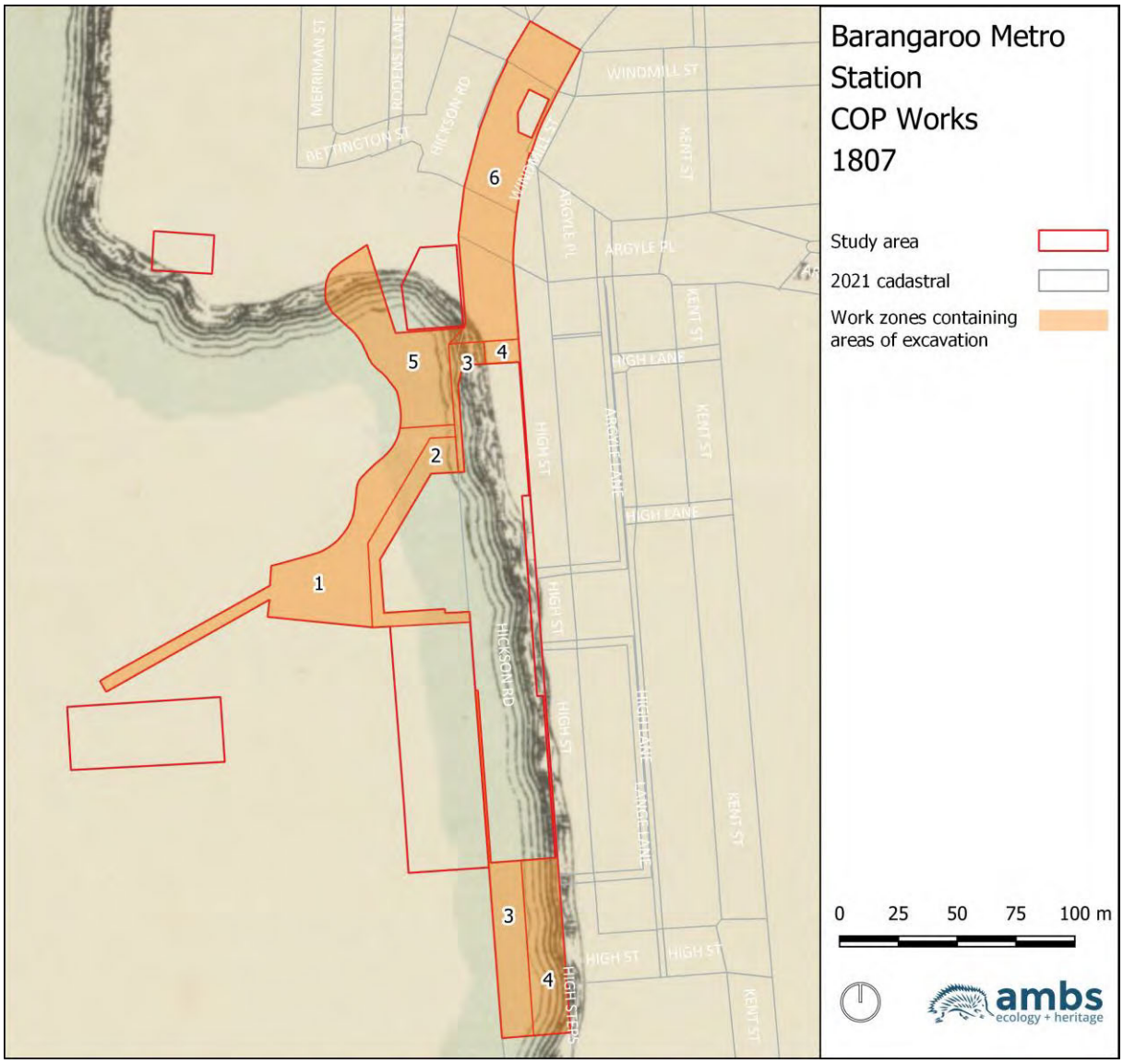

Figure 8.1: The 1807 shoreline in relation to excavation works at Barangaroo. Aboriginal archaeology-bearing deposits are most likely to be located in the vicinity of, or east of this shoreline.

Stage 1 test excavations will only be required if intact remnant soil profiles or Aboriginal artefacts are located during historic excavations.Where test excavations identify archaeologically significant or intact Aboriginal heritage deposits, Stage 2 archaeological salvage excavations will be undertaken. The extent of the Stage 2 salvage excavations will be determined by the Stage 1 testing results. Excavations will cease once an adequate sample of the archaeological resource has been recovered to allow an appropriate level of analysis.

8.4 Exhumation Management

In accordance with CoA E27 an Exhumation Management Plan (ExMP) has been prepared by Sydney Metro to guide the relocation of recovered human remains uncovered during construction to address the requirements of CoA E26. The plan was submitted to the Secretary on 9th July 2019 in advance of excavation works being carried out on the site. Any human remains uncovered during construction will be dealt with in accordance with the ExMP which is provided in Appendix E. The ExMP has been developed to address the relevant planning conditions of approval and provides a clear and concise easy-to-follow process to adopt in the event of the discovery of potential human remains during construction.

8.5 Hold points to be released by the Aboriginal Heritage Excavation Director

The Aboriginal Heritage Excavation Director will be responsible for releasing the following Hold Points:

- Historic excavation identifies Aboriginal artefacts or intact remnant soil profiles requiring Aboriginal archaeological test excavations
- Post-demolition/historical archaeological excavation inspection identifies intact remnant soil profiles or Aboriginal artefacts requiring archaeological test excavations
- Aboriginal archaeological salvage excavation exposes unanticipated significant deposits requiring extended excavation or analysis

8.6 Clearance Certificates

The Aboriginal Heritage Excavation Director will provide written advice that all archaeological investigations within an area have been completed and issue clearance certificates to allow works to commence or resume.

8.7 Heritage Induction

Aboriginal heritage inductions for all on-site staff will be conducted prior to the start of work as a component of the heritage induction. In addition, regular toolbox talks will be presented when site conditions change and/or new staff join the on-site team. Each induction/toolbox will comprise an illustrated easy to understand presentation and hard copy, which will allow an understanding the Aboriginal heritage significance of the anticipated archaeological resource, including:

- Repercussions of any breaches to the approved Aboriginal heritage strategy
- Understanding the unexpected finds procedures
- The nature of the Aboriginal cultural heritage resource
- Maps showing location of anticipated archaeological features
- Photographs of the types of anticipated archaeological features

8.8 Analysis and Reporting

Excavated archaeological material will be analysed by AMBS on a similar level to that of previous assemblages from the Sydney Basin. Information from this analysis will be used to make interpretations about the Aboriginal site use, antiquity and settlement patterns of the study area, and to assess regional cultural heritage values. A full description of the recording methods will be included in the final archaeological report.

Analysis of the excavation results will allow a reassessment of the archaeological and cultural significance of the study area and its context in the surrounding lands. Preliminary analysis of materials will be carried out during the excavations to determine the appropriate scale of the salvage excavation phase. Detailed analysis will be undertaken after all excavation works are completed. Following completion of analysis, Sydney Metro will provide long term storage of relics.

Preliminary archaeological findings reports will be finalised 40 business days after issue of Clearance Certificates and provided to Sydney Metro to assist in heritage interpretation.

The final Aboriginal Investigation Report for the COP Works will be completed after sign-off and the issue of clearance certificates on all areas of Aboriginal archaeological potential. The report will address:

- The Aboriginal cultural heritage and environmental context of the project area
- The Aboriginal community consultation process, and identified cultural values of the project areas to the local Aboriginal community

- The Aboriginal archaeological methodology used for inspections and archaeological excavations
- The results of archaeological inspections and excavations, and results of analysis of the results of the investigations, including any artefact or geomorphological analysis
- An assessment of the heritage significance of any Aboriginal heritage sites, objects or places identified by the investigations, and conclusions addressing the implications of the results of the investigations for the understanding of Aboriginal archaeology in the local area and wider region.
- recommendations for final storage and appropriate use for interpretation.

Reporting will be completed within 2 years of historic and Aboriginal archaeological excavations being completed. All Aboriginal heritage documents produced as part of the works, including this Plan, draft reporting and archaeological method statements, will be given to the RAPs for their review, comment and input before they are finalised.

9 Relic storage and interpretation

9.1 Storage

Artefacts that are recovered during the archaeological investigations will be cleaned, bagged, labelled and appropriately analysed and stored so that information that can contribute to the understanding of the site and its historical development is not lost. Such information may be appropriate for use in the site interpretation. Historical artefacts that are non-diagnostic or do not contribute to the significance values of the site will not be collected from the site and will not form part of the post-excavation analysis.

Sydney Metro will provide long term storage of both historical relics and Aboriginal artefacts salvaged and uncovered during archaeological investigations as these will be required to be considered in the permanent heritage interpretation under Project Planning Approval Condition E21 and may be used in the final design of stations under Condition E101, which will be ongoing after the completion of the COP Works.

Sydney Metro's storage facility will be secure to protect all historical relics, Aboriginal artefacts and salvaged elements from damage or vandalism.

9.2 Heritage Interpretation

The responsibility for the design of the Barangaroo Station, and incorporation of heritage interpretation into the station design, is held by Sydney Metro who have produced the overarching Chatswood to Sydenham Heritage Interpretation Plan (SM HIP) for the project, to meet the requirements of REMM NAH 8 and CoA E21. A station specific Heritage Interpretation Plan (Station HIP) has been prepared for Barangaroo station, by Sydney Metro which informs the Station Design and Precinct Plan (SDPP) as per CoA E101. The SM HIP identifies the key Aboriginal and non-Aboriginal heritage values, stories of heritage items and heritage conservation areas affected by the CSSI. The construction of Barangaroo station is a construct only contract for BESIX Watpac who will be responsible for implementing the HIPs and ensuring that the station is constructed in accordance with the approved SDPP which has been informed by the Station HIP. The overarching Chatswood to Sydenham SM HIP was submitted to the Secretary on 11th May 2017. The Barangaroo Station HIP will be submitted to the Secretary for information prior to the commencement of construction of permanent above-ground works as per the Staging Report.

Section 5.6 of the overarching SM HIP documents temporary heritage interpretation responses proposed for Barangaroo and includes the following themes which BESIX Watpac are proposing to incorporate into the site hoarding design, in accordance with CoA E21(b)(i) :

- Pre-European history of the place informed by any archaeological investigation
- The European history of Miller's Point
- The Plague and the resumption
- The Hungry Mile
- Public Housing
- Maritime History
- Archaeological resources from the Barangaroo development / Hickson Road excavation

Further, in accordance with REMM NAH2, significant archaeological findings that result from the archaeological investigations will be incorporated into the interpretation strategy. Appropriate Aboriginal Heritage interpretation will be incorporated into the design for the project in consultation with Aboriginal stakeholders in accordance with REMM AH4 which is Sydney Metro' responsibility and outside of the scope of this HMP.

The Primary Excavation Directors will provide Sydney Metro with regular updates regarding archaeological sites under investigation to be included in publicly accessible web-based updates.

The archaeological excavation report will synthesise historical information and the results of the excavation to produce clear context for the findings and to form the background of the interpretation of the archaeological material from the site.

Appendix A
Archaeological Method Statements

Sydney Metro Barangaroo COP Works Aboriginal Archaeological Method Statement

Prepared by AMBS Ecology & Heritage
for BESIX Watpac

May 2021

AMBS Reference: 20870

Document Information

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Authors:	[redacted], Director Aboriginal Heritage, AMBS Ecology & Heritage, [redacted], Senior Heritage Consultant
Approved by:	[redacted], Director Aboriginal Heritage, AMBS Ecology & Heritage

Contents

Tables

Figures

1 Introduction

The Sydney Metro & City Southwest project is 30km of a new rail system from Chatswood to Bankstown and includes a new crossing beneath Sydney Harbour, and new railway stations. The scope of the Metro project includes the Barangaroo Metro Station Construction Only Package (COP) which is the subject of this AMS.

The Project was approved by the Minster for Planning on 9 January 2017, subject to a number of Conditions set out in Critical State Significant Infrastructure [CSSI] Sydney Metro & Southwest Chatswood to Sydenham Infrastructure Approval (Application no. SSI 15_7400) (Project Planning Approval). Excavation works for road replacement, landscaping and service installation have the potential to impact on deposits containing Aboriginal heritage objects that may be present at the Barangaroo Station site. Documentation for the project includes *Sydney Metro Chatswood to Sydenham Aboriginal Heritage – Archaeological Assessment* (EIS Technical Paper 5) and *Sydney Metro Chatswood to Sydenham Aboriginal Cultural Heritage Assessment* (ACHA) prepared by Artefact Heritage (Artefact). Minister's Condition of Approval (CoA) E17 refers to the following requirements addressing Aboriginal heritage:

Aboriginal Heritage

E23 The Proponent must take all reasonable steps so as not to harm, modify or otherwise impact any Aboriginal object associated with the CSSI except as authorised by this approval.

E24 Before excavation, the Proponent must implement the Aboriginal Cultural Heritage Assessment prepared for the CSSI and included in the PIR. Excavation and/or salvage must be undertaken by a qualified archaeologist in consultation with the Registered Aboriginal Parties for the CSSI.

E25 Where previously unidentified Aboriginal objects are discovered during construction of the CSSI, construction must stop in the vicinity of the affected area and a suitably qualified and experienced Aboriginal heritage expert must be contacted to provide specialist heritage advice, before works recommence. The measures to consider and manage this process must be specified in the Heritage Management sub-plan required by Condition C3 and, where relevant, include registration in the OEH's Aboriginal Heritage Information Management System (AHIMS).

BESIX Watpac (Watpac) is undertaking the COP works and has commissioned AMBS Ecology & Heritage (AMBS) to manage the Aboriginal heritage provisions for the project. This Aboriginal Archaeological Method Statement (AMS) has been prepared in accordance with Condition E24 and the requirements of the ACHA, and addresses the Barangaroo Station COP project area.

1.1 Aboriginal Community Consultation

Sydney Metro and Artefact initiated the Aboriginal community consultation process in 2016, in accordance with the Office of Environment and Heritage (OEH, now Heritage NSW, Department of Premier and Cabinet *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010a). The following parties registered their interest in the study area through the consultation process, and will continue to be involved in the project as Registered Aboriginal Parties (RAPs):

- Metropolitan Local Aboriginal Land Council
- Darug Land Observations
- Tocomwall Pty Ltd

- Darug Aboriginal Cultural Heritage Assessments
- Kamilaroi-Yankuntjatjara Working Group
- Woronora Plateau Gungangara Elders Council
- Murra Bidgee Mullangari Aboriginal Corporation
- Aboriginal Archaeology Service Inc
- Gundungurra Tribal Technical Services
- Tony Williams
- Bilinga Cultural Heritage Technical Services
- Gunyuu Cultural Heritage Technical Services
- Mynyunga Cultural Heritage Technical Services
- Murrumbul Cultural Heritage Technical Services
- Wingikara Cultural Heritage Technical Services

Consultation and engagement will continue with the established RAPs, and draft reporting, including reports produced following any archaeological excavations undertaken will be provided to all RAPs following client approval, for their review and input. Aboriginal community representatives participating in fieldwork will be drawn from these RAP organisations, based on experience, availability, and the advice of the Sydney Metro Metro Aboriginal Focus Group.

1.2 Methodology & Authorship

This report is consistent with the principles and guidelines of the *Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 2013*. It has been prepared in accordance with current heritage best practice and Heritage NSW guidelines as specified in the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011), the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a; 2010b).

The report has been prepared by Christopher Langeluddecke, AMBS Director Aboriginal Heritage and Mike Hincks, AMBS Senior Heritage Consultant.

2 Barangaroo Station Study Area

The Barangaroo Station COP works include service installation and connection, station fitout, road replacement and removal of the northern shaft acoustic shed. The study area has been split into 10 work zones, which are summarised in Table 2.1 and presented in Figure 2.1. Five of the work zones contain areas of excavation including Hickson Road north and south of the station box between High Street and Windmill Street, and sections of the Nawi Cove foreshore (Figure 2.2).

Table 2.1 Work Zones and Activities at Barangaroo Metro Station

Zone	Activity
Zone 1	Stormwater installation
Zone 2	Waterproofing of station concrete roof, backfill and installation of landscaping and station entrance cladding, escalators, and lifts
Zone 3 and Zone 4	Demolition and removal of the existing red steel girders and road deck. Relocation of services. Complete concrete structure of ventilation pods, waterproof station concrete roof, backfill, install services, and relocate the road, kerb and guttering. Install street trees / landscaping and clad the station ventilation and emergency egress stair pods
Zone 5	Excavation of existing carpark, removal of existing surfaces, installation of new services to the chilled water plant room under Headland Park
Zone 6	Removal of the northern shaft acoustic shed, infill of the northern shaft with sand; replacement of the road, kerb, and landscaping works
Zone 7	Connecting up and commissioning plant and pipework which is already in place. All works are within existing man-holes.
Zone 8	Site sheds / canteen / change rooms
Zone 9	Temporary laydown area used to store material and plant / equipment
Zone 10	Site offices

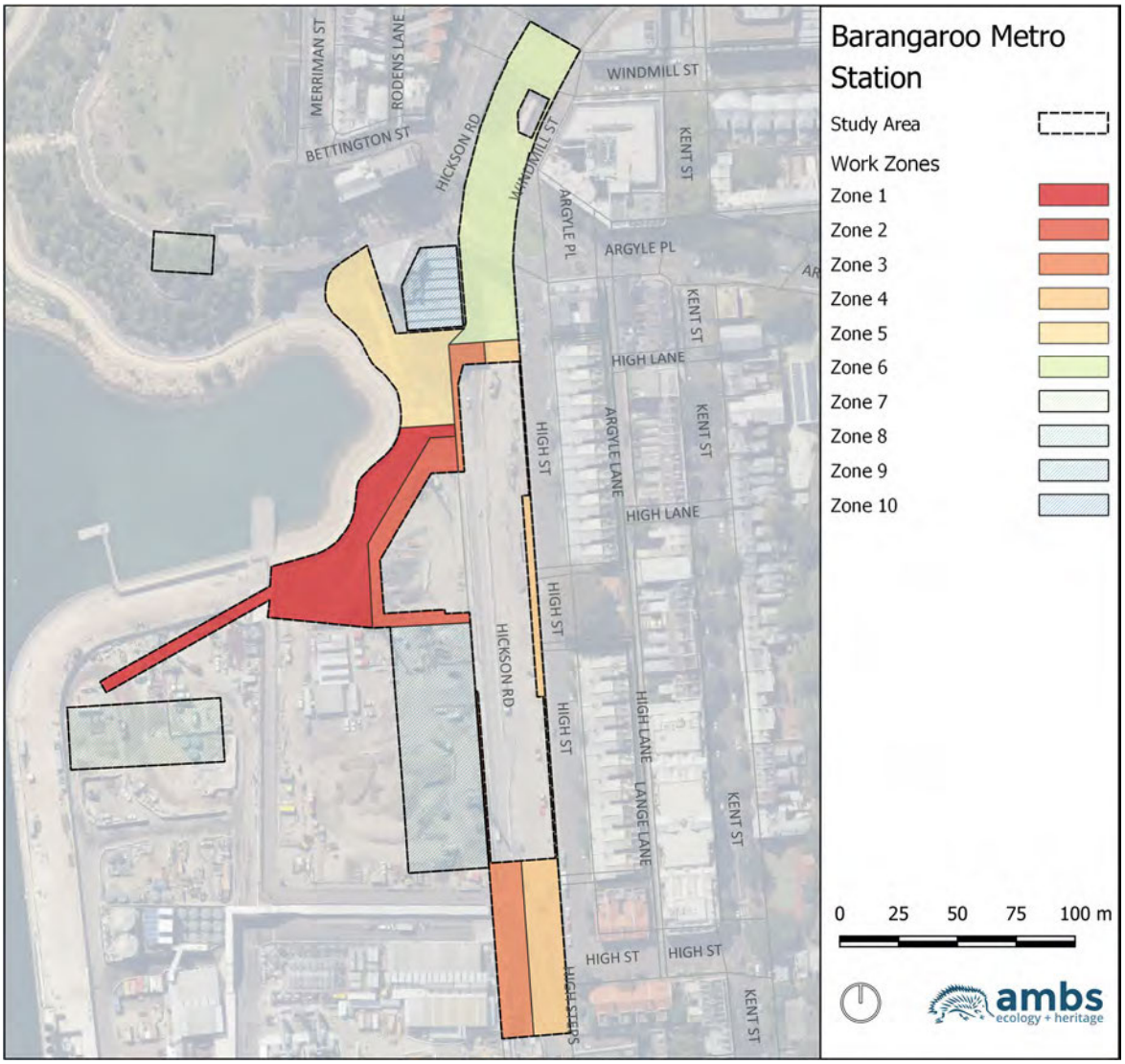

Figure 2.1 Barangaroo COP Work Zones.

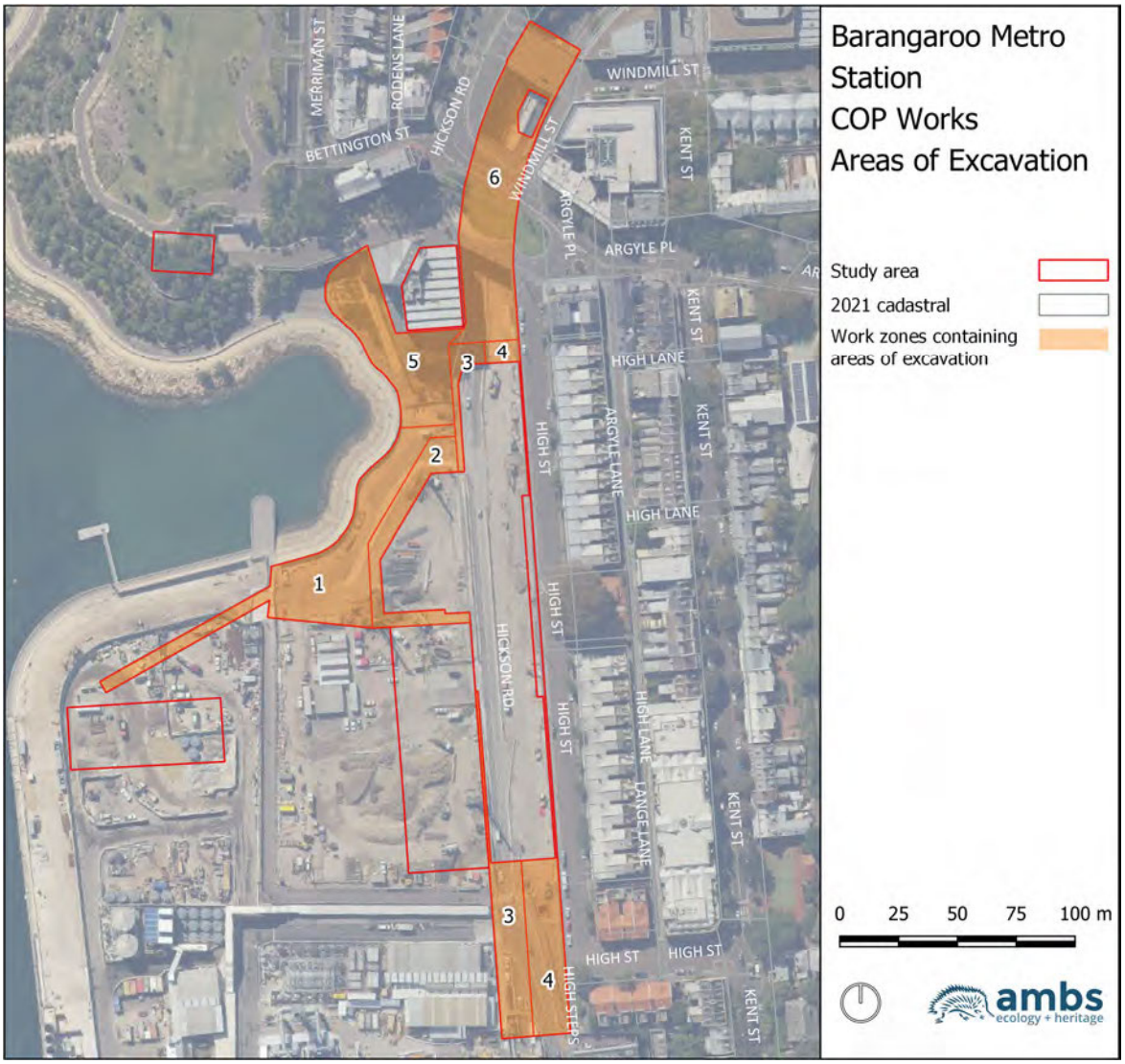

Figure 2.2 Barangaroo COP Work Zones containing areas of excavation.

3 Archaeological Context

The archaeological context of the project area has been researched and addressed in the EIS Technical Paper and ACHA, which should be referred to for detailed information on the heritage context and archaeological background which underpins this AMS. Summaries of those investigations are presented below, along with additional information gathered through research carried out for the historic archaeological investigations, and geotechnical and contamination investigations for the project areas.

3.1 Barangaroo Station

The original landscape of the Barangaroo study area is likely to have consisted of a rocky shoreline, which would have represented an important resource zone for Aboriginal people. The study area has been significantly altered since European contact, with progressive land reclamation and wharf construction along the shoreline leading to the current extent of the Darling Harbour shoreline throughout the 19th and 20th centuries. In addition, much of the current alignment of Hickson Road on the eastern extent of the study area is located along a cutting into the natural Hawkesbury Sandstone slope.

No previously identified Aboriginal heritage sites have been recorded within 100m of the study area on the Heritage NSW Aboriginal Heritage Information Management System (AHIMS) database. The nearest identified Aboriginal heritage sites recorded on AHIMS are an open camp site approximately 300m north (AHIMS #45-6-0519), and a rock engraving approximately 180m north (AHIMS #45-6-1939.

Excavation of AHIMS #45-6-0519 undertaken in 1984 identified shell midden material overlying approximately 30cm of grey sand with stone artefacts. Shell species recovered by the excavations included Rock and Mud Oyster (*Saccostrea sp.* and *Ostrea sp.*), cockle (*Anadara trapezia*), whelk (*Pyrazus ebininus*) and mussel (*Trichomya sp.*). Approximately 392 silcrete, quartz, quartzite and chert stone artefacts were recovered, including cores, used flakes and fabricators. In addition, the presence of ceramic fragments in association with the grey sand suggested continued Aboriginal use of the site following European contact.

A preliminary summary of archaeological potential and archaeological significance of the study area as assessed by Artefact in the EIS Technical Paper is presented in Table 3.1. The assessment of potential and significance assumes that archaeological deposits are present within the study area.

Table 3.1 Summary of archaeological potential and significance for Barangaroo Station study area (Artefact 2016a:101).

Location	*Archaeological potential*	*Archaeological significance*
Barangaroo Station	*Moderate to high – Archaeological potential has been identified within the western portion of the Barangaroo Station footprint. This archaeological potential relates to the possible survivability of buried shell midden deposits associated with the original shoreline of Darling Harbour.* *The eastern portion of the Barangaroo Station footprint does not demonstrate archaeological potential due to the large-scale removal of the original sandstone context.*	*Potentially high – Intact Aboriginal archaeological deposits within the Sydney CBD are extremely rare and would be of high research significance. It is also possible that out-of-context Aboriginal artefacts may be present in the layers of fill used in the area. Any such artefacts would not likely demonstrate high archaeological significance as they would not have potential to provide accurate information or answers to relevant research questions.*

3.1.1 Additional Information

Historical archaeological excavations for the Barangaroo station box and TSE in 2018 (Casey & Lowe, 2019) exposed parts of the original shoreline beneath Hickson Road including outcropping sandstone and intertidal estuarine deposits. The outcropping bedrock had been heavily modified both by nineteenth century structures and wharfs, quarrying for land reclamation, and by the cutting down of the landform to create Hickson Road. Beach sands, where present, were found to be the product of nineteenth century deposition and contained large quantities of refuse and detritus from the adjacent shipbuilding activities. Inspections of historical archaeological excavation Areas X and Y by Aboriginal Heritage Excavation Director Chris Langeluddecke found no evidence of intact Aboriginal archaeological deposits.

The western portion of the Barangaroo Station footprint was demonstrated to be below the low-water mark prior to European occupation, and contained only evidence of wharf building and reclamation.

The historic Archaeological Method Statement for the COP works (AMBS 2021) has built on the results of the 2018 excavations which demonstrated multiple phases of development and reclamation along the shoreline. The majority of the COP study area was below the low-water mark prior to European development in the area. The approximate location of the original shoreline in relation to the study area is presented in Figure 3.1.

Reclamation and development began to encroach into the harbour from the 1830s, with wharves, jetties, warehouses and stores being established along the foreshore. A quarry was active in the south of the study area from the 1840s until at least the 1850s. During the 1950s, finger wharves were infilled, significantly expanding the land reclamation in the study area. In the northwest of the site (Work Zone 5), wharf-building and the construction of substantial woolstores and bond stores at the water's edge is expected to have had a considerable impact (AMBS, 2021, pp. 15-17). The northern portion of Hickson Road in Work Zone 6 was shown to have been cut down up to 12m from 1887 levels, and Work Zone 6 was assessed as having Nil archaeological potential (AMBS, 2021, pp. 9, 35).

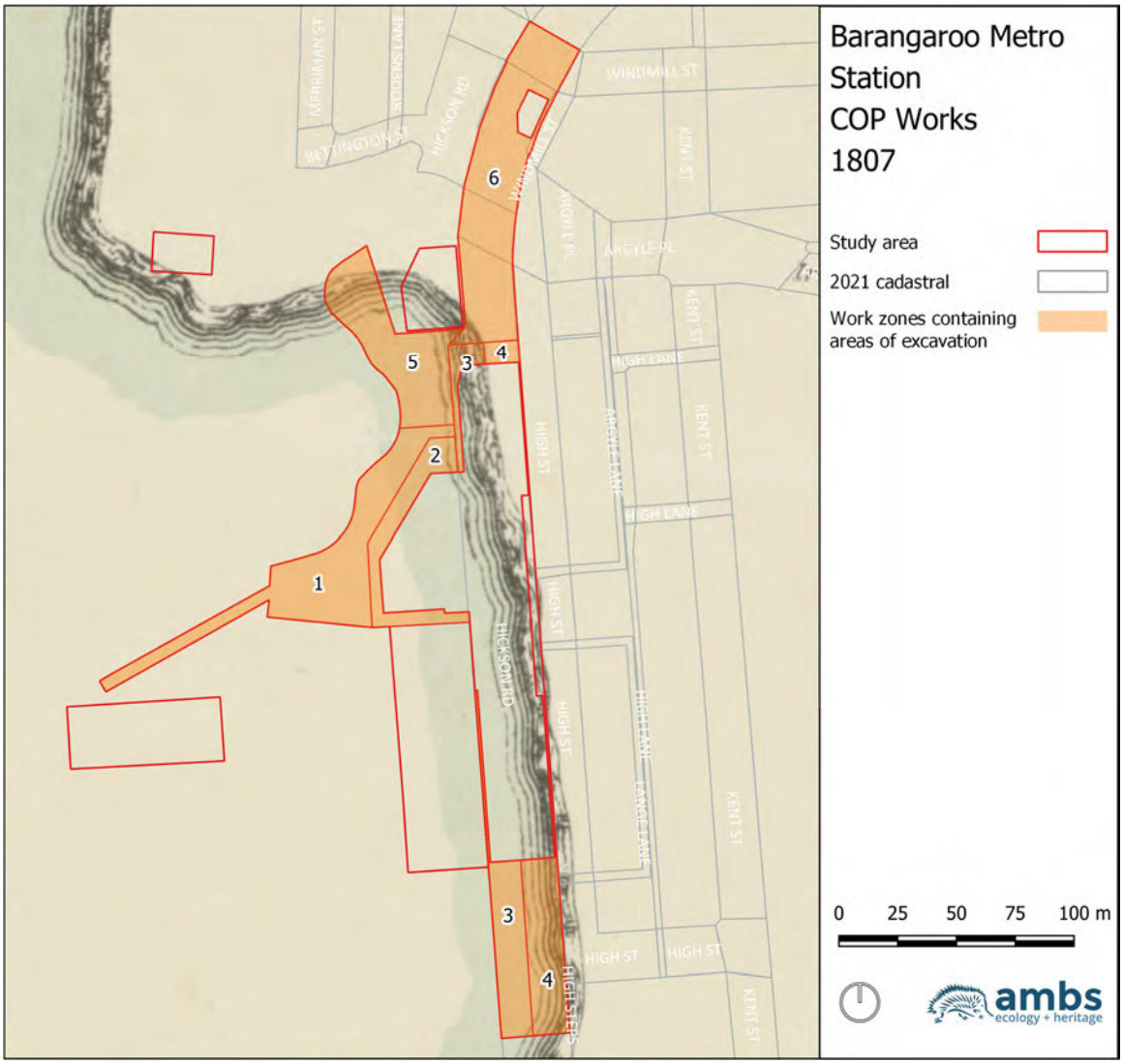

Figure 3.1 The approximate location of the Barangaroo COP study area in relation to the eastern foreshore of Cockle Bay, as presented in James Meehan's 1807 plan of Sydney (*Plan of the Town of Sydney in New South Wales,* National Library of Australia [NLA] http://nla.gov.au/nla.obj-229911438/view.

4 Research Design

The excavations and associated works required for the Barangaroo COP have the potential to impact on any Aboriginal heritage objects which may remain present within the study areas. The archaeological research design establishes research questions to guide the archaeological process, and provide the basis for the analysis of archaeological information gathered through the investigations.

4.1 Research Questions

Where archaeological excavations are undertaken, their primary aim will be to recover an appropriate sample of any archaeological deposit present. Archaeological excavations will ensure the existence of an archaeological record of the study areas, and will allow an appropriate level of archaeological analysis to be carried out on the excavated cultural material that would otherwise have been lost due to the works. Excavations aimed at increasing the current scientific knowledge of the region provide an appropriate offset to the cumulative impacts on Aboriginal heritage arising from the development, ensuring that sites will not be destroyed without retaining the information they may hold for archaeological knowledge of the area and future research.

To ensure that the research potential and significance of an archaeological resource is realised, archaeological investigations should aim to address substantive research themes. If deposits which have the potential to contain Aboriginal objects are encountered during the works, the following research questions will form the foundation of the archaeological investigations within the COP project study area, and are based on key research questions identified in the ACHA (Artefact 2017b:41).

- **Intactness**: Does the study area contain spatially intact, stratified Aboriginal archaeological deposits? Investigation of the intactness of archaeological deposits has potential to contribute to the understanding of the impacts of urban development on Aboriginal heritage sites.
- **Nature and Extent**: What is the nature and extent of any Aboriginal archaeological deposits in the study area? Is it possible to identify distinct activity areas such as knapping floors, or is there evidence of the nature of the occupation of the sites, such as longer-term occupation which might be associated with larger water supplies, to which Aboriginal people transported larger quantities of stone and practiced varying flaking techniques?
- **Significance**: What is the archaeological and cultural significance of Aboriginal sites which are identified in the study area? Where archaeological investigation identifies Aboriginal archaeological deposits in the study area, the heritage significance of the COP work site should be reassessed in line with the Heritage NSW *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b), which states that archaeological values should be identified and their significance assessed using criteria reflecting best practice assessment processes as set out in the Burra Charter. Assessments of cultural significance can only be made by the relevant Aboriginal communities, and will be established through consultation with the RAPs.
- **Comparative**: How do the results of the archaeological investigations and reassessments of significance compare with Aboriginal archaeological sites in the vicinity of the study area, and what are the implications for the understanding of Aboriginal archaeology in the Sydney Basin?

5 Archaeological Methodology

The overall scope and nature of the archaeological methodology has been defined in the EIS and ACHA, and will be applied to the Barangaroo COP study area.

5.1 Archaeological Inspection & Liaison with Historical Archaeological Investigations

Archaeological inspections will be carried out by the Aboriginal archaeological Excavation Director (ED) following completion of historic archaeological investigations and clearing of historic materials, to identify if intact remnant soil profiles are present, and to determine if there is potential for Aboriginal archaeological deposits to be present. The Aboriginal archaeological ED will liaise with the historic archaeological team for each study area during their works, to ensure that potential Aboriginal objects recovered during historic investigations are appropriately identified and taken into account when determining the requirement for Stage 1 test excavations.

Where historic archaeological excavation has been undertaken, but has not cleared large enough areas to allow adequate inspection of the study area to determine the potential for intact remnant soil profiles to be present, the mechanical removal of the extant surface, base gravels and overburden will be undertaken, directed by an archaeologist.

If soil profiles with potential to retain Aboriginal archaeological deposits are identified during inspection, or located during the historic archaeological investigations, the Aboriginal archaeological ED will assess the need for Stage 1 test excavations to be undertaken.

If no evidence of intact remnant soils with potential to retain Aboriginal archaeological deposits is identified during inspection or historic archaeological investigations, or if no Aboriginal objects are identified during historic archaeological investigations, the Aboriginal archaeological ED will issue a Clearance Certificate to inform the project team and proponent in writing.

5.2 Stage 1 Test Excavation

Stage 1 test excavations will primarily comprise manual or mechanical excavation of test pits in controlled units within each area confirmed as having potential to retain Aboriginal archaeological deposits, in order to confirm if Aboriginal objects are present, and to allow determination of the need for expanded Stage 2 salvage excavations.

Manual test pits will be $1m^2$, and dependent on the cultural material present and the nature of the deposit, excavation will proceed as 10cm arbitrary units, or stratigraphic units where identifiable stratigraphic layers are present. Archaeological test pits will initially be positioned in a grid approximately 10m apart, dependent upon the area available for investigations, and the observable levels of disturbance.

As the final design of works and impacts is not complete for the COP study area, and the study area has not been cleared at the time this AMS is being prepared, it is not possible to identify the areas that could potentially require and be available for excavation, and as such it is not possible to determine specifically where test pits would be placed during excavations. Where there are constraints preventing pits being positioned on the grid layout, pits will be offset by up to 5m within the study area. Where limited areas of remnant soils are present, pit sizes may be reduced to allow excavation to proceed. In study areas where the area of potential archaeological deposit is very limited, it is possible that Stage 1 excavations may be sufficient to archaeologically excavate the entirety of the archaeological resource, without Stage 2 excavations being undertaken.

If historic materials or introduced fill materials overlie the area to be excavated following completion of historic archaeological investigations, they may be removed by machine to expose soils requiring manual excavation, under the direction of an archaeologist.

Excavation pits will be set out by hand, and their location recorded using handheld GPS units. Excavated pits will be surveyed by a qualified surveyor prior to completion of excavation works in any portion of the study areas and the issuing of Clearance Certificates.

Test pits would be manually excavated to a depth assessed as being culturally sterile, or to a point where it is no longer physically possible to archaeologically excavate, such as when the water table is reached, the walls of the pits are no longer stable, or the pits are inundated. Due to health and safety considerations, pits will be manually excavated to 1.5m in depth, at which point additional pits will be excavated adjacent, to allow the area to be stepped; or the pits will be shored.

Where excavation is required beyond 1.5m, and previously excavated units have identified limited numbers of archaeological materials in upper units, machine excavation may be undertaken to recover or expose soils at depths shown to be likely to retain archaeological materials, or adjacent to manually excavated test pits in order to create a stepped working surface to allow manual excavation at depth. Machine excavation will require a mechanical excavator equipped with a small, flat edged bucket, excavating in shallow scrapes to remove soils, under the direction of an archaeologist. Mechanical excavation should take place in 20cm units, and the directing archaeologist should record the excavated soils as per the manual excavation methodology. A sample of up to 50% of units excavated by machine should be sieved.

Should it be determined that there is potential for additional cultural material to be present at depths deeper than that able to be manually excavated, deeper sediments may be investigated through the use of a hand auger. Where hand auger results suggest that archaeological deposits have potential to continue beyond the point where test pits are inundated, the Aboriginal archaeological ED may consider bulk recovery of units beyond that depth using machine excavation and sieving.

Where appropriate, sections will be drawn detailing the stratigraphy and features within the excavated deposit, and all units will be photographed, prior to and during excavation. Soil and carbon samples will be collected where appropriate, and measurements of the pH of soils will be made. All manually excavated material will be sieved on-site through 3mm and 5mm sieves, to ensure recovery of small archaeological materials, and material will be wet or dry sieved as appropriate to soil conditions.

If suitable features or deposits are identified during excavations, samples will be taken for dating by radiocarbon or OSL analysis, depending on the nature of the sample. If shell midden material, hearths or suspected hearths are identified, samples of each layer or deposit material will be subject to C^{14} radiocarbon dating determinations by the University of Waikato Radiocarbon Dating Lab, or similar facility.

To allow comparison with other archaeological studies in the local region, where appropriate a suitably qualified geomorphologist will be engaged to analyse the soils in the study areas, and examine soil profiles revealed during excavation. Geomorphological information will be appended to and summarised within final reporting, and will contribute to the overall interpretation of the results of the archaeological excavation.

If Stage 1 excavations recover insufficient Aboriginal cultural material to trigger Stage 2 salvage excavations, the Aboriginal archaeological ED will issue a Clearance Certificate to inform the project team and proponent in writing following completion of the Stage 1 works. Clearance

Certificates may apply to an entire study area, or discrete portions of the study areas, as works are completed.

5.3 Stage 2 Salvage Excavation

Where the Stage 1 test excavations identify archaeologically significant or intact Aboriginal heritage deposits, Stage 2 archaeological salvage excavations will be undertaken.

Triggers for Stage 2 excavations within the Barangaroo COP study area are as follows:

- Identification of any artefacts during Stage 1 excavations. A minimum number of artefacts has not been set due to the potential heritage significance of sites in these areas
- Identification of rare or significant artefacts, features or site types
- Identification of artefacts in contexts which may provide significant information on site formation, including potential for samples to be extracted suitable for dating

The extent of the Stage 2 salvage excavations will be determined by the Stage 1 test excavation results, and will utilise the same methods of manual or mechanical excavation. Manually excavated salvage pits shall initially be undertaken by expanding out in four $1m^2$ pits adjacent to the sides of the original pit, where the study area to be investigated is large enough to allow such expansion. Excavations will cease once an adequate sample of the archaeological resource has been recovered to allow an appropriate level of analysis, and to allow adequate description of the intactness, nature, extent and significance of the site. Machine excavation will be utilised as per Stage 1, where it is necessary to remove historic materials, introduced fill, or culturally sterile soils prior to manual excavation, or to investigate areas over 1.5m in depth.

Where Aboriginal heritage objects are identified during historic archaeological excavations, the Stage 1 test excavation will form part of the historic excavation program, and will be guided in line with the relevant historic Archaeological Method Statement for that work site. RAP representatives would be involved in the excavation of Aboriginal objects from historic archaeological contexts. Where historic materials are identified during the Stage 1 or 2 test excavations, the historic ED will be consulted with to determine any necessary modifications to the Aboriginal AMS.

Should Aboriginal heritage objects be identified in introduced fill material that is not considered a historic archaeological context and will not be excavated under the historic AMS for the relevant study area, the Aboriginal archaeological ED will establish if additional investigation of the fill material is required. Additional investigation may include, but not be limited to, excavation of manual test pits to sample the fill as per the Stage 1 methodology, or mechanical excavation and sieving of a larger area of fill.

Following completion of Stage 2 excavations, the Aboriginal archaeological ED will issue a Clearance Certificate to inform the project team and proponent in writing. Clearance Certificates may apply to an entire study area, or discrete portions of the study areas, as works are completed.

5.4 Post Excavation Analysis & Reporting

Following excavation, attributes will be recorded for each excavated artefact in accordance with the Heritage NSW AHIMS Feature Recording Form – Artefact, which requires identification and recording of material, artefact type, dimensions, and platform and termination type. Excavated archaeological material will be analysed on a similar level to that of previous assemblages from the Sydney Basin, and information from this analysis will be used to make interpretations about the Aboriginal site use, antiquity and settlement patterns of the study area, and to assess regional cultural heritage values.

A full description of the recording methods will be included in the final archaeological reporting, and analysis of the excavation results will allow a reassessment of the archaeological and cultural significance of the study area and its context in the surrounding land. Preliminary analysis of materials will be carried out during Stage 1 test excavations to determine the appropriate scale of the Stage 2 salvage excavation phase. Detailed analysis will be undertaken after all excavation works are completed.

An Aboriginal archaeological excavation report will be prepared the parts of the study area subject to archaeological excavations, and will address:

- The Aboriginal cultural heritage and environmental context of the project area
- The Aboriginal community consultation process, and identified cultural values of the project areas to the local Aboriginal community
- The Aboriginal archaeological methodology used for inspections and archaeological excavations
- The results of the archaeological investigations, including any artefactual or geomorphological analysis
- An assessment of the heritage significance of any Aboriginal heritage sites, objects or places identified by the investigations, and conclusions addressing the implications of the results of the investigations for the understanding of Aboriginal archaeology in the local area and wider region
- Recommendations for final storage and appropriate use for interpretation.

Following completion of the Aboriginal heritage excavations, the location, nature and extent of any sites identified by the works will be recorded on an Aboriginal Heritage Information Management System recording form, and provided to Heritage NSW in line with their requirements.

All draft reports will be sent to the RAPs for comment, and any feedback received in a timely manner will be incorporated into the final report as part of the consultation process, in accordance with Heritage NSW requirements.

5.5 Storage of Aboriginal Objects

Aboriginal objects that are recovered during the archaeological investigations will be cleaned, bagged, labelled and appropriately analysed and stored so that information that can contribute to the understanding of the sites is not lost. Prior to analysis, Aboriginal objects will be stored in a locked container on site during excavations.

Sydney Metro will provide long term storage of both historic and Aboriginal relics salvaged and uncovered during archaeological investigations. Sydney Metro's storage facility will be secure to protect all relics and salvaged elements from damage or vandalism.

5.6 Human Remains

In the event that suspected human remains are identified during the Aboriginal archaeological investigations, works must immediately cease in the vicinity of the find, and the find should be managed in accordance with the *Aboriginal and Historic Heritage Unexpected Finds Protocol.* If the remains are identified as human, the finds will be managed in accordance with the Sydney Metro *Exhumation Management Plan.*

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Barangaroo Metro Station
Construct Only Package (COP)
Archaeological Method Statement

Prepared by AMBS Ecology & Heritage
for BESIXWatpac

May 2021

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Approved by:	[redacted], AMBS Director of Historic Heritage

Contents

Tables

Figures

1 Introduction

AMBS Ecology & Heritage (AMBS) has been commissioned by BESIXWatpac on behalf of Sydney Metro, to prepare an *Archaeological Assessment and Research Design* (AARD) for the Barangaroo Metro Station Construction Only Package (COP). The Barangaroo COP will involve fitout of the new Barangaroo Metro Station, installation and connection of services, and establishment of the new road surface on Hickson Road.

The Barangaroo COP project is a component of the Sydney Metro City and Southwest project, which is a new 30km-long rail system from Chatswood to Sydenham and includes a new crossing beneath Sydney Harbour, and new railway stations.

The Project was approved by the Minster for Planning on 9 January 2017 subject to a number of Conditions set out in Critical State Significant Infrastructure Sydney Metro & Southwest Chatswood to Sydenham Infrastructure Approval (Application no. SSI 15_7400) (Project Planning Approval). Documentation for the project-wide works included a *Non-Aboriginal Impact Assessment* (EIS Technical Paper 4) and *Sydney Metro Historical Archaeological Assessment and Research Design Report* (AARD), both prepared by Artefact Heritage. Minister's Condition of Approval (CoA) E17 refers to the pre-excavation reporting requirements prior to construction:

> *The Archaeological Assessment Research Design Report (AARD) in the PIR must be implemented. Final Archaeological Method Statements must be prepared in consultation with the Heritage Council of NSW (or its delegate) before commencement of archaeological excavation works. The final methodology must:*
> *(a) provide for the detailed analysis of any heritage items discovered during the investigations;*
> *(b) include detailed site specific archaeological management and artefact management strategies;*
> *(c) include cored soil samples for soil and pollen for the Pitt Street site within the Tank Stream Valley; and*
> *(d) provide for a sieving strategy.*

Prior to the construction of the Station Box and tunnelling works at the Barangaroo Metro site, Casey & Lowe Archaeology & Heritage prepared an Archaeological Method Statement (AMS) for the Station Box excavations which, with the results of the Casey & Lowe excavations supercede the AARD prepared by Artefact Heritage (Artefact; 2016) (Casey & Lowe, 2017). This Archaeological Method Statement (AMS) builds on that document and assesses the archaeological potential of areas of proposed works associated with the COP outside the Station Box and provides a research design and methodology for the management and mitigation of those works.

Although it is within the scope of the current works, the area of the Station Box has been excluded from this archaeological assessment and research design. The area of the station box was the subject of an extensive open area archaeological excavation in 2018 (Casey & Lowe, 2019) and the resource has been removed from the footprint of the station. The preliminary results of the excavation have informed the assessment of archaeological potential in this document.

1.1 Study Area

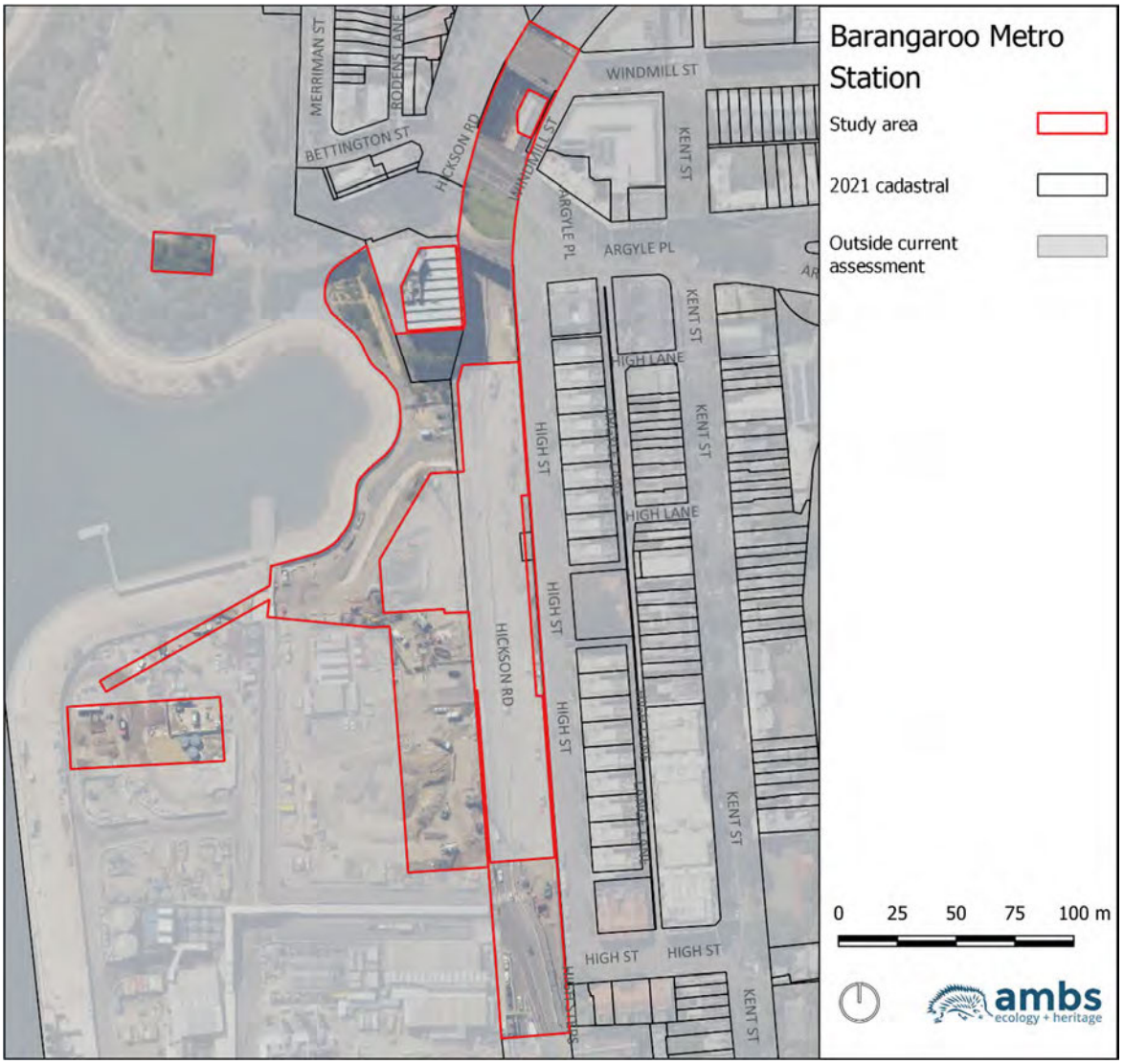

Figure 1.1: The study area excludes the station box which has already been archaeologically excavated.

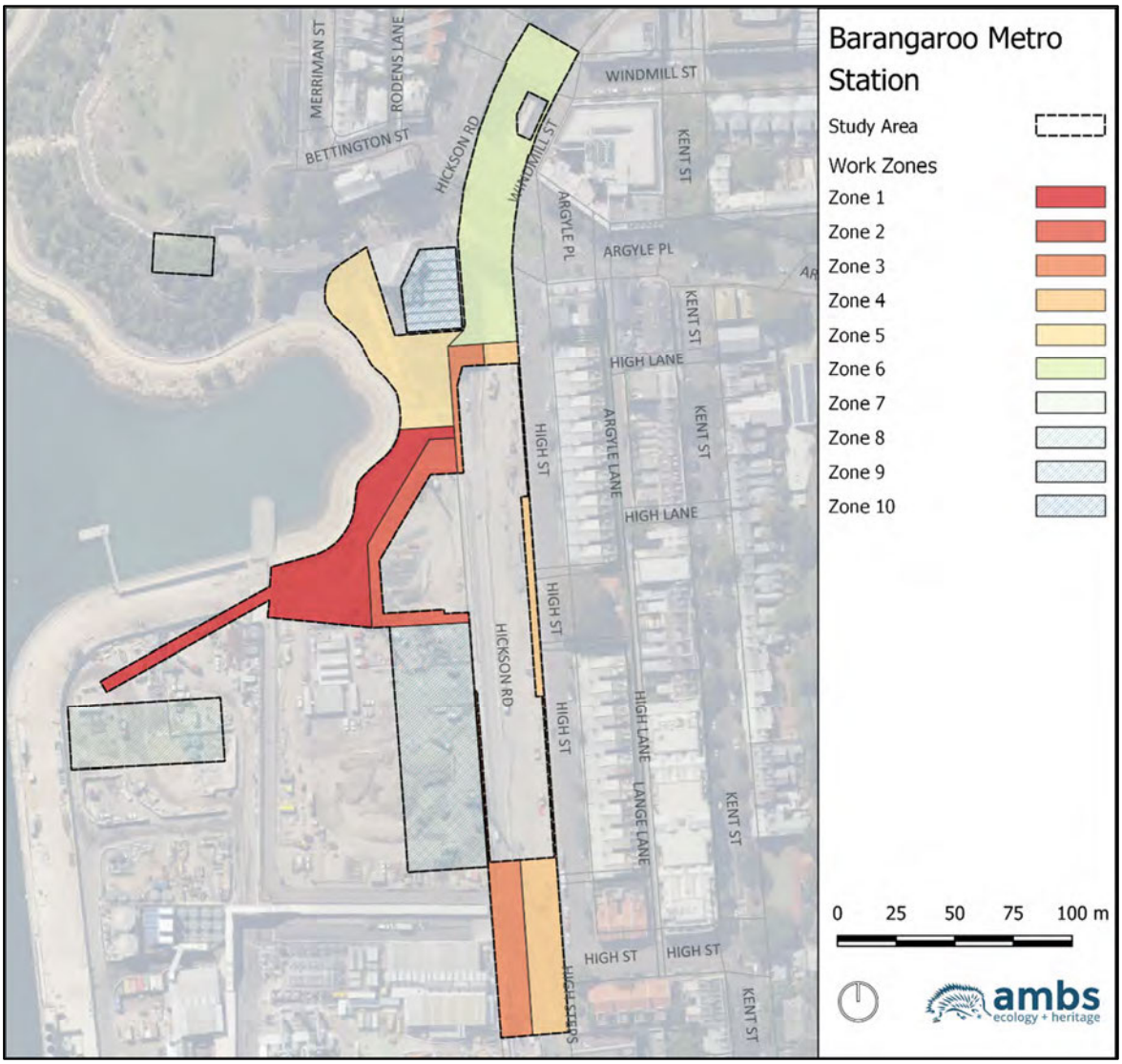

Figure 1.2 Study area showing work zones.

The study area is split into 10 work zones (Table 1.1). The assessment of impact will address the activities in each work zone:

Table 1.1: Work Zones and Activities at Barangaroo Metro Station

Zone	Activity
Zone 1	Stormwater installation
Zone 2	Waterproofing of station concrete roof, backfill and installation of landscaping and station entrance cladding, escalators and lifts
Zone 3 and Zone 4	Demolition and removal of the existing red steel girders and road deck. Relocation of services. Complete concrete structure of ventilation pods, waterproof station concrete roof, backfill, install services and relocate the road, kerb and guttering. Install street trees / landscaping and clad the station ventilation and emergency egress stair pods
Zone 5	Excavation of existing carpark, removal of existing surfaces, installation of new services to the chilled water plant room under Headland Park
Zone 6	Removal of the northern shaft acoustic shed, infill of the northern shaft with sand; replacement of the road, kerb and landscaping works
Zone 7	Connecting up and commissioning plant and pipework which is already in place. All works are within existing man-holes.
Zone 8	Site sheds / canteen / change rooms

Zone 9	Temporary laydown area used to store material and plant / equipment
Zone 10	Site offices

1.2 Methodology & Authorship

This report is consistent with the principles and guidelines of the *Burra Charter: The Australian ICOMOS Charter for the Conservation of Places of Cultural Significance 2013* (Burra Charter). The report has been prepared in accordance with current best practice guidelines as identified in the *NSW Heritage Manual* (1996), published by the Heritage Office and Department of Urban Affairs and Planning, and associated supplementary publications.

This assessment aims to identify the historic archaeological potential and significance associated with the study area to ensure the protection of its archaeological values. This report has been written by Mike Hincks, AMBS Senior Historic Heritage Consultant with additional historical research by Madeline Rodwell, AMBS Historic Heritage Consultant. Jennie Lindbergh, AMBS Director Historic Heritage reviewed the final draft of the report for quality and consistency.

2 Historical Context

2.1 Overview

The study area encompasses Hickson Road from High Street to Windmill Street, and the eastern foreshore of Nawi Cove, almost all of which has been reclaimed from the waters of Darling Harbour. The development of the site has been greatly influenced by its topography, which allowed some parts of the study area to flourish, and others to remain largely undeveloped for most of its history. In 1911 the construction of Hickson Road dramatically altered the landscape and permitted easy access to the foreshore from different parts of the city. There are therefore two histories to the site – pre- and post-1911 – in some cases the latter completely obliterated any evidence of the former.

A comprehensive history of the entire northeastern foreshore of Darling Harbour was prepared for the Barangaroo Metro project Archaeological Method Statement in 2017 by Casey & Lowe (Casey & Lowe, 2017). This chapter does not intend to replicate that history, but rather augments it with detailed analysis of the historical plans in the areas of proposed works for the Barangaroo COP. Table 2.1 is a summary of the general development of the area based on the Casey & Lowe document. Additional land titles research has been done for Lots 3,4 and 5 of Section 93 which was not covered by the previous Archaeological Method Statement.

Table 2.1: Phases of development at the Barangaroo Metro Station site

	Overview of Development
Early 1800s	• Early occupation of Darling Harbour set on western ridge, related to military barracks (officer's quarters, magazine, etc.) • Original shoreline line shown on maps and plans from 1788 o No buildings are shown on the 1807 or 1823 plans but the original foreshore had been subdivided into three grants • Millers Point became centre of small-scale shipbuilding • 1802: A track was established along the ridge to serve the allotments and premises on the shore of Cockle Bay • 1811: First wharf in Cockle Bay ordered in 1811 – Market Wharf o Serviced Parramatta trade, provided shipping of food to the newly opened market on Market Street o Located at the base of Market Street (outside of study area), began to move commercial activity away from Sydney Cove
1820s	• James Munn established the earliest yards, included a floating dry dock o Lawrence Corcoran took over after death
1830s	• Land at Millers Point granted – large grants along waterfront for maritime activities, smaller grants towards headlands for individual dwellings • 1830s parish maps show modified shoreline for wharfage • Government to improve roads, quarryman employed to cut into the western face of the hill • 1839: Kent Street passable along the whole length of Argyle Street • Numerous small quarries established along Millers Point, local buildings sought permissions to utilise local sandstone in construction • Surge of private wharf and warehouse building, wharves constructed through infilling shoreline • Australian Gas Light Company's works (est. 1843) was the exception to private development
1840s	• 1849: John Cuthbert bought waterfront south of Munn's

1850s	• 1856: Munn's property acquired by Cuthbert
Late 1800s	• Most wharves within Darling Harbour unsuitable for modern shipping and in dilapidated condition • 1870s: older wharves demolished for larger, modern facilities • Cuthbert's yard was first to be redeveloped, Thomas Dibbs acquired property and rebuilt for large-scale wharfage and goods storage • 1870s-1880s: small boat builders left the area as demands for wharfage grew
Early 1900s	• 1900: Bubonic Plague – harbour side areas (The Rocks, Millers Point and Darling Harbour) put under quarantine • Government resumed and demolished houses and whares deemed substandard o Allowed government to develop along Darling Harbour foreshore previously restricted by private property boundaries • Sydney Harbour Trust established – substantially altered the original landscape of Miller's Point o Complete redevelopment of a number of areas o 1901: older homes demolished including in Clyde and Merriman Streets o 1910: forty buildings removed from Thornton, Munn and Argyle Streets for wharf expansion o 1909 – construction of Hickson Road to link new wharves at Welsh Bay with new and existing wharves at Darling Harbour • Works included decommissioning and dismantling gas works site, area without solid bedrock required pouring 15cm thick concrete foundation over 10cm thick blue metal o 1924 – Hickson Road through gasworks complete, wharves nearing completion
Late 1900s	• Post-war period: cargo transport by road, rail and container ship overtook smaller shipping o Containers allowed faster loading and unloading, reducing need for warehouse space o Required larger mechanized shipping terminals • 1950s: existing finger wharves infilled – creation of concrete decking, cranes and lighting for larger shipping facilities
2000s	• 2006: container terminal at Barangaroo shut down • 2008: redevelopment of Barangaroo foreshore o Substantial construction to south o Landscaping of headland after removal of port hardstand o Area mixed urban precinct – public parkland, commercial buildings o Barangaroo Central (former gas works) development planned

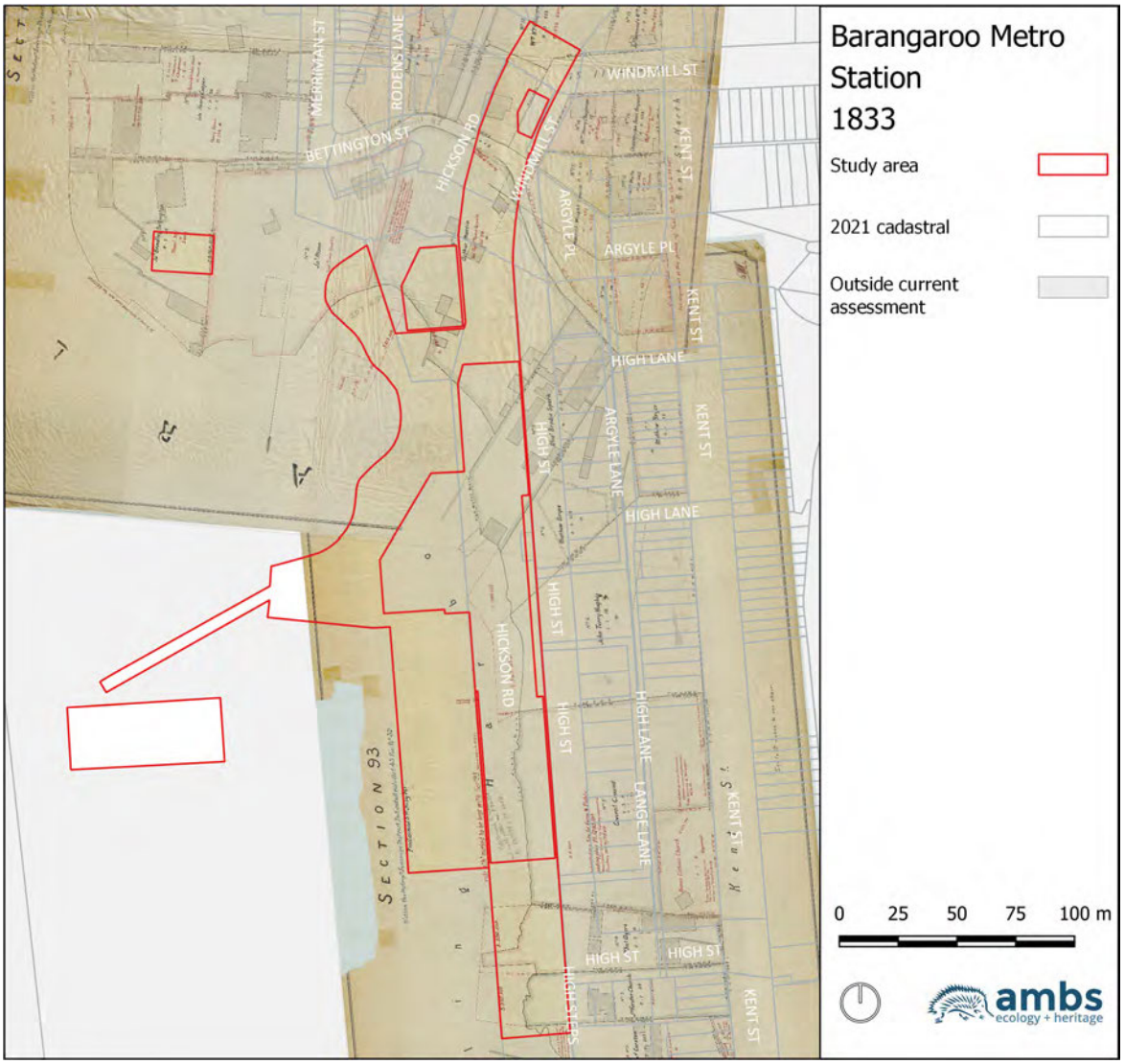

Figure 2.1; The study area shown relative to Sections 92 and 93 of the 1833 City of Sydney survey (City Engineer and City Surveyors Department, 1833).

2.1.1 Aboriginal/European interaction

Millers Point (or nearby – the location is only described as "behind the point on which the Hospital is built" (White, 1790, p. 190)) is probably the place where there was an exchange of goods between Aboriginal and European people that was described by John White on 29 July 1788:

> *We gave them some bread, which they received with apparent pleasure, but did not eat any of it while in our presence. We likewise presented them with a looking-glass, but this they received with indifference, and seemed to hold in no kind of estimation. I gave one of the women a pocket handkerchief, which she immediately tied round her head, and shewed great satisfaction. She had a young child between her knees in the canoe (the way in which they always carry their infants), for whom she solicited something, in the most suppliant tone of voice I ever heard. The only thing I had about me was a narrow slip of linen, which I gave her; and, trifling as it was, she appeared to be perfectly satisfied with it, and bound it round the child's head. (White, 1790, p. 191)*

The journal entry is very early evidence of not only the exchange of goods, but also of selective use of and selective value attribution to foreign materials by Aboriginal people. It indicates that we can expect to find European cultural items in Aboriginal archaeological contexts from the earliest days of the colony. It also demonstrates that utility was not necessarily the prime motivator behind the

acquisition of European material, and that we may find non-Aboriginal items in Aboriginal archaeological contexts that do not fall into familiar or intuitive use-categories.

Notably, in the same day's journal entry White records the spearing of a convict by Aboriginal people elsewhere on the waterfront (White, 1790, p. 189). The contrast between the two events is not remarked upon by White and we can only assume that to experience such extremes in relations in the same day was commonplace in the early months of the colony. Just shy of one month later, White describes the spearing and carrying away of a young goat by Aboriginal men (White, 1790, p. 213). The incident was also close to the hospital but probably nearer Dawes Point than the earlier encounter.

In the first year of the colony, the western side of the Cove was seemingly a porous edge of the settlement and was the location of both aggressive and friendly encounters between Aboriginal and European people. Cockle Bay was separated from the Cove by a high ridge that meant that the town expanded primarily to the south and east. This idea of the western ridge being a frontier or permeable boundary in the first years is echoed in paintings from 1802 and 1803. Both show the settlement from its western edge, and both depict a liminal space in which Aboriginal people are undertaking traditional activities alongside the buildings and people of the colony. Although the depiction of the Aboriginal people throwing spears in close proximity to the chatting and seated Europeans in Evans' painting appears fanciful, the choice of location and its cleared but uncultivated and undeveloped appearance is instantly recognisable as a frontier between wild and managed. The Aboriginal people depicted here are symbolic of that frontier, and of what lies on its other side. The use of colour and shade to emphasise the darkness of the untamed foreground and the light and order of the town beyond are easily read and understood by the viewer in both images.

Figure 2.2: An 1802 painting by Edward Dayes looking south-southeast from near Dawes Point (Dayes and Jukes, 1804).

Figure 2.3: An 1803 painting by G.W. Evans looking east from the high ridge that runs between Millers Point and Sydney Cove (Evans, 1803).

Understanding this context is useful for interpreting the only contact-period archaeological site in the vicinity of the Barangaroo COP works, which is located around 180m north of the study area at Moore's Wharf (Lampert and Truscott, 1984).

The Aboriginal archaeology consisted of the partial remains of a campsite. A 500mm x 500mm deposit of sandy brown soil averaging 310mm thick was excavated from within a natural depression in the bedrock. The excavated material contained 392 stone artefacts and was sealed by a midden layer 100mm thick. The midden material was in turn sealed by a rubble construction layer for the wharf buildings that were built in the 1830s. Four sherds of blue and white transfer print ceramic were found within the artefact-bearing soil beneath the midden (Lampert and Truscott, 1984, p. 1 Appendix 1). The ceramic was not modified, but this unexplained presence or utility is evocative of interactions of the kind described by White, and also of the liminal space depicted in the paintings of Evans and Dayes.

Aboriginal people undoubtedly continued to be present in Millers Point in the subsequent decades, as Kass (1987) has noted. Aboriginal people were employed in various ways in the colony, including the maritime trades that were centred around Millers Point and the harbour:

> *In 1845, Mahroot, one of the few survivors of the original inhabitants was interviewed during an enquiry into the state of the Aboriginal people. He lived by catching and selling fish. With the proceeds of this he bought clothes, meat, flour and sugar. He had never worn the traditional native dress but had always dressed in coat and trousers… To make some money, Mahroot had signed on for five or six whaling voyages (Kass, 1987, p. 11)*

The interactions that these activities would have generated were surely numerous, including Mahroot's descriptions of drinking with his European companions after coming ashore. However the probability of being able to identify the traces of these kinds of interactions archaeologically is slim to none.

2.1.2 Study Area North - Overview

The relatively unmodified shorelines of Lots 1 and 2 in Section 92, initially granted to Joseph Munn and Arthur Martin respectively; are partially represented within the study area. The development of the foreshore of these lots and their transformation through extensive reclamation and wharf

building is the focus of the historical context of this part of the site. The establishment of Munn Street to the northwest allowed important road access to the foreshore and increased its usability and value. Access to Munn Street was paramount as it was the only reasonably traversable road to the high ground of Argyle and Kent Streets. It meant that the huge filled-in wharfs between Clyde Street and Munn Street were never subdivided, as access would be cut off from all but the northwestern parts. These wharfs, covering much of the northern part of the study area were utilised first by Cuthbert's shipbuilding business and later by Dibbs, who owned large portions of the foreshore by the 1880s.

In the extreme north of the study area, the footprint of the project crosses the original alignment of Windmill Point Road into William Henry Chapman's grant on Lot 12 of Section 92. However, as the study area has been cut down some 14m from its original height for the construction of Hickson Road in this location, Chapman's grant and its subsequent development is not relevant to this archaeological assessment beyond its destruction, and is therefore not discussed further. Likewise, the part of the study area (Work Zone 7) that is within Bettington's grant on Lot 3 is not discussed. Archaeological and historical analysis is of no benefit to this part of the site as works in this area are confined to connections within existing service pits.

Work Zone 10 is the site offices at Dalgety Bond Stores. Although there will be no excavation in this area, it has been included in the discussion of historical context because historical surveys and overlays are not always accurate, and some of the features and structures that appear to be within the footprint of this building may in fact be in adjacent areas of excavation. This includes early structures associated with Munn and Martin (Figure 2.4).

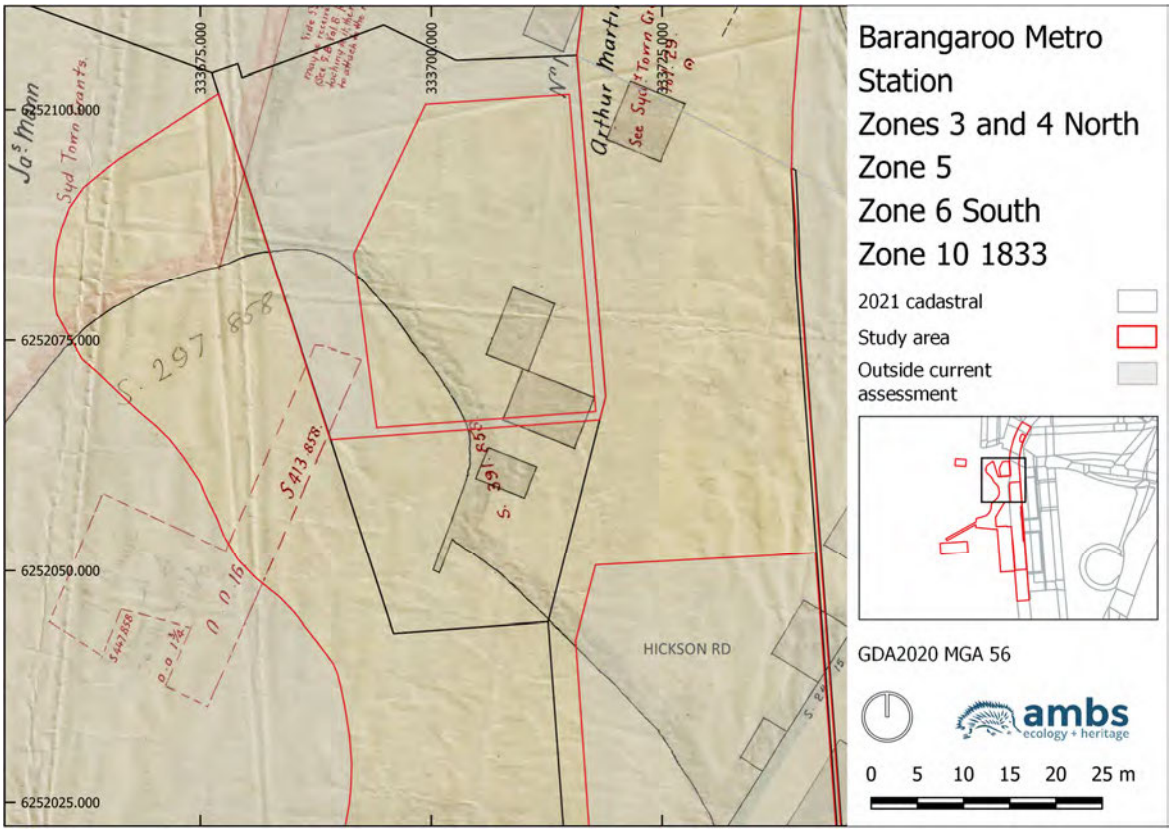

Figure 2.4: The 1833 foreshore of Munn and Martin's land showing up to five structures and a narrow jetty within the footprint of the study area (City Engineer and City Surveyors Department, 1833).

2.1.3 Early development of the shoreline

In 1833, a dispute between grantees Munn and Martin over land in Lot 2, Section 92 had been settled in Martin's favour , and Arthur Martin was afterwards in possession of three structures on the foreshore, along with a narrow jetty protruding southwest into the bay (Casey & Lowe, 2017, p. 54) (Figure 2.4). The construction of two of these structures had been commenced by Munn during his occupancy of the land (Casey & Lowe, 2017, pp. 54-55). A lime kiln in their midst (Casey & Lowe, 2017, p. 56), indicated these were probably utilitarian buildings. The 1833 survey (City Engineer and City Surveyors Department, 1833) positions the main structures and kiln around 15m distant from the high water line, and partly beneath the Dalgety Bond Stores (Figure 2.5). Contours recorded in 1887 give an indication of the slope in this part of the study area, which had probably changed little since 1833. The contours suggest that Martin's foreshore buildings and kiln were built on a strong slope of 27% (Figure 2.5). The largest of the three buildings was constructed across the slope and was surveyed as being around 8m x 6m. The contours indicate that the ground may have dropped considerably across the width of the building (possibly 1.5m if the slope was even), and so the structure may have had a partial basement, or have been built on land that was cut back into the slope to produce a level surface. In either case, it suggests that building on the Millers Point landform was not necessarily straightforward, and choices were probably deliberate and considered.

The 1833 survey shows that larger buildings on Martin's land that may have been residential were located further up the slope towards the present location of Argyle Street. With the exception of the narrow jetty, the foreshore appeared largely unmodified, and remained this way until after 1855 (Figure 2.6).

By 1855, development upslope had increased considerably. Wentworth Street and Unwin Street had been established, and residential buildings of modest size had begun to fill the space between. Some houses were depicted as small as 3m x 4m, they were tightly packed, and may have consisted of little more than a single room. Nine such structures flanked a yard 3m wide crossed by an open drain and shared 2 cesspits between them (City Engineer and City Surveyors Department, 1855).

The lack of development of the shoreline despite the crowded nature of Wentworth Street and Unwin Street at this time is symptomatic and indicative of the topography close to the shore. Despite the close proximity of the residences and streets to the water's edge, the significant difference in height limited its engagement with the residential neighbourhood above. This is well demonstrated by the results of the 2018 archaeological excavation in the station box (summarised in section 3.4), which show two very distinct levels of development at the foot of the slope. The change is embodied by the base of a deep cistern on Wentworth Street and the floor of a storehouse on the wharf occurring at a similar height (Casey & Lowe, 2019, pp. 44, Figure 3.64). It wasn't until Cuthbert acquired the land along the waterfront and began to construct his filled-in wharf that the shoreline was finally connected to the streets above by the circuitous route of Munn Street to the northwest.

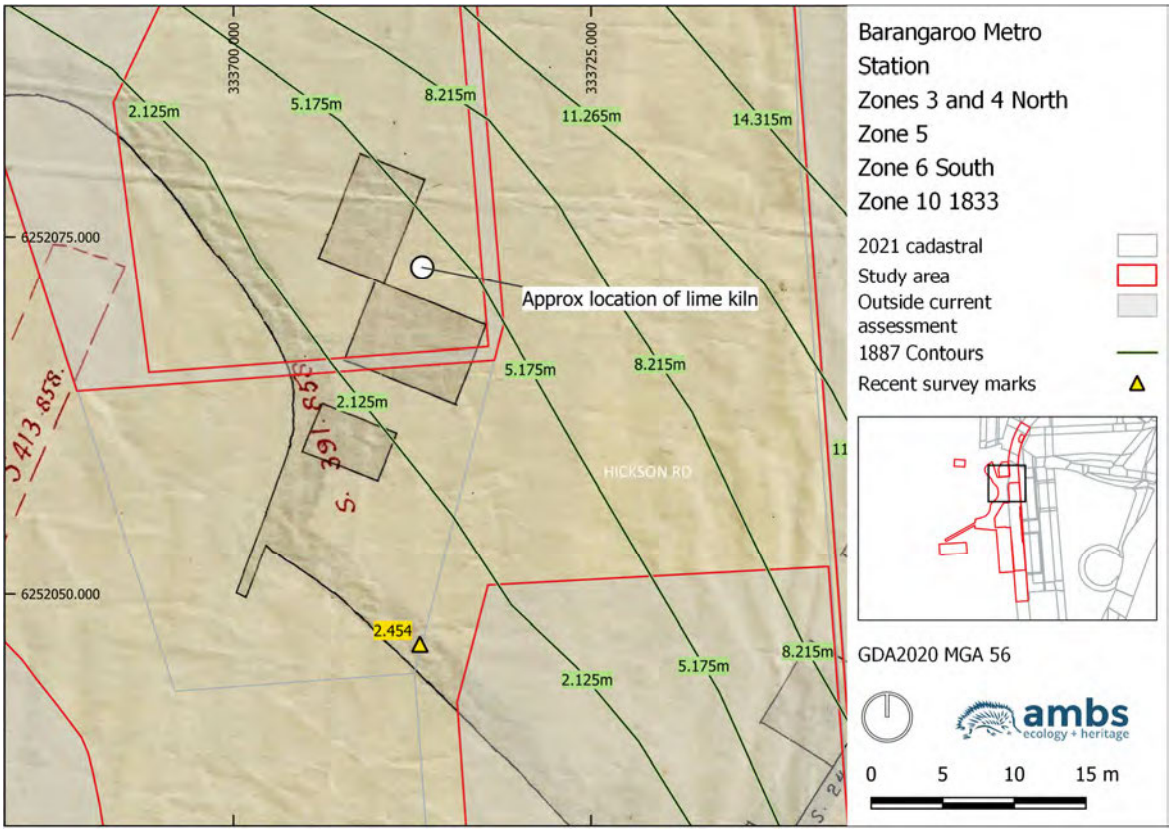

Figure 2.5: Contours recorded in 1887 (Moriarty, 1887) give an impression of the early landform and are shown here relative to structures surveyed in 1833 (City Engineer and City Surveyors Department, 1833) and a twentieth century survey mark at the level of Hickson Road (46693, 1988, LPI NSW).

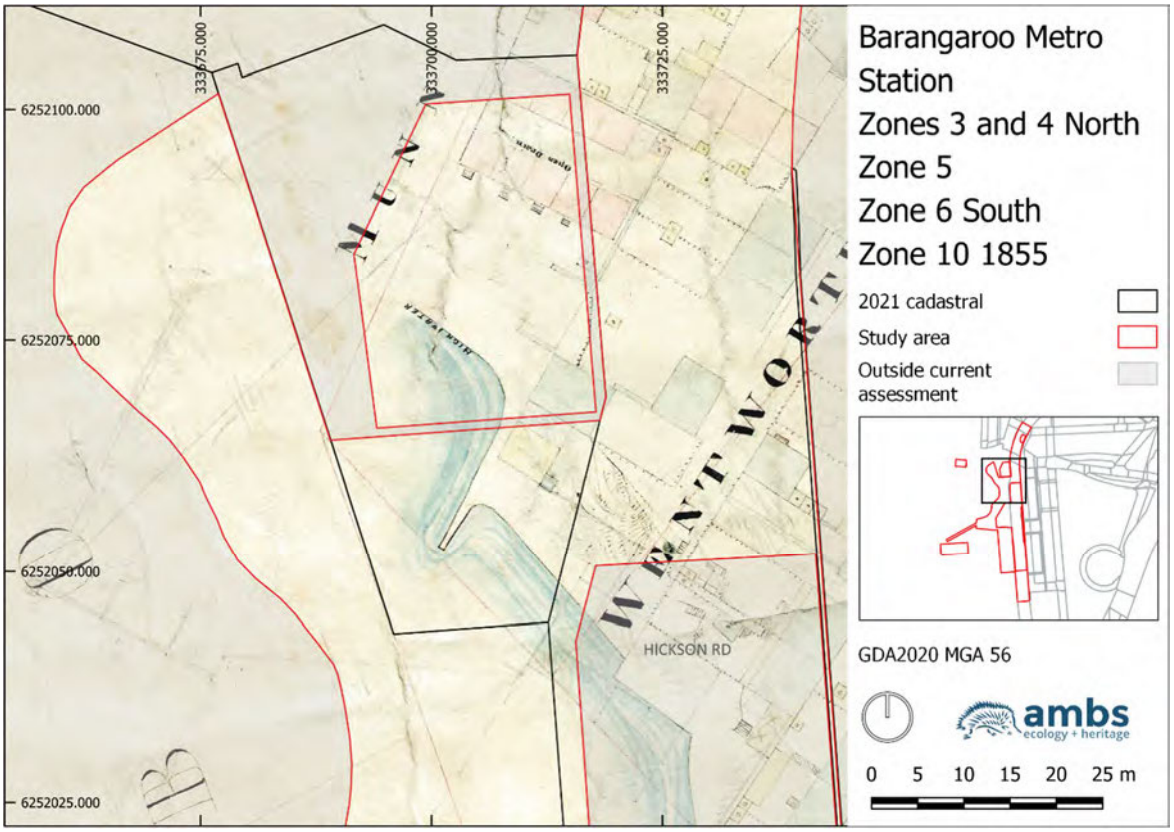

Figure 2.6: The foreshore in the northern part of the study area in 1855. Wentworth and Unwin (here shown as Munn) Street have already been established on the higher ground but the foreshore remains largely unmodified (City Engineer and City Surveyors Department, 1855).

2.1.4 Cuthbert's Shipbuilding Yard

Cuthbert's wharf was constructed in two stages. The first stage had been completed by 1863, when Cuthbert was granted the reclaimed land that formed the wharf (NSW LRS, 1863). The first stage included a single slipway and a narrow dock 17ft 5in (5.3m) wide (Figure 2.7). Most of the narrow dock is included within the study area. Although constructed with long stone walls that would have required considerable expense and labour, the dock appears to have been short-lived. It was filled in to create a more extensive wharf within two years of the grant.

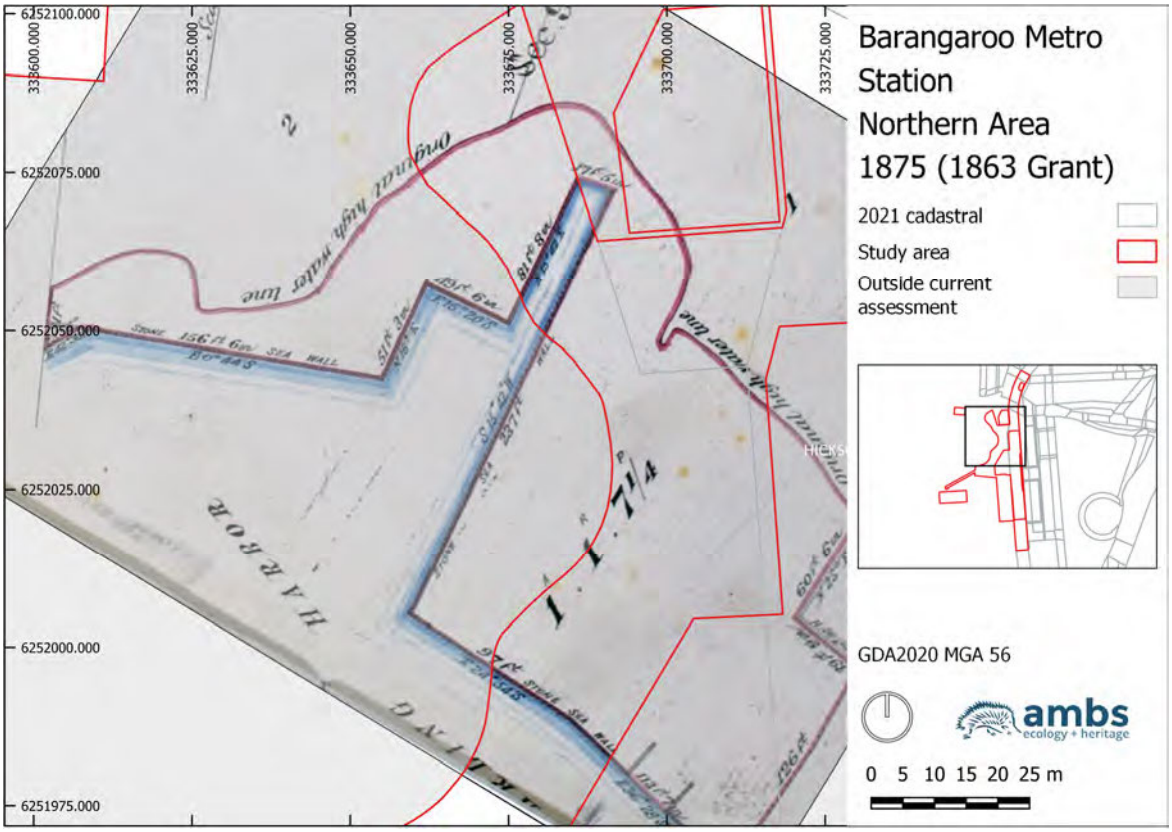

Figure 2.7: Cuthbert's 1863 grant of reclaimed land showing the narrow dock crossing the study area. This image is from an 1875 transmission of estate (NSW LRS, 1875) which shows measurements of the dock and the stone sea wall.

By 1865, Cuthbert had constructed a filled-in wharf of some 8581m^2 (calculated from the 1865 survey), incorporating three slipways, a timber jetty, and containing a large saw shed and numerous other wharf buildings. The wharf was fringed with a stone seawall that ran from Clyde Street in the southeast to Munn Street in the northwest. The impracticality of Clyde Street's gradient for use by the wharf is indicated by Cuthbert's decision to place his large saw shed at the point where the street met his wharf, effectively cutting off access between the two.

The study area includes the southeastern work area of Cuthbert's wharf, between the two southern slipways, as well as parts of several wharf structures at the periphery in the north and east (Figure 2.9). It was a part of Cuthbert's original (pre-1863) wharf, and as the largest open space at the time, and containing the only slipway, would have been the central work area. With the saw shed located in the southeast, this part of Cuthbert's wharf is likely to have been the favoured building location even after the wharf was expanded. The study area also encompasses what became the rear ground of the third slipway after the dock was filled in, and includes the footprint of a large structure that was built against the retaining wall of Munn Street. With the exception of the saw shed, this building was the largest on Cuthbert's wharf. A contemporary painting by Samuel Elyard (Figure 2.8) appears to show the structure in a stylised ramshackle state, with the Munn Street houses on the higher ground beyond. It is a tall open-sided structure with strong vertical supports and a large amount of timber stacked against it. This building was probably the store for cut timber, the large and long planks required for the biggest vessels would account for its oversized nature. The 1865 survey depicts it as around 18m long and 8m deep. Over 10m of this structure is included within the study area.

Figure 2.8: Painting titled *Boat Shed, Darling Harbour* by Samuel Elyard dating from 1862-1875 showing the large northern structure on Cuthbert's wharf in the centre of the image (Elyard, 1862).

The footprint of several more residences fronting Unwin and Wentworth Streets are also within the study area by 1865, in the present location of Hickson Road and the Dalgety Bond Stores. The remains of many of these residences are likely to have been removed during the construction of Hickson Road. The 1887 contours indicate that most of the structures on Unwin and Wentworth Streets were located over 3m above the twentieth century level of Hickson Road (2.454m AHD71 recorded at Dalgety Bond Stores at Survey Mark 46693, 1988 [LPI NSW]).

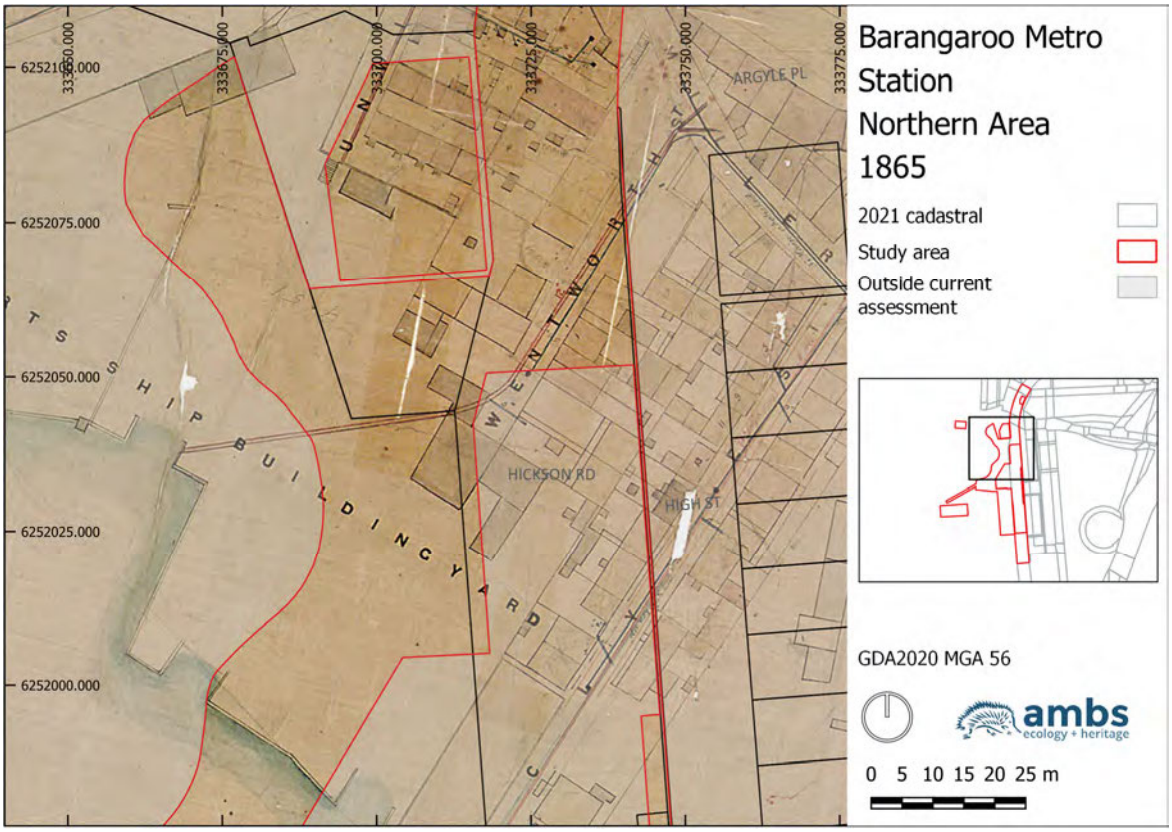

Figure 2.9: 1865 Plan of the northern part of the site showing part of Cuthbert's wharf (including the large northern structure) and residences on Unwin and Wentworth Streets within the study area (City Engineer and City Surveyors Department, 1865).

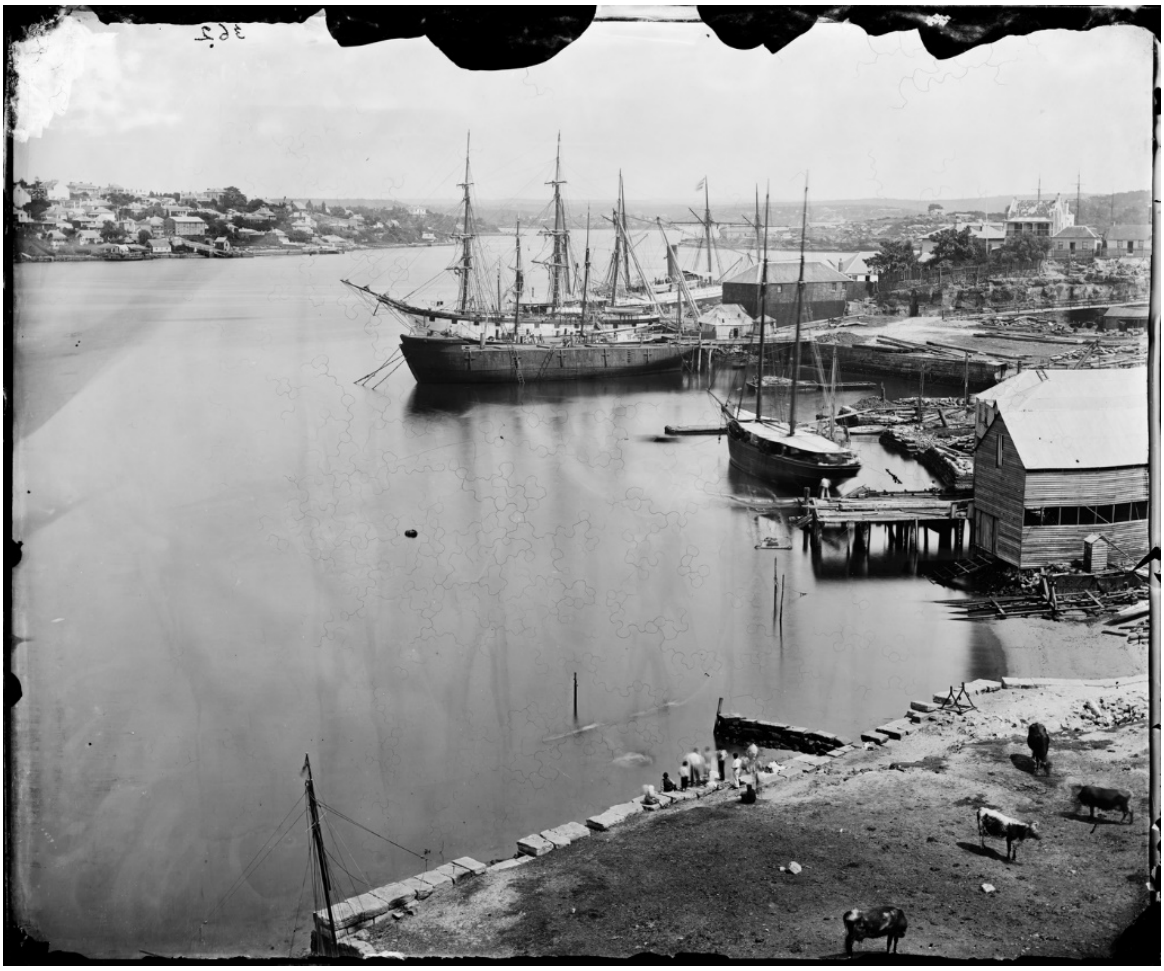

Figure 2.10: A c.1875 image looking northwest from Osborne's wharf, just south of Clyde Street. Cuthbert's shipbuilding yard is shown at the right beyond the boat shed (Mitchell Library, SLNSW, Shipyards at Millers Point looking across to Balmain, digital ID: a2825073).

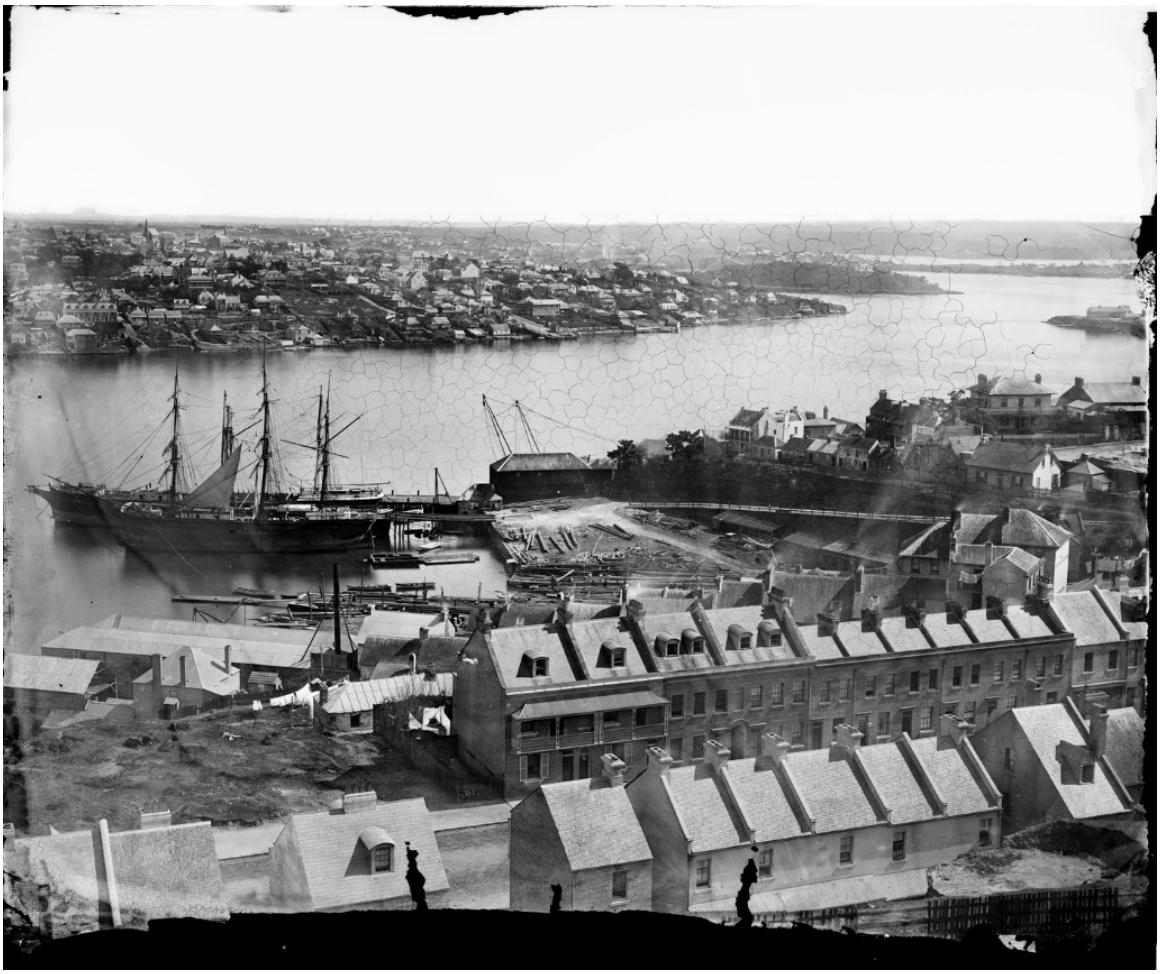

Figure 2.11: Looking over Cuthbert's yard from Observatory Hill sometime between 1870 and 1875. This image can be compared with Figure 2.13, taken from the same vantage point some 10 years later (Mitchell Library, SLNSW, Miller's Point and Balmain from the Observatory, digital ID: a2824955).

2.1.5 Dibbs' Wharf and Gibbs Bright & Co.

By the late 1870s Thomas Alwright Dibbs was occupying and modifying Cuthbert's wharf. Cuthbert had constructed a flat filled-in wharf with three slipways and only a short jetty. It was purpose-made for shipbuilding but had no berths at which ships of deep draught could load or unload. Upon possession of the wharf, Dibbs began constructing long finger wharfs which projected out into deep water and which were suitable for receiving and loading goods (Figure 2.12). The large structure in the north was either converted to or rebuilt as a flour store and was recorded as 'iron' suggesting that the open sides of the shed had been covered in with galvanised sheeting.

In 1894 a survey of the bond stores in Sydney (Mahlstedt, 1894) recorded several substantial structures on the wharf, which was by this time being operated by Gibbs Bright & Co. A large brick woolstore dominated the northern end of the wharf and had replaced Dibbs' iron flour shed. In addition, two small stone structures were located at the rear of the wharf near the current location of Dalgety's stores, and a large iron shed stood in the location of Cuthbert's narrow dock (Figure 2.15).

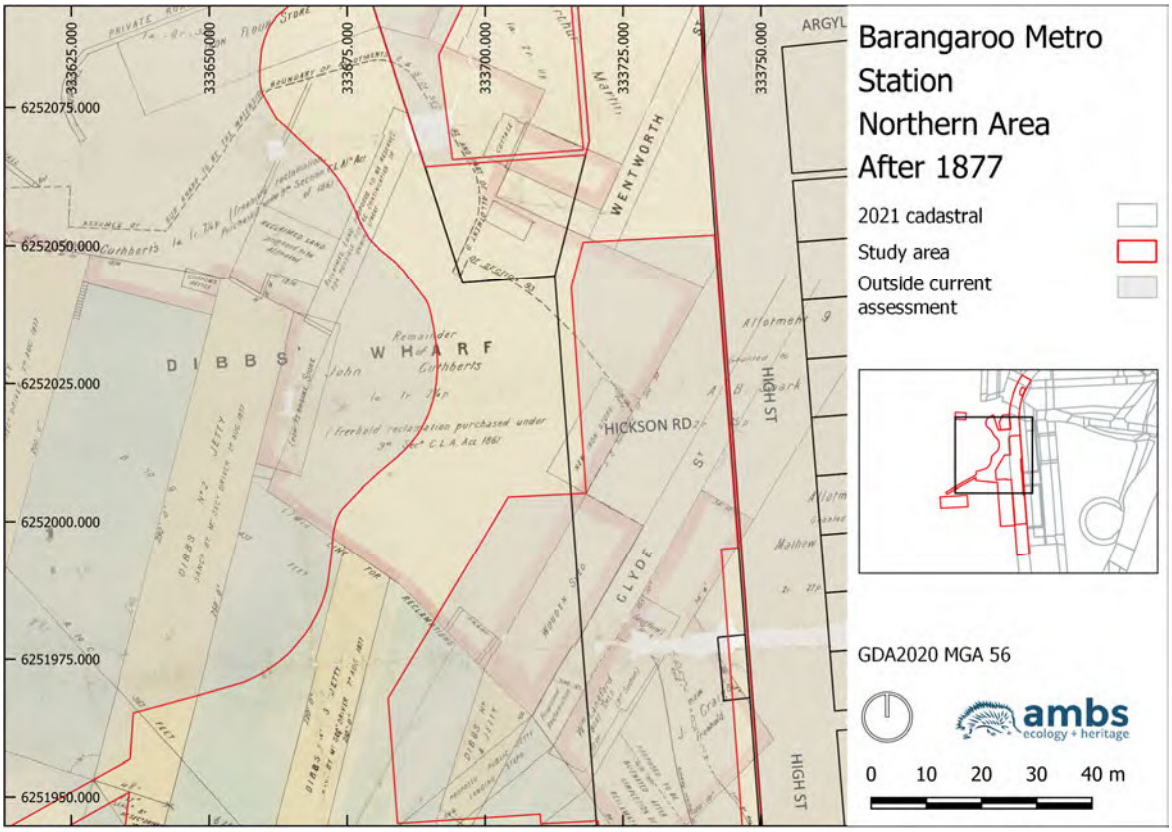

Figure 2.12: A c. 1877 plan showing Dibbs' modifications to Cuthbert's wharf including constructing long jetties and filling in the slipways (Norton and Co, 1877).

Figure 2.13: an 1882 photograph looking over Dibbs' wharf from Observatory Hill towards Balmain. The large iron-clad flour store can be seen at the right (City of Sydney Archives, A-00016724, https://archives.cityofsydney.nsw.gov.au/nodes/view/574116).

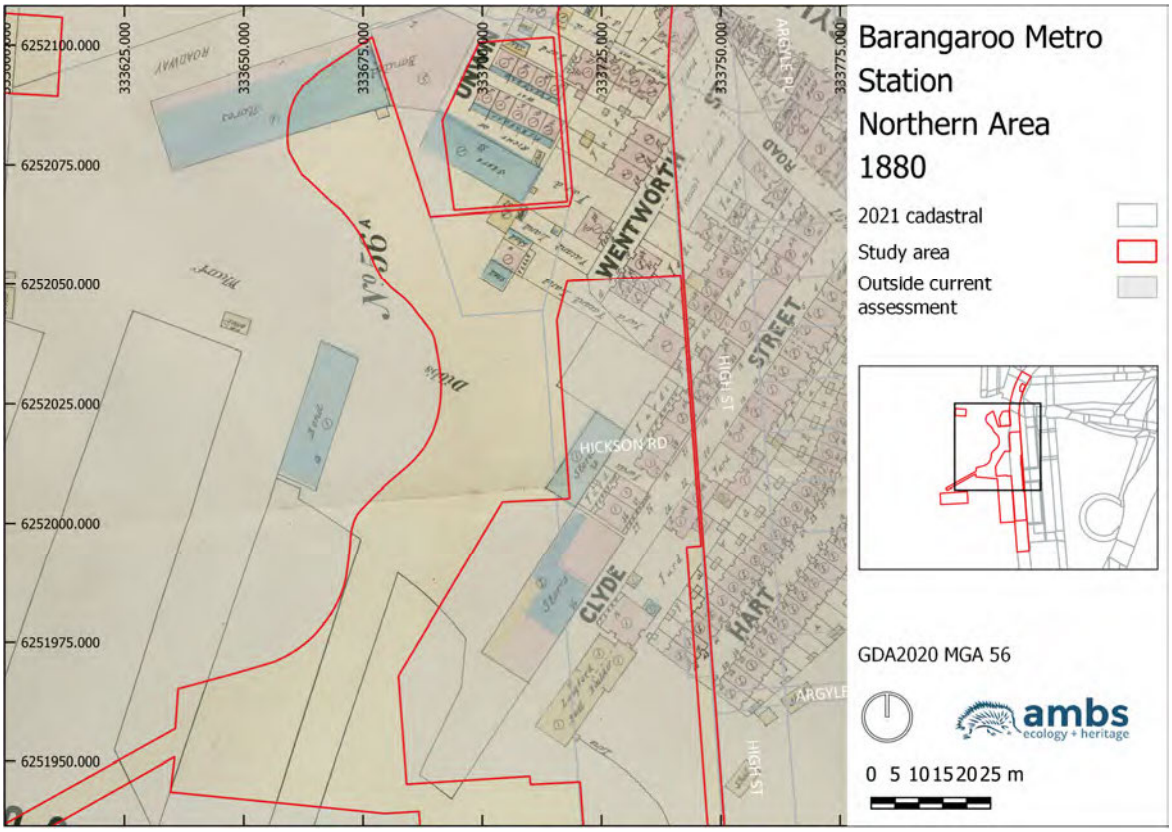

Figure 2.14: Dove's 1879-80 survey showing Dibbs' wharf and finger jetties (Dove, 1879).

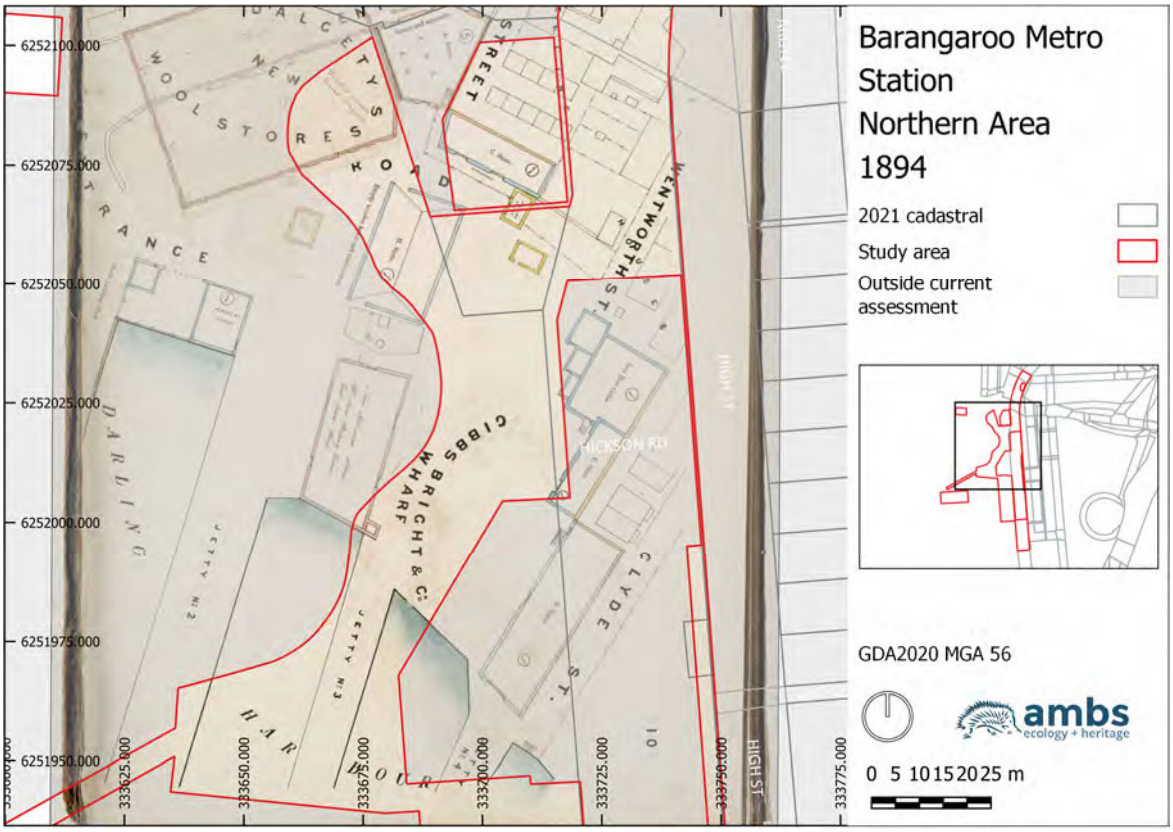

Figure 2.15: Mahlstead's 1984 survey of the wharf showing substantial stores occupying the former shipyard (Mahlstedt, 1894).

2.1.6 Study Area South

To the south of the study area, the steep and rocky topography of the slope from the top of the Kent Street ridge to the shoreline of Darling Harbour significantly affected the development of this part of the site. The ground was no steeper than that to the north, but without the kind of access that Munn Street provided for the shoreline in Section 92, the waterfronts were cut off from the streets on the ridge above, and were not fully developed until the construction of Hickson Road in 1911.

2.1.7 Early development

Within the study area are the shoreline portions of Lots 3, 4 and 5 of Section 93. Initial grants of lots 3 and 4 were to John Forster Church and Thomas Agars respectively. By 1833, Agars had constructed a projecting filled-in jetty that was depicted by the survey as 7m wide and extending 21m into the bay from what appeared to be a rocky shore. The 1887 contours indicate that the slope of the land closest to the shore was similar to that on Martin's parcel, and Agars constructed two buildings at about 3-4m above high water at a distance of around 26m from his wharf, on a strong slope of around 21%. Like Martin to the north, Agars had also built what was probably a residence on the much higher ground fronting Kent Street.

On Lot 3, John Church had not begun to develop the waterfront part of his property by 1833, and it was drawn on survey as rocky and protruding into the bay. However, he had constructed a considerable-sized building on the lower parts of his land and left the higher street frontage vacant, suggesting that this was the more important part of his property.

Lot 5 was reserved as government land and the higher ground close to Kent Street was quarried from an early date. The portion of this lot within the study area remained almost completely undeveloped until the construction of Hickson Road commenced in 1909. The foreshore remained a beach that by 1887 had a relatively gentle slope that was exposed at low water across the study area.

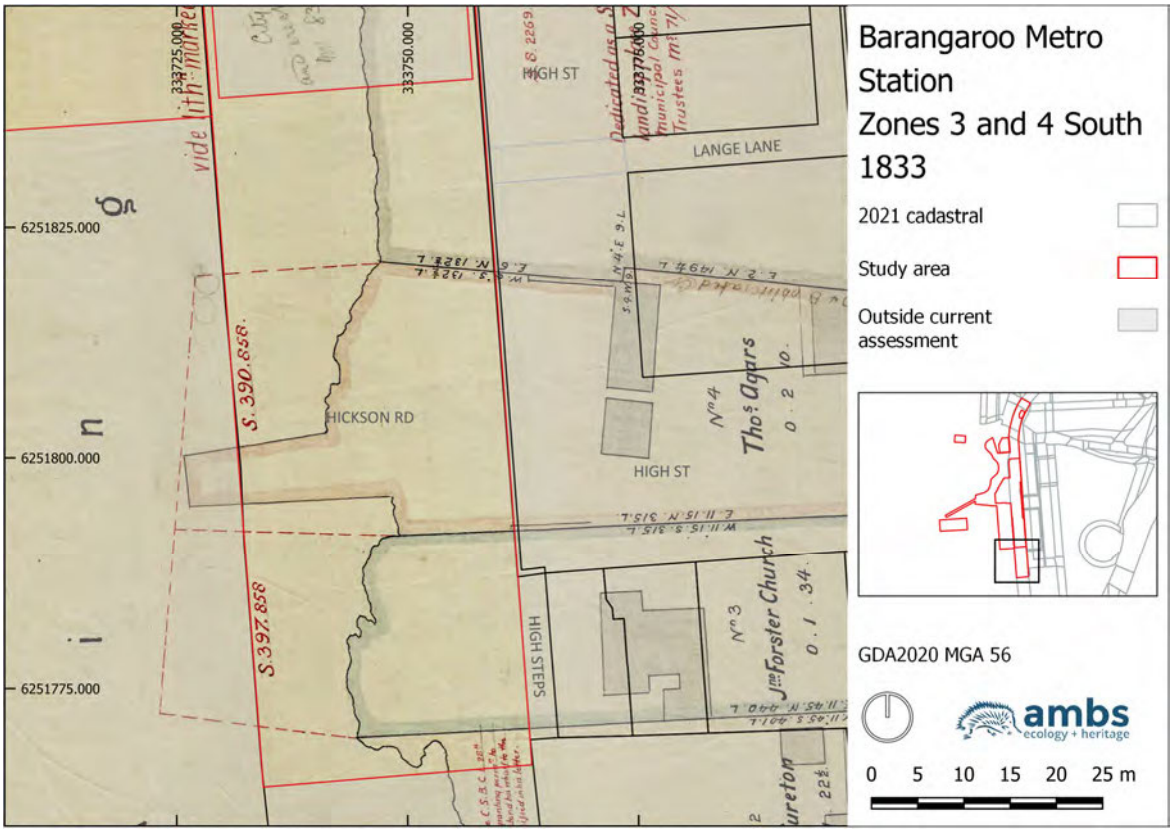

Figure 2.16: 1833 survey of the shoreline portions of Lots 3, 4 and 5 of section 93 (south to north) (City Engineer and City Surveyors Department, 1833).

2.1.8 Mid-century boat sheds and wharfage

By 1855, Thomas Agars had passed away and his land was put up for auction in 1853. In the following decades the land was continually subdivided, with a general division remaining between the higher ground close to Kent Street and the portion which addressed the water. Annotations to the 1855 plan indicate that activity intensified along the shoreline after Agars' death, and three structures were added to the jetty before the compilation of the 1865 survey. Church's foreshore to the south is depicted as rocky and steep and remains undeveloped in 1855, but annotations indicate that structures were built at the water's edge shortly after (Figure 2.17).

By 1865 there was still no substantial wharfage at either property, but several structures had been built at the waterline. Their depiction on plan at high water indicates that they were probably sheds on stilts. Steps are drawn indicating the steepness of the slope at the water's edge. Annotations indicate that a northern extension was added to the jetty after the survey was complete (Figure 2.18).

In 1876, Staunton Spain applied to reclaim 17 perches at the edge of Agars' grant. By 1880, the boat sheds had been demolished and adjoining filled-in wharfs covering a total of 800m^2 fronted the properties at Lots 3 and 4. By the time the land was resumed by the government in 1901, the Lot 4 wharf had been extended by a further 574m^2 to the north and west, and a dotted line at the end of the Lot 3 wharf suggested that a similar extension was underway at the time of resumption (Figure 2.21).

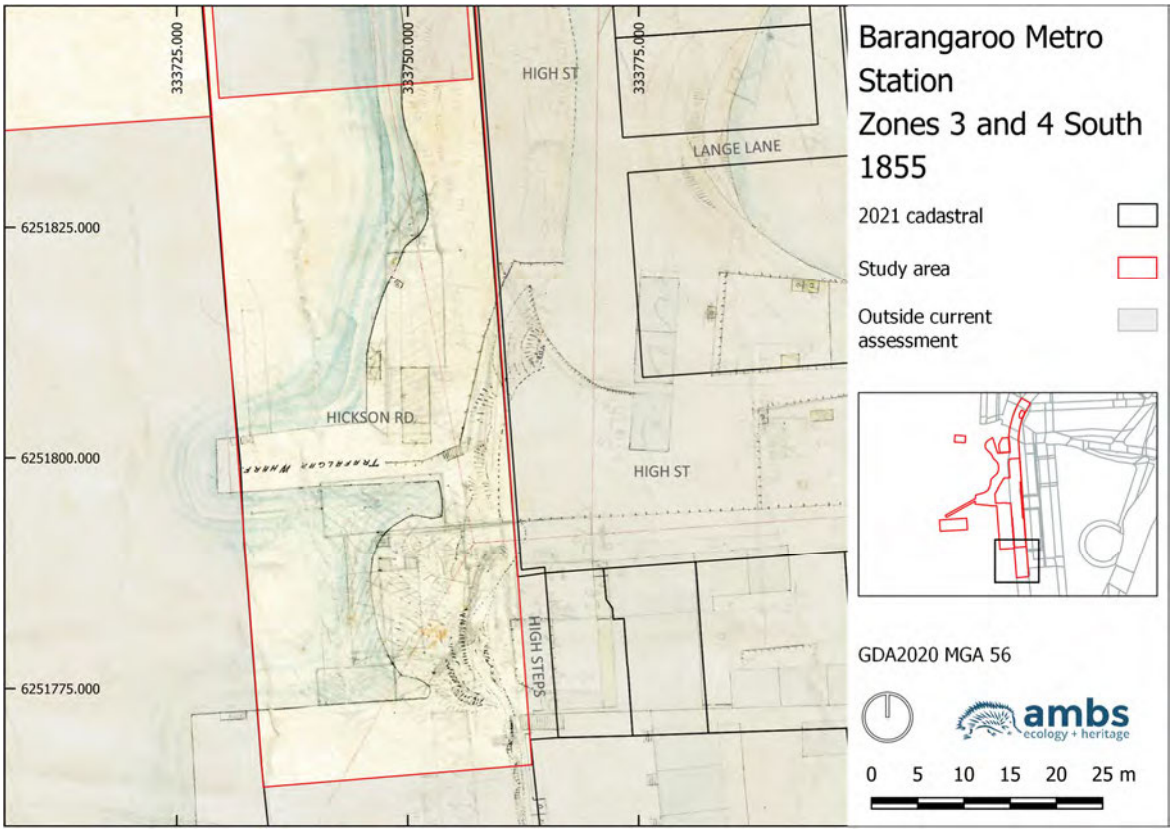

Figure 2.17: 1855 plan showing development of the foreshore in the south of the study area (City Engineer and City Surveyors Department, 1855).

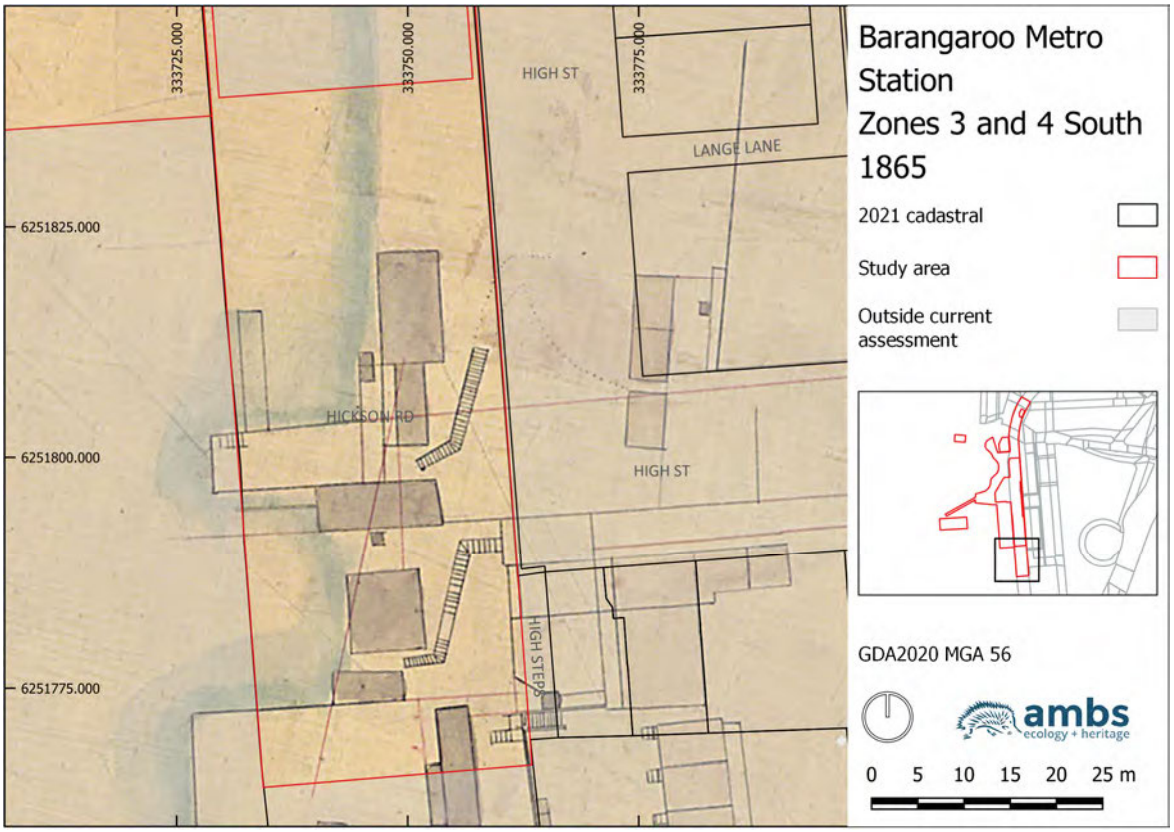

Figure 2.18: 1865 Trig Survey showing boat sheds at the water's edge on Lots 3 and 4 (City Engineer and City Surveyors Department, 1865).

Figure 2.19 c.1870 artist's painting of Darling Harbour (Allotment 5/Government Ground/Quarry left of image) (SLNSW, View of Miller's Point and Darling Harbour, ca. 1870/ artist unknown, digital ID: 825789).

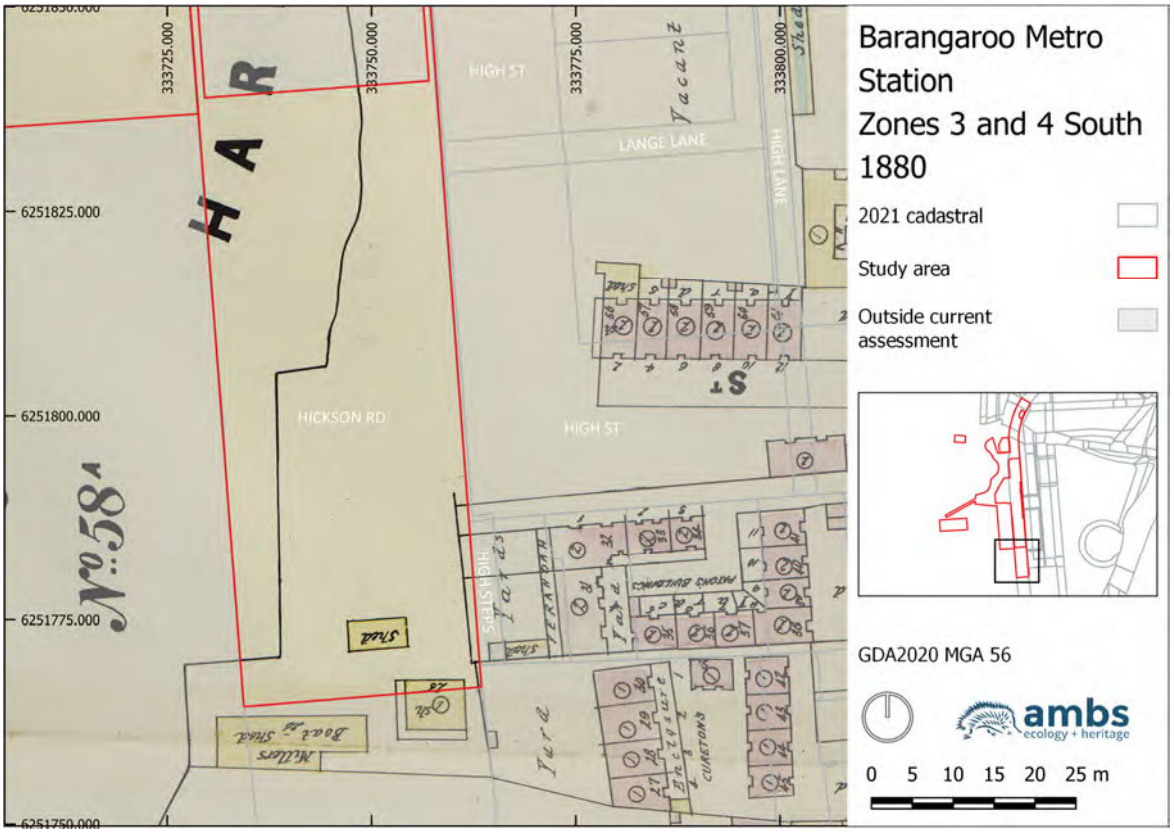

Figure 2.20: Dove's 1879-1880 survey showing an amalgamated wharf fronting Lots 3 and 4 (Dove, 1879).

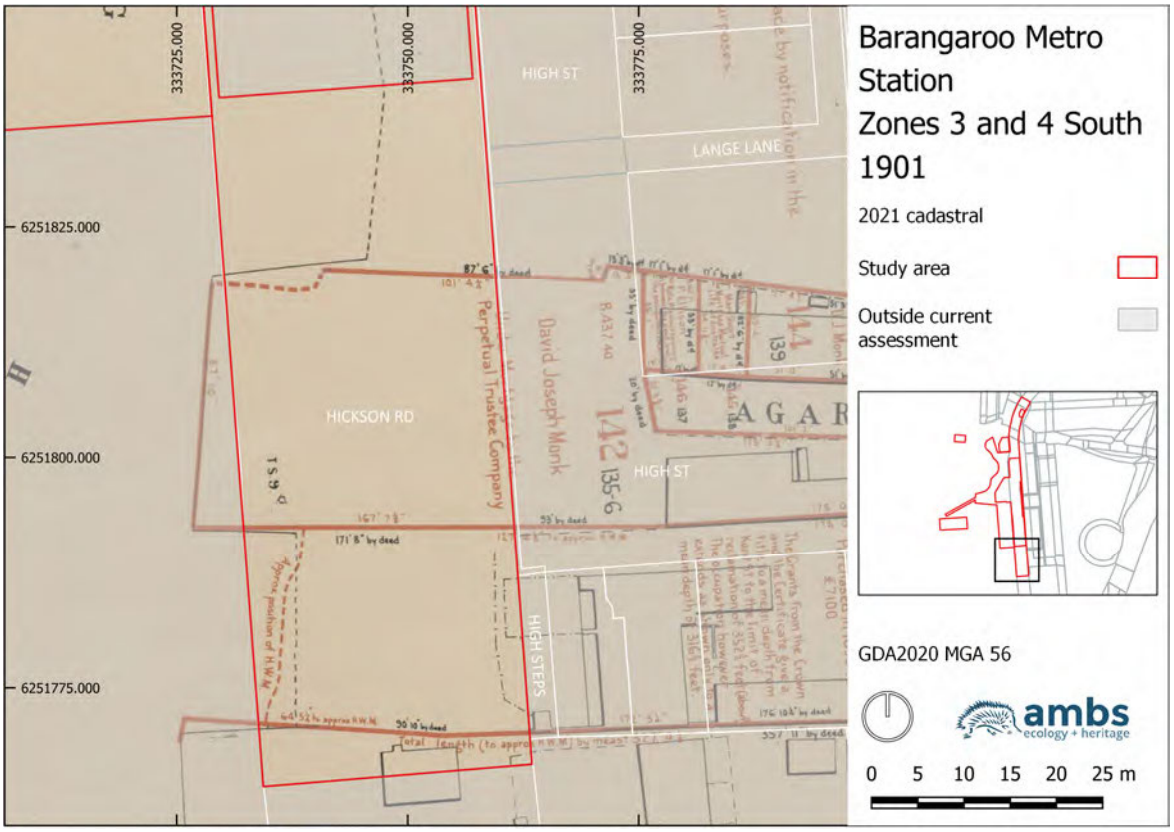

Figure 2.21: 1901 resumption plan showing extensions to the wharfs in Lots 3 and 4 are underway (Gullick, 1901).

2.1.9 Construction of Hickson Road

The construction of Hickson Road followed the resumption of wharfage along the eastern shore of Darling Harbour after an outbreak of bubonic plague in 1900. In combination with the road construction and the cutting back of the rock face along Hickson Road, the upgrades of the wharfs resulted in a total transformation of the study area.

Throughout the nineteenth century, the nature of development along the northeastern shore of Darling Harbour had been determined by the topography and the rocky quality of the steep slopes. The ground was not easily modified, and the street layouts were forced to follow the ridgelines or else create roads and lanes that were too difficult for carts to use. The creation of Hickson Road at wharf level, and cutting a straight line north along the shore, changed the way in which the properties addressed the harbour and formalised the divide between high and low ground that many of the lots had struggled to overcome.

In the north of the study area, much of the intermediate ground between Argyle Street and the waterfront was removed to level the 28m-wide road. In some locations up to 12m of rock and soil was removed to keep the road at wharf-height. The new wharfage was suspended on substantial piles and rat-proofed with Monier plates (Figure 2.23).

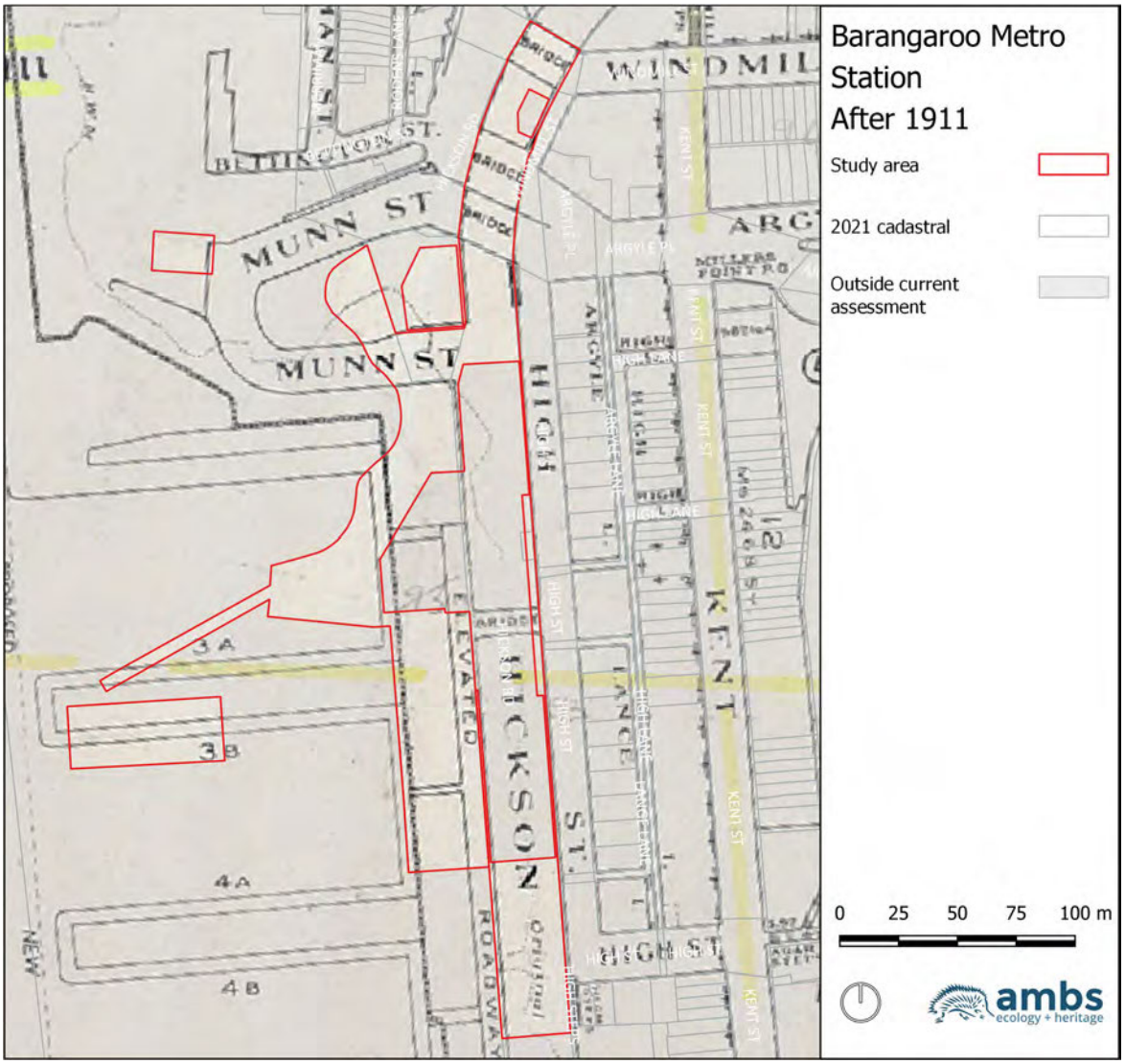

Figure 2.22: An undated parish map of St Philip showing the orientation of the wharfage after the construction of Hickson Road.

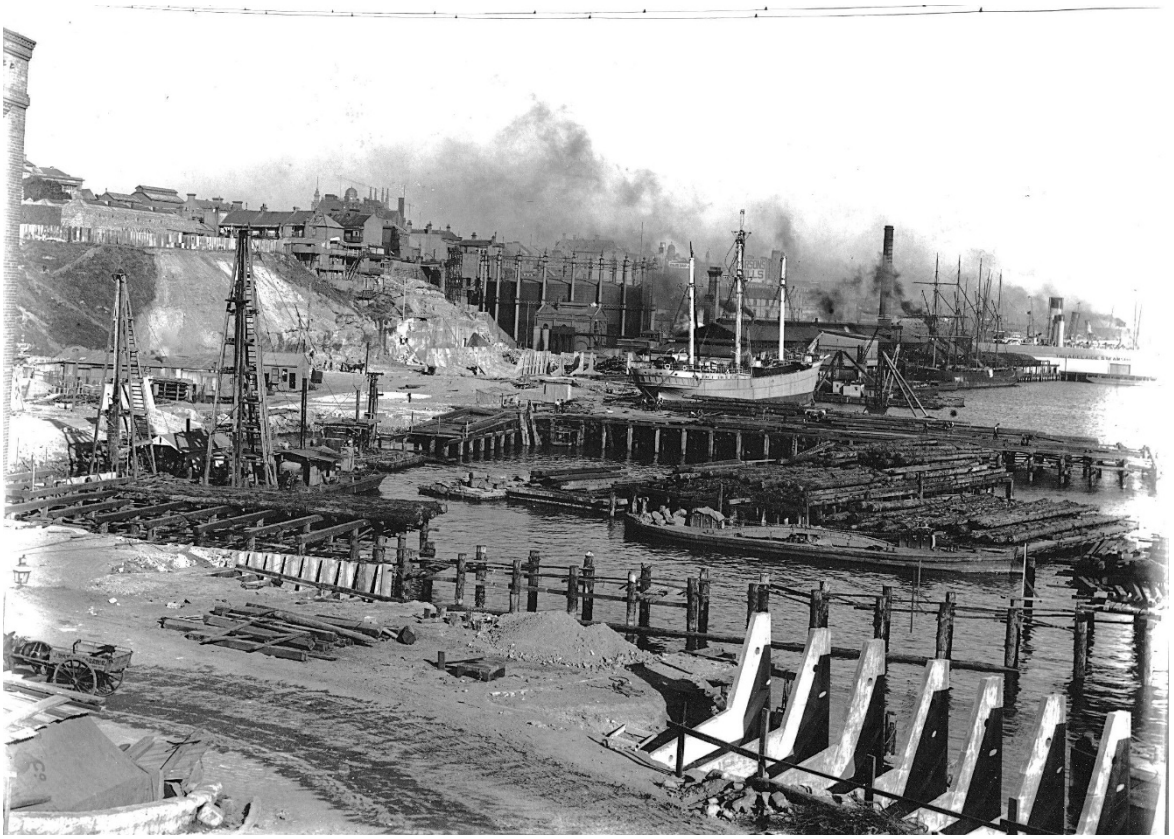

Figure 2.23: 1909 East Darling Harbour (from approximately Munn Street) (City of Sydney Archives, A-00077313, https://archives.cityofsydney.nsw.gov.au/nodes/view/698395).

Figure 2.24 1930s Hickson Road looking southwest from near the Argyle Street Bridge (City of Sydney Archives, A-00077266, https://archives.cityofsydney.nsw.gov.au/nodes/view/698327).

2.2 Lots and Grantees within the Study Area

Lot/Section	Grantee	Description
Allotment 5 Section 93, 1 acre 3 roods 5 perches	Government Land	Allotment 5, abutting the land grant of John Terry Hughes was nominated Government Ground covering 1 acre 3 roods 5 perches, of which 1 acre 1 rood 39 perches were dedicated as a site for ferry and public landing on 15 August 1871. On the southern portion of the allotment fronting Kent Street there was a Roman Catholic Church, the land of the church accounted for 1 rood 6 perches of the Government Ground. By 1855, the Government Ground was still mostly a quarry, extending from Allotment 6 (grant to John Terry Hughes).
Allotment 4 Section 93, 2 roods 10 perches	Thomas Agars	Thomas Agars arrived in Australia in 1820 at the age of 30, he was noted on the 1828 census as a convict serving a seven year sentence and had been employed as a gardener (SANSW, 1828 Census Book 1, pp. 8-9). On 29 April 1837, Agars received his official land grant of 2 roods 10 perches which had been announced in the Government Notice on 22 July 1835 (NSW HLRV, Grant Register, Serial 47-90; *New South Wales Government Gazette*, 22 July 1835, p. 493). He was to pay a Quit Rent or sum of four pounds ten shillings from July 1836 until June 1849, after which it was reduced to two pounds five shillings. Based on the 1833 map, it is assumed Agars took possession of the land a number of years before the grant was received as there were already four structures noted on the map, the two larger structure were located close to Kent Street while the smaller two were situated closer to the centre of the grant. • 1837: Newspaper advertisements list Thomas Agars, Trafalgar Warehouse, Kent Street and on the Wharf of Thomas Agars (*Colonialist*, 25 May 1837, p. 8; *Commercial Journal and Advertiser*, 24 October 1838, p. 1). • 26 April 1841: Thomas Agar ceased partnership of stock and capital with Charles W. Roemer (*New South Wales Government Gazette,* 20 April 1841, p. 612). • April 1842: allotments of land for sale situated in Kent Street and Darling Harbour (proprietor Thomas Agars), adjoining stores and residence of Thomas Agars: o Lot 1: frontage to Kent Street, 19 ½ perches, neat cottage known as Trafalgar cottage (4 rooms, kitchen, cellar, pantry, gardens in front and rear, well of water, other conveniences, verandah fronting Darling Harbour) o Lot 2: land rear of Lot 1, 8 ¾ perches, suitable for erection of store, dwelling house or both o Lot 3: water frontage to Darling Harbour with wharf, 13 perches, suitable for erection of large store (*Sydney Herald*, 23 April 1842, p. 4). • November 1852: death of Thomas Agars, merchant, aged 63, George Stabler named one of executors in will (*People's Advocate and New South Wales Vindicator*, 6 November 1852, p. 14; *Sydney Morning Herald* 17 November 1852, p. 3).

Lot/Section	Grantee	Description
		• 14 September 1853: sale by auction, Lot 1: block of land, 1 ½ acres in Kent Street, nearly adjoining premises of late Thomas Agars, suitable for erection of wharves and water-side premises (*Sydney Morning Herald*, 15 August 1853, p. 8). • 25 August 1876: Staunton Spain, application to reclaim and purchase land fronting Thomas Agars allotment 4 (*New South Wales Government Gazette*, 25 August 1876, p. 3366; NSW HLRV, Old Form Torrens Register, Vol-Fol 473-144). o 4 November 1879: Grant for Staunton Spain of 16 perches for £56 o 6 February 1880: transfer to David Joseph Monk (Vinegar Manufacturer) o 26 November 1888: transfer to Mutual Provident (?) Land Investing and Building Society Limited ▪ 26 November 1888: mortgage to David Joseph Monk o 10 April 1890: transfer to David Joseph Monk ▪ 24 December 1891: mortgage to James Marks ▪ 22 April 1898: discharge of mortgage ▪ 22 April 1898: mortgage to the Perpetual Trusted Company Limited ▪ 2 April 1902: discharge of mortgage o 1902: Notice of Resumption o 1911: vested in Sydney Harbour Trust o 25 January 1923: land proclaimed public highway, vested in Council of the City of Sydney (Hickson Road)
Allotment 3 Section 93, 1 rood 34 perches	John Forster Church	• 4 May 1836: grant to John Forster Church of 1 rood 34 perches (NSW HLRV, Grant Register, Serial 39-165). • August 1844: death of John Forster Church, wife Barbara Ann Church named executrix (*Sydney Morning Herald*, 14 October 1844, p. 3). • June 1862: death of Barbara Ann Church, John George Church, Walter Marshall Church and Bartholomew O'Brien named executors (*Sydney Morning Herald*, 12 June 1862, p. 8; *New South Wales Government Gazette*, 17 June 1862, p. 1104). • 15 November 1878: Under *Crown Lands Alienation Act* 1861, Theophilus Paton permitted to reclaim and purchase 17 perches of land – reclaimed extension of Allotment 3 (*New South Wales Government Gazette*, 21 July 1876, p. 2810; 15 November 1878, p. 4583).

Lot/Section	Grantee	Description
		• 22 March 1880: Grant of reclaimed land to Theophilus Paton for £60 (NSW HLRV, Old Form Torrens Register, Vol-Fol 493-242). o 16 May 1889: mortgage to William McGee, discharged 29 December 1891 o 29 December 1891: mortgage to William McGee, discharged 3 August 1893 o 5 September 1893: mortgage to Jane Railton ▪ Transfer of mortgage to William McGee • 5 November 1894: transfer from Theophilus Paton to Henry Elliot and Andrew Fenwick o 10 June 1895: mortgage discharged o 4 June 1895 mortgage to Stephen Freeman • 8 July 1895: Certificate of Title (joint tenancy) granted to Henry Elliot and Andrew Fenwick (NSW HLRV, Old Form Torrens Register, Vol-Fol 1168-65). o 14 January 1896: mortgage to Jane Foreman(?) ▪ February(?) 1899: transfer of mortgage to Joseph Foreman, discharged 27 April 1899 • 26 April 1899: transfer from Henry Elliot and Andrew Fenwick to Eva Connell Hordern • 8 June 1900: Certificate of Title granted to Eva Connell Hordern for combined portions including part Allotment 3, part Allotment 4 and 17 perches (NSW HLRV, Old Form Torrens Register, Vol-Fol 1318-29). • 31 January 1901: Notice of Resumption by Minister of Public Works • 6 February 1911: Sydney Harbour Trust proprietors • 25 January 1923: land proclaimed as public highway, vested in the Council of the City of Sydney – Hickson Road (3 April 1925, Fol 1691, MSB Plan StP. 162A) and High Street (steps at High Street, 25 January 1923, no. 9 Fol 347, MSB plan StP. 102A) • 26 May 1939: Maritime Services Board of NSW proprietors

Lot/Section	Grantee	Description
		○ January 1985: 115 Kent Street leased to Housing Commission of NSW, expires 25 March 2004 ○ January 1985: 121 Kent Street leased to Housing Commission of NSW, expires 25 March 2004 ○ January 1985L 119 Kent Street leased to Housing Commission of NSW, expires 25 March 2004
Allotment 1 Section 92, 1 acre 2 roods 11 perches	Arthur Martin	• Arrived in Australia in 1792 as a convict serving a life sentence and received a Conditional Pardon 1 December 1809 (SANSW 1828 Census Book 4, pp. 224-225; NSW HLRV, Grant Register Index of Pardons Serial 4-M;NSW HLRV, Grant Register of Pardons Serial 4-19) • Arthur Martin is listed as either an overseer or superintendent of Lime Burners in five Government House funding and salary lists between 1818 and 1820 (*Sydney Gazette and New South Wales Advertiser*, 4 March 1815, p. 1; 12 June 1919, p. 3; 28 August 1919, p. 2; 8 June 1820, p. 3; 18 March 1820, p. 3; 29 July 1820, p. 3) • Martin, who had worked government overseer, was granted permission by Governor Macquarie in 1813 to occupy land on Cockle Bay in recognition of his ten years of service (1795 to 1805) and his good conduct (*Australian*, 29 June 1832, p. 4). • Governor Thomas Brisbane had promised land to James Munn to commence a ship-building business, part of which was the land Arthur Martin had his limekiln. In 1832, Martin brought action against Munn for trespass, he sought possession of the land which he claimed had been promised to him by Governor Macquarie. The case was tried twice and in both instances the verdict was in favour of Martin. • On 15 January 1834, 1 acre 2 roods 11 perches (Allotment 1 Section 92) was formally granted to Arthur Martin; however, he had already conveyed the property to Frederick Wright Unwin on 8 and 9 November 1833 through a deed of Lease and release including the houses and limekiln (NSW HLRV, Grants, Serial 31-243; NSW HLRV, Old System Deed, Book F-492; Book F-767). • An auction on 20 January 1834 advertised 24 building lots at Darling Harbour, two of which fronted the water and claimed to be ideal for a wharf or a boat builder and another two had stone buildings already erected, while the exact location of the allotments is unknown, it is likely the subdivision occurred between what

Lot/Section	Grantee	Description
		would become Unwin and Wentworth Streets and the stone buildings are likely those constructed by Munn (*Sydney Herald*, 20 January 1834, p. 4). • Through a deed of Lease and release, Frederick Wright Unwin sold back some of the land to James on 15 and 16 May 1834 (NSW HLRV, RPA 4494).
Allotment 2 Section 93, 1 acre 32 perches	James Munn	• Arrived as a free settler 1824 on Brig Amity with wife Ann, noted as ship builder owning 800 acres of land total (James (45) Ann (32) in 1828) (SANSW, 1828 Census Book 4, pp. 346-347) • December 1825: had set up ship-building business, was advertising for youths (14-15yr) as apprentices, Millport, Cockle Bay (*Australian*, 1 December 1825, p. 1) • 12 March 1830: report of attempted theft from ship-building premises at Millport (name of his building yard), Cockle Bay (*Sydney Gazette and New South Wales Advertiser*, 16 March 1830, p. 4) • February 1834: Abstract of sales by auction list six allotments in Darling Harbour near Mr. Munn and an allotment in Darling Harbour near Miller's Point sold by private contract to Mr James Munn (about 70 perches) [Martin's land?] (*Sydney Herald*, 6 February 1834, p. 2) • May 1834: 15 valuable building allotments near the Miller's Point, running from the residence of Mr James Munn to that of J B Bettington and most of them having a frontage to the main road near the property of F W Unwin [Munn's subdivision?], these were sold at auction in June for a sum of £800 (*Australian*, 6 May 1834, p. 3; *Sydney Gazette and New South Wales Advertiser*, 3 June 1834, p. 3)) • 6 June 1840: Grants of Town Allotments, Section 92, 1. Arthur Martin (Grantee) Deed already issued; 2. James Munn (Grantee) Deed already issued (*New South Wales Government Gazette*, 6 June 1840, p. 562) • June 1840: while providing advice, he was noted to be a ship builder for 45 years (*Sydney Monitor and Commercial Advertiser*, 22 June 1840, p. 5) • 26 February 1848: Death of Mr James Munn, native of Irvine, aged 68, 'oldest ship builder in Sydney, and a much respected colonist', private invitations not

Lot/Section	Grantee	Description
		being issued for funeral (*Sydney Morning Herald,* 28 February 1848, p. 3)

3 Archaeological Context

3.1 Areas of Archaeological Potential Assessed in the AARD (Artefact Heritage, 2016)

Artefact's assessment of archaeological potential at the site has been superceded by the results of the archaeological excavations within the station box area (Casey & Lowe, 2019) which have demonstrated higher potential for remains to survive in the east of the site below Hickson Road. This has raised the level of potential for Agar's wharf and Martin's lime kilns. A revised assessment of archaeological potential is set out in section 4.1.

Table 3.1: Artefact assessment of archaeological potential for the study area.

Phase	Potential	Archaeological Resource
1 (1788-1830)	Nil-Low	Evidence relating to early lime kilns in the northwest of the study area
	Low	Evidence of environmental change, pollution and landscape modification such as quarrying
	Low-Moderate	Potential archaeological resources relating to early use of Agar's wharf in the southern part of the study area
2 (1830-1900)	Moderate	Potential archaeological resources relating to the growth and operation of Agar's and Sparks wharf, and later of Cuthbert's shipyard in the northwest of the study area
	Moderate-High	Potential archaeological resources relating to the growth and operation of Cuthbert's shipyard
	Moderate	Potential for timber or stone jetty remains and associated deposits

3.2 Archaeological Excavations at Barangaroo Headland and Barangaroo Station

Two large-scale open area archaeological excavations have taken place within and adjacent to the study area in the last 8 years. In 2013 Austral Archaeology undertook archaeological investigations within Hickson Road and to the northwest of the study area as part of the construction of Nawi Cove. In 2018, Casey & Lowe undertook open area investigation of the station box for Barangaroo Metro station (Figure 3.1).

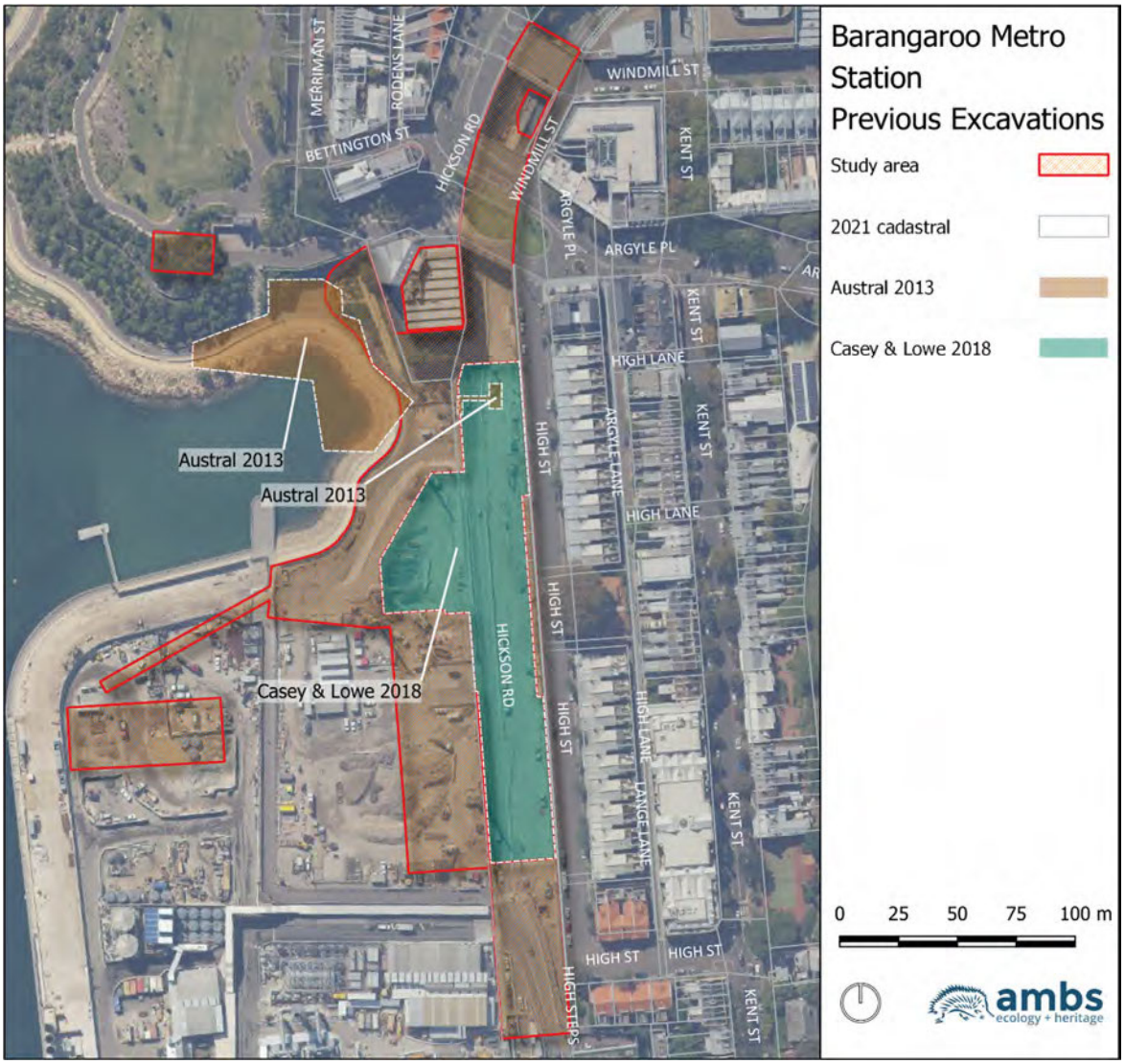

Figure 3.1: Previous archaeological investigations within and adjacent to the study area.

3.3 Barangaroo Headland Park Historical Archaeological Excavations (Austral Archaeology 2016)

Austral Archaeology (Austral) was engaged by Laing O'Rourke and Baulderstone (later Lend Lease) on behalf of the Barangaroo Delivery Authority to complete archaeological investigations as part of the Barangaroo Headland Park project. Austral completed archaeological investigations on site in 2013, working in two broad areas across the site, the Wharves Site, at the northern end of the Headland, and the Shipyards Site, within and adjacent to the present Nawi Cove.

Two of Austral's excavation areas overlap or are directly adjacent to the current study area: The Northern Cove Excavation Area and the Hickson Road Excavation area.

Archaeological excavations within the Northern Cove Excavation area primarily identified remains associated with shipbuilding and maintenance and land reclamation, firstly, relating to Munn's (1824-1848) occupation of the site, then to Cuthbert's Shipbuilding Yard (1854-1875). Following this was the construction of Dibbs' Wharves (c.1875-1899), then the resumption of the land followed by the establishment of a concrete seawall (1900-1907) (Austral 2016a: 9-10).

The eastern portion of the excavation area overlaps with the boundary of the current study area adjacent to Nawi Cove. Along the eastern boundary of the site, a thick deposit of wooden shavings

was identified in the large slipway, the deposit was of varying thicknesses, with a maximum recorded depth of 530mm. Its extent continued to the north and east beyond the excavation area. Underlying this deposit near the eastern boundary of the site was a timber boardwalk overlying a grey sand deposit. Under the sand deposit was a packed sandstone and bluestone rubble deposit in the slipway, which in turn overlay a grey silty sand fill on the natural sandy shore (Austral 2016b: 149-156).

The eastern slipway wall also extends north-east through the excavation area, continuing beyond its eastern extent, suggesting it may still be extant within the current study area (Austral 2016b:160). To the east of the slipway wall a working area was identified, comprising a series of layered occupation deposits, with few identified archaeological features except for disturbance from later services. The occupation deposits were assessed as being indicative of a working area within the shipyard, as evidenced by an orange brown sandstone and clay surface, which may have been used as a solid surface to support working structures (Austral 2016b: 349).

Archaeological monitoring was undertaken in the Hickson Road monitoring area, with Austral noting that the nature of the works, which related to modifying and introducing new services, meant that many of the trenches they monitored were very narrow and deep. Across the area, the upper strata consisted of asphalt road surface overlying concrete or finely crushed gravel. In the eastern part of the monitoring area, missed fills and demolition rubble were present to a depth of over 2m, overlying sandstone rubble fill and bedrock. The western part of the study area contained layered fills overlying a concrete surface which was poured over a brick floor. One brick footing was also identified along with a small sump in the concrete surface. Underlying the brick floor was sandstone rubble, a disturbed deposit with building materials, and then bedrock. All features were identified as being associated with twentieth century uses of the study area, with the brick and concrete features forming part of a basement to an early-twentieth century warehouse. It was also identified that no nineteenth century 'shaping' was identified in the bedrock, which appears to have been truncated in the twentieth century (Austral 2016b:302-304).

Figure 3.2: Dibbs' seawall to the northwest of the study area (Austral Archaeology, 2016, p. 99)

Figure 3.3: Dibbs' seawall looking northeast towards Dalgety stores (Austral Archaeology, 2016, p. 99)

3.4 Barangaroo Metro TSE Works: Barangaroo Station Archaeological Investigations (Casey & Lowe, 2019)

Casey & Lowe were commissioned by AMBS Ecology and Heritage, on behalf of John Holland CPB Ghella JV, to undertake historical archaeological investigations at the Barangaroo Station site,

Sydney. The following summary has been based on the preliminary results report (Casey & Lowe, 2019). The final report is in progress at the time of writing (May 2021).

The staged excavation was undertaken wholly within the footprint of the station box for the Barangaroo Metro Station. The archaeological remains included evidence of mid-nineteenth century wharfage, an 1830s house, seawalls, a slipway, and the remains of a wrecked abandoned vessel (Unidentified Darling Harbour Boat 1 [UDHB1]).

In Areas R and T (immediately adjacent to Work areas 1 and 2 in the current project), the investigations found evidence of Cuthbert's shipbuilding yard and wharf (1854-1875) and Dibbs's seawalls and wharfage (c.1875-1899). The remains included timber debris, extensive evidence of woodworking and distinct areas of activity on Cuthbert's wharf surface. Cuthbert's seawalls and a slipway, and piles for suspended wharfage were also found in good condition. Modifications to the walls and slipway that were undertaken by Dibbs, and contemporary public steps and paving were found at the termination of Clyde Street. Cuthbert's wharf and shipbuilding yard, and buildings associated with Dibbs' use of the wharf are also partly located within Work Zones 1, 2 and 5 of the current project.

The remains of a rocky and sandy intertidal zone that predated the extension of Clyde Street was found beneath Hickson Road (in Area X), next to the foundations of an 1830s house. Partly buried by the beach sand was the remains of a 30ft boat that had been abandoned prior to the construction of Cuthbert's wharf. Similar intertidal environments are thought to have existed within the current study area adjacent to boatbuilding businesses in Work Zones 3 & 4 South.

In Areas Y and Z were the remains of late nineteenth century wharf structures, built on the outcropping sandstone and reclaimed land beneath Hickson Road. The truncated remains of a well or cistern associated with housing on Wentworth Street was located in Area Z adjacent to Work Zones 3 & 4 North, and Work Zone 6.

Figure 3.4: Orthophoto of Area T showing timber debris on Cuthbert's Wharf (Casey & Lowe, 2019, p. 18)

Figure 3.5: Remains of vessel UDHB1, Area X (Casey & Lowe, 2019, p. 36)

Figure 3.6: Foundations and floors of late nineteenth century wharf structures, Area Z (Casey & Lowe, 2019, p. 43)

4 Assessment of Archaeological Potential

The archaeological resources of any site are finite but have the potential to provide insights into everyday life that are not available from any other resource. Archaeological resources may provide evidence that will enhance the historical record and, as such, make a contribution to an understanding of the history and settlement of a local region. In view of the substantial costs involved in archaeological excavation of a site, a clear justification for any archaeological excavation needs to include the following considerations:

- What is the likely integrity of the archaeological resource? Is it likely that largely intact physical evidence would be exposed during excavations such as structural features, artefacts from underfloor deposits, rubbish- or cess-pits, wells or other features with an ability to contribute meaningfully to an understanding of the development of the site as part of the wider development of Darling Harbour?
- What is the research potential of the archaeological resource? Is it likely that the results of the excavation make a significant or important contribution to an understanding of wider research issues regarding the early settlement and development of Darling Harbour?

4.1 AMBS Assessment of Archaeological Potential

Areas of archaeological potential have been mapped in Figure 4.1 and are discussed in

Table **4.1**. Archaeological potential has been assessed as a combination of known structures or activities and likelihood of survival. There are five levels of potential within the Study Area:

- Nil
- Nil to Low
- Low
- Moderate
- Moderate to High

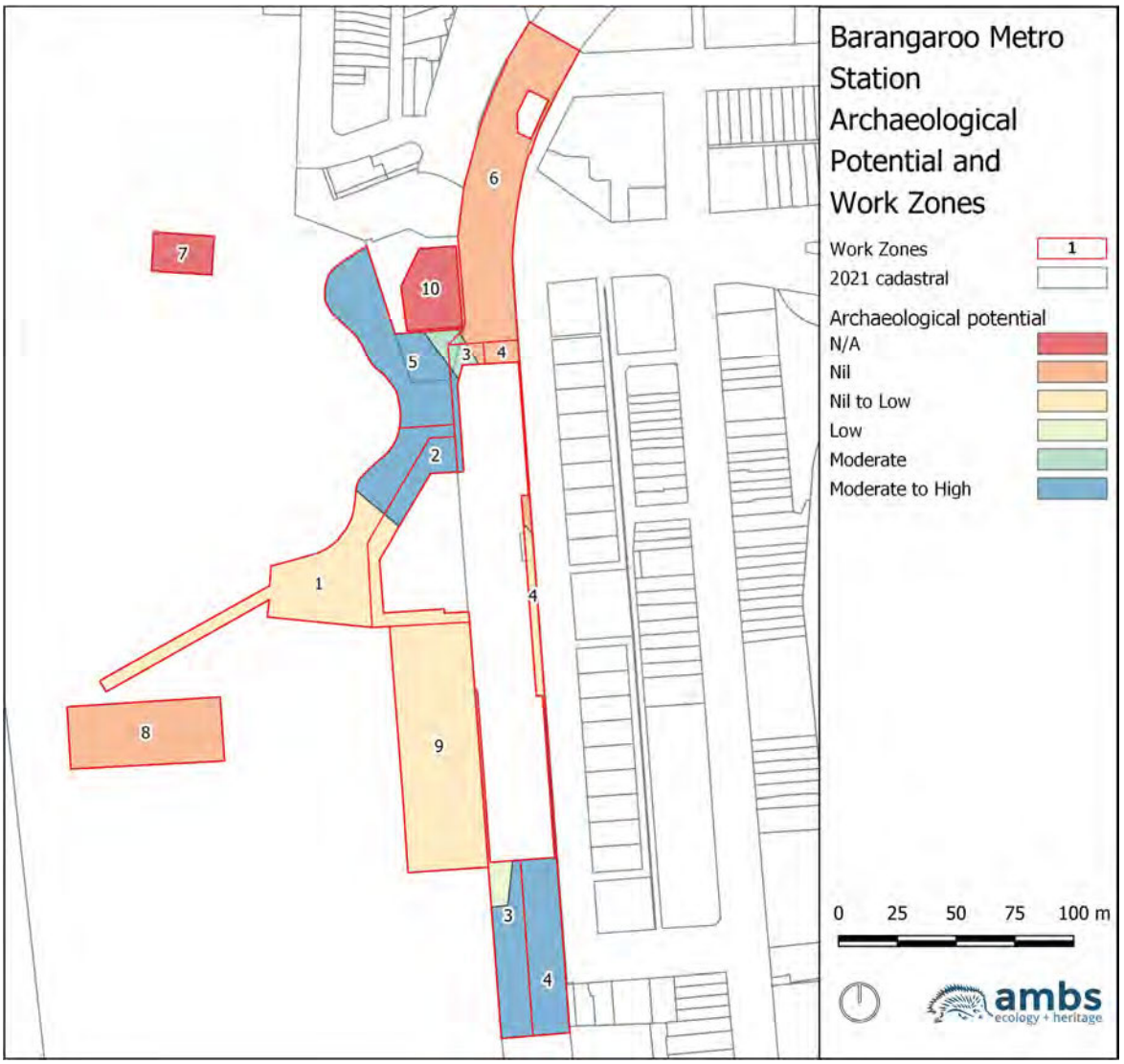

Figure 4.1: Areas of archaeological potential within the study area relative to Work Zones (numbered).

Table 4.1: Assessment of archaeological potential by area, work zone and phase.

Work Zone	Phases represented	Archaeological potential	Comments
3 and 4 (south)	• Early development of the foreshore (Phase 1: 1788-1830) • Mid-century boat sheds (Phase 2: 1830-1900) • Late nineteenth-century wharf construction (Phase 2: 1830-1900)	Moderate-High	This area has Moderate to high potential for evidence of Thomas Agars' pre-1833 infilled jetty including cut stone or rubble walls and working surfaces. The empty beachfront of the adjacent government land is likely to have been permissively used and may contain residential or commercial refuse or offcuts and discards from nearby boatbuilding activities. The low water and undeveloped beach in the northern part of this area is likely to have been a similar environment to that in which UDHB1 was found during the Station Box excavations. There is potential for the remains of abandoned vessels to have been buried by the estuarine sands along this stretch of beach. The mid-century boat sheds depicted on the 1865 survey were demolished prior to the construction of the filled-in wharf (c.1876). It is possible that the structural material of the sheds was used as part of the infill and highly likely that the foundational piles of these structures will remain buried beneath the wharf fills. There may be evidence of partially completed seawalls which were not finished prior to resumption in 1901.
1, 2 and 5	• Early foreshore (Phase 1: 1788-1830) • Cuthbert's shipbuilding yard (Phase 2: 1830-1900)	Moderate-High	This area has Moderate potential for evidence of the early foreshore including Martin's narrow jetty (it may be located further to the northeast). There is High potential for evidence of Cuthbert's shipbuilding yard and wharf including a narrow dock that was constructed prior to 1863, evidence of the 1863 and 1865 stone seawalls, and moderate potential for the large timber store and the footings of several peripheral structures. The narrow dock appears to have been short-lived, and its infill and construction methods may contain evidence of why that was so. It is also likely to contain evidence

Work Zone	Phases represented	Archaeological potential	Comments
	• Dibbs' wharf and stores (Phase 2: 1830-1900) • Gibb & Bright's bond and wool stores (Phase 2: 1830-1900)		of boatbuilding such as offcuts and abandoned boat parts that found their way into the dock while it was in use. Previous excavations by Austral and Casey & Lowe suggest that there is a high potential for evidence of boatbuilding activity in the form of discarded boat parts, timber offcuts and tools on the wharf surface. There is moderate potential for evidence of Dibbs' modification of the wharf including changes to seawalls and fills to raise the height of the wharf, as well as Dibbs' flour shed and several peripheral structures at the rear of the wharf. The scale of the woolstore recorded in 1894 suggests that this is the most likely structure to have left substantial evidence.
1, 2 and 9	• Construction of Dibbs' finger wharfs	Nil-Low	This part of the study area was not infilled until the second half of the 20th century and was deep water throughout the 19th century. Although evidence of Dibbs' finger wharfs may remain, it is likely to only be in the form of cut-down timber piles, which have no research potential or significance of their own. The archaeological potential of this area is therefore considered to be Nil-Low.
8	None	Nil	This part of the study area was deep water until the second half of the twentieth century and has no archaeological potential.
10	N/A	N/A	This part of the study area is Dalgety's stores which will be used as a site office without modification. An assessment of archaeological potential for this area is not relevant to the project.
7	N/A	N/A	This part of the study area is the site of service connection works in existing service pits without modification. An assessment of archaeological potential for this area is not relevant to the project.
3	• Early development of the foreshore (Phase 1: 1788-1830) • Mid-century boat sheds (Phase 2: 1830-1900)	Low	This area is on the periphery of the activity associated with the foreshores of Lots 3, 4 and 5 of Section 93. However, in 1887 it was recorded as being at Low Water and may contain intertidal refuse and other peripheral evidence of activities on the shore. This area is considered to have Low potential for significant archaeology.

Work Zone	Phases represented	Archaeological potential	Comments
	• Late 19th century wharf construction (Phase 2: 1830-1900)		
3 and 4 (north), 6	• Hickson Road construction	Nil	This area has no potential for pre-Hickson Road archaeology. The original landform in this area has been completely removed.
4 (north)	• Early shoreline (Phase 1: 1788-1830)	Nil-Low	1887 contours suggest that remnants of unmodified outcropping sandstone or evidence of wells or other deep features cut into it may survive. However, this is considered unlikely and the potential for this area is Nil to Low.
3 (north) and 5	• Early foreshore, Martin's jetty and buildings (Phase 1: 1788-1830)	Moderate	There is Moderate potential for evidence of the early shoreline and Martin's Jetty, limekiln or structures to survive beneath this part of Hickson Road. 1887 contours suggest that the surface of the landform prior to the construction of Hickson Road may be partially preserved in this area.

5 Archaeological Significance

The physical evidence of past activities is a valuable resource that is embodied in the fabric, setting, history and broader environment of item, place or archaeological site. The above evaluation of the study area has identified the potential for relatively intact archaeological resources. The value of this resource to the community can be evaluated by assessing its cultural heritage values. 'Cultural heritage significance' and 'heritage value' are terms used to express the tangible and intangible values of an item, place or archaeological site, and the response that it evokes in the community. Identification of this value, the significance of the archaeological resources is assessed against the SHR criteria. There are no known assessments of the historic archaeological significance of the study area.

5.1 Assessment of Archaeological Significance

An item will be considered to be of State or local heritage significance if, in the opinion of the Heritage Council, it meets one or more of the following criteria. Historical archaeological relics assessed as having State or local significance should be managed under the 'relics' provisions of the *NSW Heritage Act* 1977.

NSW Criterion (a) an item is important in the course, or pattern, of NSW's cultural or natural history (or the local area);
The record of adaptation to, and transformation of the landscape at Millers point has been demonstrated archaeologically by previous excavations in adjacent areas by Austral in 2013 and Casey & Lowe in 2018. The site has the potential to contribute to our understanding of the early European settlement of Millers point, and the importance of the shipbuilding industry to the growth and development of the area. The site has significance under Criterion (a) at a local level for its ability to represent successive phases of development and change along the eastern shore of Darling Harbour throughout the nineteenth century.

The site has the potential to represent these changes as they occurred both through the large-scale developments of Cuthbert and Dibbs, and also through the piecemeal undertakings and modest ambitions of the small landholders on Lots 3 and 4 at the southern end of the site. The study area has the ability to produce data at both ends of the scale within a small geographic area. The methods of construction, quantities of material and labour represented by the archaeological resource will be able to demonstrate what was achievable for some of the largest businesses within the colony as well as its smaller entrepreneurs. It also has the ability to illustrate the contingent and ad-hoc development of the Darling Harbour shoreline which was always limited by what the topography would allow. If evidence of Agar's pre-1833 wharf survives it would demonstrate early, small-scale wharf-building and reclamation and would be of local significance for its ability to demonstrate early adaptation and use of the shoreline.

If the original shoreline of Lot 2, section 92 (Martin's grant) survives within the study area it may contain evidence of the lime kiln, associated structures, or associated activities. If evidence of the lime kiln survives it would be of State significance for its ability to represent the exploitation of naturally occurring shell beds and middens along the shores of Cockle Bay (Darling Harbour) in the early decades of the colony, and as a rare example of early lime-burning technology in Australia.

Evidence of the day-to day workings of Cuthbert's shipyard would be of local significance for its ability to illustrate working conditions in nineteenth century Darling Harbour, and would be comparable with similar wharf and maritime industry sites that have been excavated in Darling Harbour in recent years.

Evidence of the later stores on Dibbs' and Gibb's wharf have the ability to represent the importance of the import and export industries through the scale and investment of materials apparent in their construction and layout, and the beginnings of the mercantile domination of the eastern shore of darling Harbour, which would reach its apex with the construction of Hickson Road and the system of two-level roads and wharfs.

The archaeological remains of the wharfs, and the shipbuilding and mercantile activities are of local significance for their ability to contribute to our understanding of the development of Millers Point and Darling Harbour. If remains of Martin's lime kilns and associated structures are found to survive within the study area with good integrity they would be of State significance.

NSW 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);
Although John Cuthbert was a notable shipbuilder and his success was well-known in the colony and in Britain (Nairn, 1969), the connection between the individual and the site is not strong or special. Archaeological evidence of Cuthbert's shipbuilding wharfs and yards may tell us something of the level of investment and capital behind his operation but as they are likely to be limited to footings, seawalls and evidence of day-to-day workings at the site, they would not necessarily contribute to our knowledge of the life or works of the individual. Likewise, the association with Cuthbert is unlikely to contribute meaningfully to the interpretation or significance of the artefacts at the site. The archaeological resource is unlikely to meet the threshold for significance under this criterion.

NSW 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);
Although the construction of seawalls and wharfs demonstrates a particular type of engineering, particularly on a large scale, the archaeological evidence for these works is unlikely to be a unique or remarkable example of its type and is not expected to meet the threshold for significance under this criteria.

NSW 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);
While no consultation has been undertaken with the local community in relation to the values of the archaeology, it is acknowledged that local communities are interested in the archaeology of their local area and its development. Should archaeological resources associated with the nineteenth century occupation of the study area be present, they may have interest or value to the local community.

The threshold for significance against this criterion has not been met at this time.

NSW 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);
The research potential of the site is related to the adaptation and development of the eastern shore of the bay, the day-to-day working conditions of the shipyard, the scale of the undertakings in wharf-building and reclamation, and the inertia and resistance to change that becomes manifest in the material culture of created landforms, and not least of all the environmental and social dynamics that they influence and perpetuate once in place.

The site has the potential to augment existing data from comparable maritime sites in Darling Harbour and elsewhere in NSW, and also to generate intra-site comparisons of activities at different temporal and material scales. The physical and perceptual experience of the original landform has been so disrupted by the construction of Hickson Road and the apron wharfs that it is no longer detectable in the streetscapes and contours of the existing landscape. The

archaeological resource at the site has the potential to provide evidence of that original landscape and the material narrative of its development and change that cannot be provided by any other resource. The research potential of the site is significant at a local level.

NSW Criterion (f) an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the local area);
If the lime kiln recorded on Martin's land survives within the study area it would be a rare example of the exploitation of naturally occurring shell beds and middens in Darling Harbour for the production of lime, and a rare example of the use of early lime-burning technology in Sydney. If the kiln survives with good integrity and interpretable deposits and associated contexts it would be of State significance under this criterion.

NSW 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).
Evidence of seawall and wharf construction is likely to be representative of mid-nineteenth century reclamation and wharf building in Darling Harbour and would be significant at a local level.

5.2 Statement of Archaeological Significance

The site is significant at a local level for its ability to contribute to our understanding of development and change in Darling Harbour throughout the nineteenth century, including working conditions and day-to-day life in the shipyards, investment and change in the material culture of altered landscapes and land creation, the influence of topography as a delimiter on construction and the material manifestation of commercial ambition in wharf creation and building construction. The site has the potential to represent these changes as they occurred both through the large-scale developments of Cuthbert and Dibbs, and also through the piecemeal undertakings and modest ambitions of the small landholders on Lots 3 and 4 at the southern end of the site.

The research potential of the site is related to the adaptation and development of the eastern shore of the bay, the day-to-day working conditions of the shipyard, the scale of the undertakings in wharf-building and reclamation, and the inertia and resistance to change that becomes manifest in the material culture of created landforms, and not least of all the environmental and social dynamics that they influence and perpetuate once in place. The site is significant at a local level for its ability to represent these changes as they occurred in the nineteenth century development of Darling Harbour and Millers Point.

Evidence of the early nineteenth century occupation and exploitation of the resources in and around Darling Harbour would be rare and would offer a unique representation of these activities that could not be gained from other sources. If remains of Martin's lime kiln and associated contexts or structures survive with good integrity at the site they may be of State significance for their ability to represent early lime-burning technologies in Sydney and the use of naturally occurring shell beds and middens in Darling Harbour for lime burning.

6 Assessment of Heritage Impact

6.1 Impact of the COP works

Final detailed design of some works is not complete and as suchthe following is a preliminary assessment of impact.

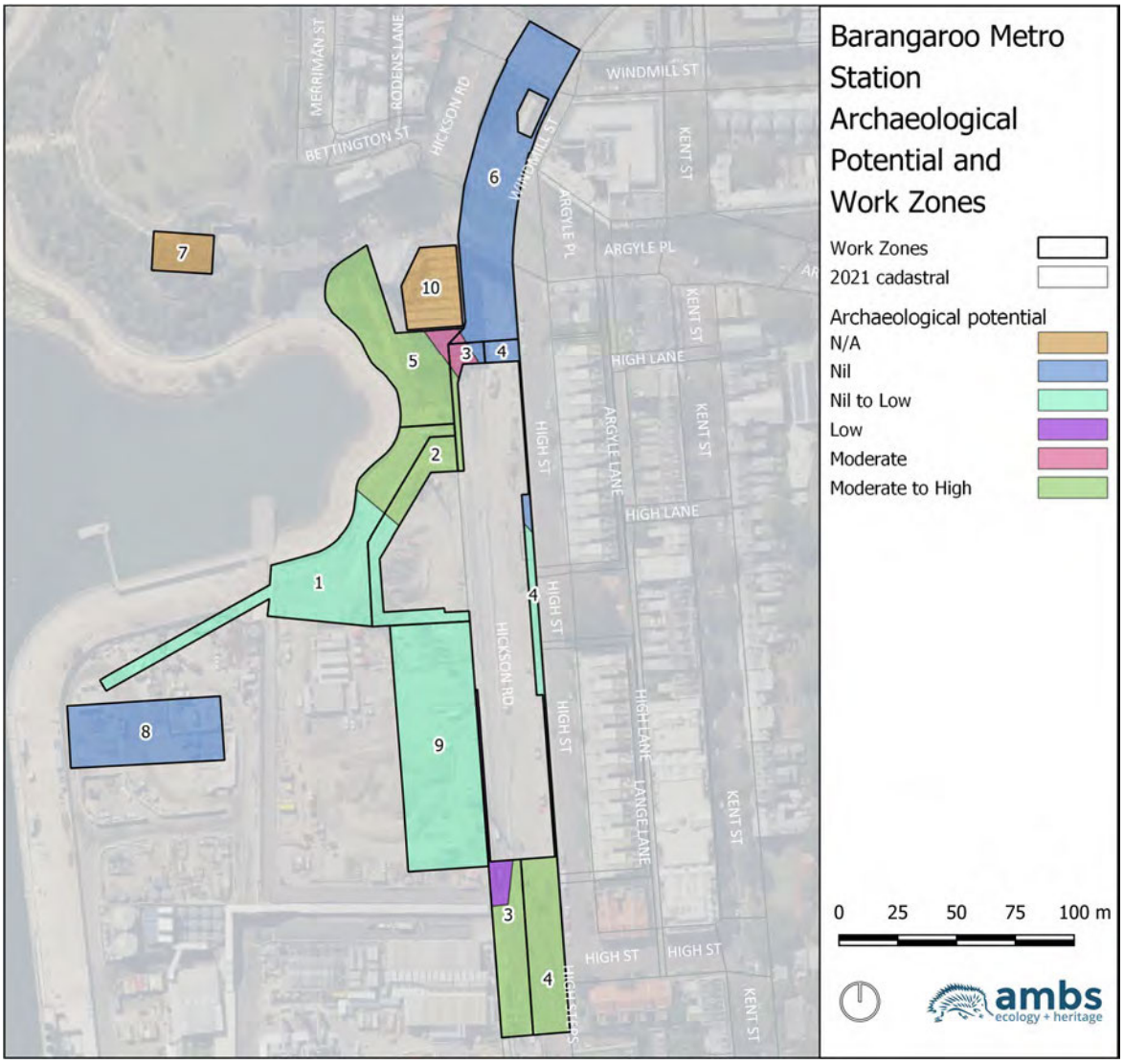

Figure 6.1: Work Zones and archaeological potential.

Table 6.1: Assessment of potential impacts relative to areas of archaeological potential.

Work Zone	Activity	Archaeological Potential	Potential Impact
1	Stormwater installation	Contains areas of: Moderate-High (NE) Nil-Low (SW)	Stormwater installation in the northeast of Work Zone 1 has the potential to impact on seawalls, Cuthbert's wharf, Dibbs wharf and structures, and Gibb & Bright structures
2	Waterproofing of station concrete roof, backfill and installation of landscaping and	Contains areas of: Moderate-High (N) Nil-Low(S)	Landscaping works in the northern half of Work Zone 2 have the potential to impact on the remains of Cuthbert's

Work Zone	Activity	Archaeological Potential	Potential Impact
	station entrance cladding, escalators and lifts		shipbuilding wharf, seawalls, Dibbs' wharf, and structures associated with Gibb & Bright
3 and 4	Demolition and removal of the existing red steel girders and road deck. Relocation of services. Complete concrete structure of ventilation pods, waterproof station concrete roof, backfill, install services and relocate the road, kerb and guttering. Install street trees / landscaping and clad the station ventilation and emergency egress stair pods	Contains areas of: Moderate-High (S) Low (S) Nil (N) Moderate (N)	Works in the south to relocate the road, guttering and services have the potential to impact Agars' jetty and associated boat sheds, evidence of permissive use of the beach and shoreline of the vacant government lands, and later wharfs and seawalls. Works in the north to relocate the road, guttering and services have the potential to impact the remains of the original shoreline and structures and possibly lime kiln on Martin's land.
5	Excavation of existing carpark, removal of existing surfaces, installation of new services to the chilled water plant room under Headland Park	Contains areas of: Moderate-High (W) Moderate (E)	Removal of surfaces and installation of services has the potential to impact the original shoreline of Martin's land and associated structures, evidence of Cuthbert's wharf and seawalls including the pre-1863 dock and timber store shed, Dibbs' wharf and associated structures, and Gibb & Bright's stores.
6	Removal of the northern shaft acoustic shed, infill of the northern shaft with sand; replacement of the road, kerb and landscaping works	Nil	No impact
7	Connecting up and commissioning plant and pipework which is already in place. All works are within existing man-holes.	N/A	No impact
8	Site sheds / canteen / change rooms	Nil	No impact
9	Temporary laydown area used to store material and plant / equipment	Nil-Low	No impact
10	Site offices	N/A	No impact

7 Archaeological Method Statement

Archaeological remains can enhance the historical record and as such make a contribution to an understanding of the history and settlement of a local area. The archaeological resource within the study area, if present with good integrity, has moderate to high research potential and local (and possibly State) significance. In view of the substantial costs involved in the archaeological excavation of a site, the research design should be problem-oriented; however, allowance should always be made for new questions to respond to unexpected archaeological evidence. Archaeological research questions provide a framework for an archaeological investigation and for the analysis of the results of the excavation and artefacts recovered during excavations.

The research design and methodology has been designed to build upon the results of archaeological excavations that have already taken place within the Barangaroo station project area, and Darling Harbour more widely, and to produce a comparable dataset for cohesive and coherent interpretation at the site.

7.1 Casey & Lowe Research Questions (AMS, 2017)

Casey & Lowe added a number of research questions to those put forward by Artefact in 2016:

7.1.1 Shipbuilding

Archaeological remains of Cuthbert's shipyard, which eventually covered the whole of the excavation area, should be examined to determine if they can reveal information about the variety and quality of shipbuilding that took place on the site over time. This in part can be answered by the examination of discarded fittings and tools on the site, as well as timber off-cuts. The arrangement of the work space such as the relationship of the slipway(s), sail loft, saw pits, forges and other features can say much about organisation and efficiency. It would be of interest to see if some features such as saw pits and forges were absent from the site as this would demonstrate the interconnectedness, or otherwise, of the shipyards in Darling Harbour with other local businesses. It is noted that often the archaeology of ship building is limited to ephemeral remains of the odd copper nail and part of a slip.

How did boatbuilding change across the site and how did it relate to changing economic concerns of the colony with the development of the colonial economy with the shipping wool to Britain the Goldrush as well as the shipping to the northern coast of NSW?

7.1.2 Maritime Infrastructure

Barangaroo Station site provides an opportunity to explore the transformation of a section of the Darling Harbour waterfront from the early 19th century to the government takeover in 1900 and then into the 20th century. The focus on this theme is on capitalism, evolving nature of the maritime infrastructure, and how these two themes shaped choices made in relation to individual site development? The nature of private v public construction of wharfage and seawalls and how it relates.

Of interest would be the comparison between the quality of public versus private infrastructure, quality both in materials and construction. For example, was turpentine, an excellent hardwood resistant to marine borers, consistently used? If lesser quality timbers such as ironbark were used as piles, were they copper sheathed (a protection against marine borers)?

- Documenting the quality of the jetties, seawalls and other maritime infrastructure constructed by private firms would provide insight into the attitudes of those firms.

- Did high quality structures indicate confidence and a willingness to invest for the long term?
- Did poor quality and poorly maintained structures reflect a struggling owner or one that did not see it economically beneficial to build durable infrastructure on their property or lease? Did the maintenance and condition of the waterfront infrastructure drop off towards the start of the 20th century?
- If so, how much was this due to the 1890s depression and/or to owners realising that the government was looking at resumptions cause them to reduce expenditures in maintaining their structures, thereby providing the government more justification for taking over?
- Other relevant questions will be addressed as they arise.

7.1.3 Industrial Archaeology

The questions relating to the industrial sites within the Barangaroo Station study area relates to both the technological nature of the sites and the evidence for work place practices as well as issues of urbanisation and concentration of work and living arrangements in close proximity. A set of questions were developed by Casey & Lowe in 1995 for an iron foundry site in Pyrmont and also for a brickmaking area in Surry Hills on three different archaeological projects during the 1990s and in 2005. These questions relate to the exploration of the layout of the industrial set up, and how work moved through the site. These have been explored successfully at the Darling Quarter and Barangaroo South archaeology projects and subsequent reporting. The type of research questions which would be used to address the potential mills and lime kiln sites within the Barangaroo Station site are:

- Spatial use of the workspace, identification of activity area?
- Levels of technology evident in the various processes of the industrial activities undertaken within the kilns?
- Evidence for the type of items produced by the individual company?
- Evidence for the working conditions of the staff?
- Were these exclusively male workplaces, if so do they help us understand the construction of male gender roles and relationships?
- How the landscape or landform was transformed to allow for the operations of the kiln, factory or workshop, i.e. the casting of moulds in the ground, the creation of a mill pond or the construction of a building?
- Relationship between the workshop/foundry/factory/kiln and any associated residential accommodation:
- How was the life in the residences affected by being in such close proximity to an industrial complex?
- Is this relationship exemplified by the presence or evidence of pollution within close proximity to the house? In the case of the Bulwarra Road house the whole backyard was overlain with metal dross, suggesting that it was used as an extension of the industrial premises. The proximity of the foundry meant that there were no windows in the northern side of the house, the sunny side, so as to stop any smoke and soot on furnace firing days from entering into the house through the windows. Also, no washing would have been done on furnace firing days.

7.1.4 Landscape Archaeology

The exploration of how the landform of Darling Harbour was altered between c.1820 and 1980s is fascinating as it testifies to the need for more land in specific locations and to provide adequate drafts for shipping. This represents the development of urban pressures as early as the 1830s to concentrate local industry around the main transport network, shipping, so as to aid distribution of their products and the importation of the goods as needed. The ability of entrepreneurs to

transform mud flats into useful land, to build wharfage far enough into the harbour to provide safe mooring for ships bringing in cargo and taking away goods. The alteration and manipulation of the landform of Darling Harbour has been part of its story of Sydney for the last two centuries. The methods and means by which the landform was altered can tell us much about attitudes to waste and rubbish disposal, particularly the deposition of waste from other construction projects, such as the reclamation of nearby areas in the 1920s and the study area in the 1950s and 1960s with material excavated from elsewhere and dredged from the harbour.

- What was the nature of the original landform?
- Evidence for shells, such as cockles and oysters, and what plant species were found in this area?
- How has this part of Darling Harbour evolved over time?
- How many times was the landform remade within the study area?
- What different materials and means were used, and what was the depth of the reclamation at each stage? How different was this to the practices at the Darling Quarter, Barangaroo South, Darling Harbour Live and the KENS sites?
- Were the phases of reclamation successful or not?
- Were the different properties reclaimed at different times?
- Where did the reclamation fill come from?
- How was the new landform used?
- What was the relationship between the reclaimed land and the wharfage?
- Other relevant questions will be addressed as they arise.

7.2 AMBS Research Questions

The current project aims to produce a dataset coherent with the research themes and questions already investigated at the Barangaroo Station site and will adopt the research questions posed by Casey & Lowe with the following additions:

7.2.1 Cuthbert's Shipbuilding Yard

- What evidence is there for Cuthbert's pre-1863 design of the wharf with a narrow dock? Is there evidence for its failure structurally or from silting?
- What can we tell about the changes that occurred between the two phases of Cuthbert's wharfage? Is there a different quality to the engineering and seawall construction that differentiates the two phases in terms of investment of capital and labour?
- Is there evidence of the worker's day to day lives in the shipyard? Can we see evidence of eating, drinking and smoking in the artefacts that build up with the timber and detritus on the surface of the wharf?
- Are there unexpected artefacts from domestic or other settings at the wharf or is the assemblage related to a work environment only? What can we tell about the close-knit nature of residences and industry in this part of the harbour? Is there evidence to suggest that the occupants of the houses on Wentworth, Unwin, Clyde and Munn Streets overlooking the wharf are disposing of rubbish at the edge of the high ground, or that drains and storm events are bringing detritus down from the streets above? What is the nature of the interaction between the two environments that is suggested by the artefact assemblage at the wharf?

7.2.2 Landscape Archaeology

- There is the potential to encounter wharf and jetty structures of small and large proportions at the site. Is there evidence of changes in the estuarine environment due to their construction, such as increased shoaling, changing erosion or deposition patterns? Do the structures progressively respond to the changes that they cause by redesign or

simply by pushing further into deep water? What evidence is there for change and response in the construction methods of the wharfs and what does it tell us about the ability of the designers to read the landscape or to respond appropriately? Are there signs of success or failure and what was the engineering response?

- How have the builders of structures at the edge of the steep and rocky ground adapted to or modified the landform to achieve their goals? What is the balance between adaptation and modification? Do we find evidence of opportunistic use of natural quirks in the shoreline to construct the initial jetties and wharfs on Agar's and Martin's properties? What can we tell about the decision-making processes and the choices that were made by the initial grant holders in relation to their land and its challenging form?

7.3 Archaeological Management

The day-to-day management of the archaeological excavations will be undertaken by Primary Excavation Director, Mike Hincks and Secondary Excavation Director Lian Ramage. Key members of the team will be Guy Hazell, surveyor, who will set out the site grid and survey all site features to contribute to the overall plan of the site in its entirety and in accordance with each identified phase of the site. James Cole, AMBS Archaeologist, will be important in assisting in the day to day management of the site.

The archaeological investigations program will comprise:

- Testing and monitoring of the slab and overburden removal to determine the extent, integrity, and potential significance of the underlying archaeology (Section 7.3.2).
- If archaeological remains are present with good integrity open area stratigraphic excavation would proceed to salvage all archaeological remains within areas of impact.

The significance and research potential of the archaeological resource associated with the wharfs and associated structures means that these buildings will be excavated using both mechanical and manual techniques. The following methodology addresses all potential instances where archaeological investigations will be required within this site.

7.3.1 Heritage Induction

AMBS will prepare a document that addresses the project scope, identifying the sensitivities of the site and the relevant heritage requirements of the project and will be presented to all on-site personnel. The induction will be approved by the Primary Excavation Director (ED) and presented by the Secondary Excavation Director (ED). The induction/toolbox will include an illustrated easy to understand hard copy outlining the main points and procedure, which will include:

- Understanding the heritage significance of the anticipated archaeological resource, including:
- Repercussions of any breaches to the approved archaeological strategy
- Understanding the unexpected finds procedures
- The nature of the archaeological resource
- Maps showing location of anticipated archaeological features
- Photographs of the types of anticipated archaeological features

Additional toolbox meetings will be given each day, as required, to provide an overview and management of the anticipated archaeological resource for that day and in the event of unanticipated relics or features being exposed.

7.3.2 Archaeological Testing & Monitoring

Archaeological testing will be undertaken in areas of Moderate-high potential to establish the depth of archaeology and to confirm its integrity in those areas. If it is found that the impacts will exceed the depths of the top of the nineteenth century archaeology, then open area stratigraphic excavation would proceed to salvage all archaeological remains within areas of impact. The testing will be directed by Mike Hincks, primary excavation director for the project.

Three trenches of 10m x 2m are proposed to be excavated within areas of Moderate to High archaeological potential. If the results are ambiguous, a fourth trench may be needed in either the southern area of Work Zones 3 and 4 or in Work Zones 2 and 5. The proposed locations are shown in Figure 7.1.

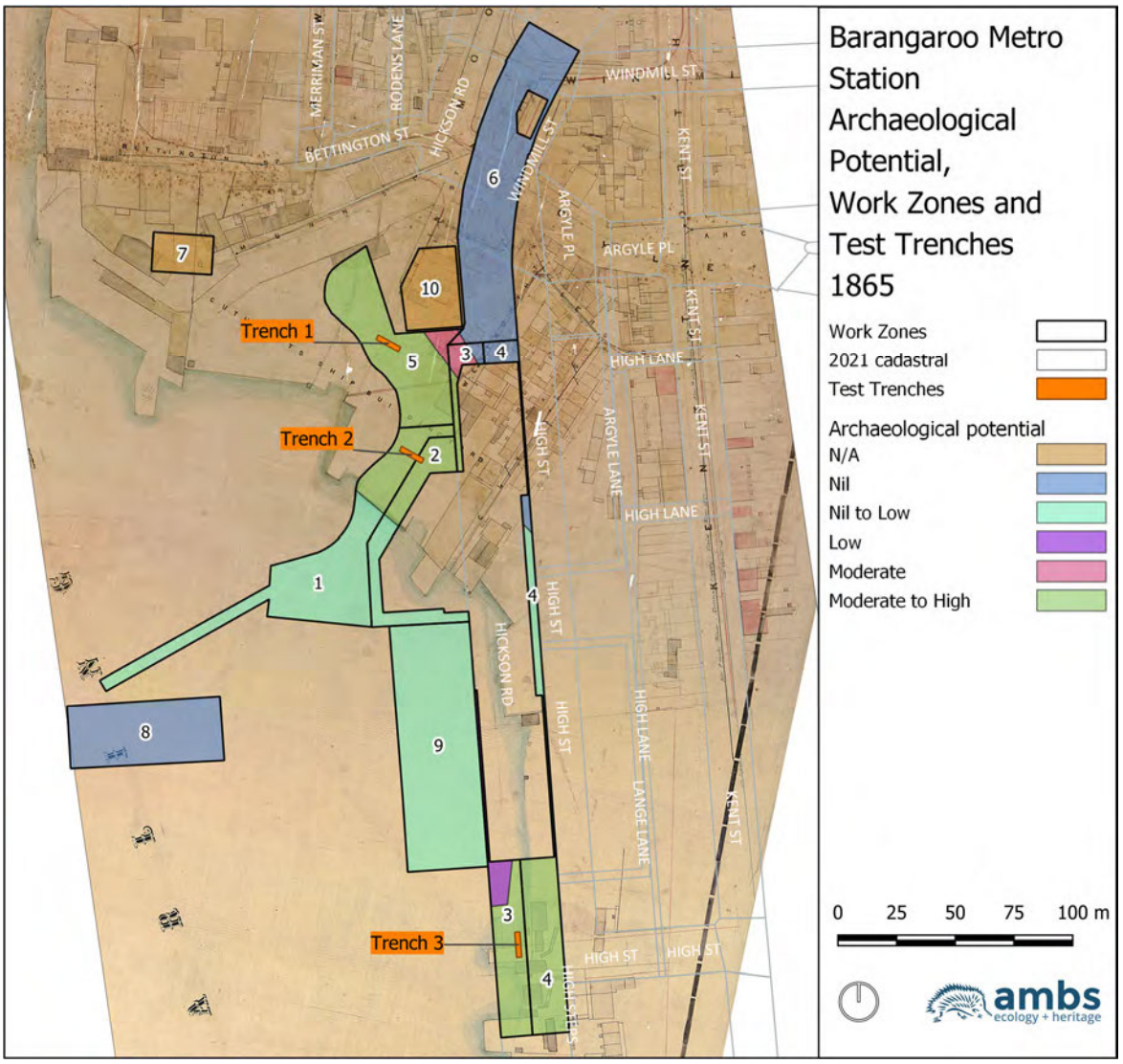

Figure 7.1: Proposed archaeological test trenches in areas of Moderate-High potential

If no evidence of significant archaeology is encountered in the test trenches in areas of Moderate to High potential, the works may proceed under the unexpected finds procedure. If isolated areas of significant archaeology are encountered they will be excavated and recorded archaeologically and salvaged from the areas of impact.

Archaeological monitoring will be undertaken in areas of Moderate archaeological potential. If significant archaeology is encountered then open area stratigraphic excavation would proceed to

salvage all archaeological remains within areas of impact. Monitoring will be undertaken by Mike Hincks.

If there are no underlying archaeological relics, features or deposits in the areas under investigation, the Primary ED will attend the site to verify and a ***Clearance Certificate*** will be prepared by the Primary ED to inform the project team and Proponent in writing.

There is potential that unexpected relics may be exposed during site works, which will be addressed by the Primary ED (see Section 7.7 below).

Where a significant archaeological resource with good integrity is exposed, open area excavation will proceed following removal of the overburden and once the area has been made safe to salvage the archaeological remains.

7.4 Open Area Stratigraphic Excavation

The extent that open area excavation will be required will not be known until the specific area of impact and the depth and nature of significant archaeology is established. Excavations will be directed by the Primary ED, Mike Hincks, assisted by Secondary ED Lian Ramage and Archaeologist James Cole. The team may comprise up to 20 archaeologists if large areas of the site are required to be salvaged, though this may increase or reduce in accordance with the site archaeology.

Excavation will be in accordance with the following methodology to ensure that all significant archaeological relics, features and deposits are appropriately managed and recorded:

- Establish a site datum and lay out a grid, relevant to the size of the site, 10m, 20m or 50m, across the site in order to record the levels of extant deposits, features and relics;
- Significant features will be recorded in detail and excavated manually under the supervision of the excavation director
- All significant archaeological deposits, features and relics that are exposed during the excavations will be recorded in accordance with heritage best practice standards.

  Recording will include:
  - Cleaning features to facilitate photographic recording;
  - Scale plans;
  - Elevations of features, if relevant;
  - Digital photographs (in JPG and RAW format); and
  - Photogrammetry
  - Site survey; and
  - Detailed description of the feature, deposit or relic to ensure that a clear and comprehensive record of the archaeological resource of the site is preserved for the future.
- Sequential numbering of features and deposits to facilitate preparation of a Harris Matrix and artefact labelling;
- Preparation and development of a Harris matrix, to show stratigraphic relationships between all recorded archaeological features and deposits;
- All information regarding the location, dimensions and characteristics of all recorded archaeological features and deposits will be recorded on pro-forma context sheets;
- Collection of all significant artefacts for analysis, except from non-significant unstratified fill. Samples of bricks and mortar will be collected from each structure, as relevant;

Soil samples will be taken from topsoils, cesspits and other relevant deposits for analysis by a palynologist. The results of the analysis should provide an insight into the indigenous and introduced flora of the locality and diet of the local community.

A ***Clearance Certificate*** will be issued by the Historic Excavation Director for each site requiring archaeological testing or excavation and recording after investigations are completed at that particular location.

7.5 Archaeological Excavation and Sampling Strategy

7.5.1 Wharfs and jetties

All wharf surfaces will be exposed and recorded. Activity areas will be identified where possible and any large scale working surfaces or yard deposits will be sample excavated and recorded. All significant features will be fully excavated and recorded. Artefacts from large scale wharf deposits, wharf fills or surfaces will be sampled to demonstrate the variety and type, favouring diagnostic and datable items. Not all artefacts will be collected from these contexts. Elevations of sea walls will be drawn in representative sections and in sections which demonstrate change, repair, modification or unusual use of methods or technology.

Positions of piles and remains of other timber fittings will be recorded and sampled where appropriate

7.5.2 Early shorelines and areas of low water

Intertidal zones and areas of low water will be sample excavated by machine to investigate the possibility of buried early structures or degraded or abandoned vessels, evidence of rubbish accumulation and tidal deposition of artefacts and shipbuilding discard.

7.5.3 Buildings and sub-surface structures

All footings will be exposed and recorded and dateable materials (such as bricks and mortar) will be sampled. Interior occupation or working surface deposits will be hand excavated and artefacts will be 100% recovered. In the unlikely event that underfloor deposits are present within the structures, all underfloor areas will be excavated within a 500mm grid, using 50mm spits, and wet sieved. Cesspits and rubbish pits (if present) will be excavated along tip lines (if identifiable).

7.6 Sieving Strategy

Evidence of past activities is provided by artefacts recovered during archaeological excavation, in particular from occupation deposits. Occupation deposits with potential to allow for conclusions to be drawn as to standards of living and access to goods occur beneath floors, within cesspits, rubbish pits, wells or cisterns, and yard deposits. Occupation deposits would be wet or dry sieved, in accordance with the density of the soil matrix and the likely improved retrieval of significant artefacts.

Where relevant, sample sieving of deposits will be done to determine whether a deposit warrants sieving and if so, this should be wet or dry sieving. Two recycling wet sieving systems have been constructed by the TSE team to facilitate that wet sieving is environmentally compliant.

Each room of each house under investigation and that has underfloor deposit will be gridded into 1m squares. The deposit within each square will be excavated and sieved to ensure that all evidence of material culture is retrieved for analysis, no matter how small. The purpose of this process is to spatially map areas of activity as demonstrated in the material assemblage. Similarly, dense deposits from other structures or features such as cesspits and wells or cisterns will also be sieved, if this is deemed to be the best strategy for retrieving all possible artefacts.

7.7 Unexpected Heritage Finds

The archaeological methodology outlined in this report is anticipated to record and sample all of the significant archaeology at the site.

However, there is potential that physical evidence associated with the early occupation of the site may be present but not recorded on maps or in early documents; unexpected heritage finds. The unexpected heritage find may include, but not be limited to:

- Artefacts derived from housing, shipbuilding and industrial contexts.
- Isolated rubbish pits or dumps of rubbish within reclamation or wharf fills
- Remnants of former maritime infrastructure.
- Sunken objects
- Other unexpected heritage finds.

Work will cease within the immediate environment of the find and the ED Mike Hincks will attend the site to determine its integrity and significance and to determine the appropriate management for the find. If considered to be of local significance they will be managed in accordance with this AMS. If deemed to be of state heritage significance, the Secretary and the Heritage Council will be informed, in accordance with Section 146 of the NSW Heritage Act, 1977. The Excavation Director will provide written confirmation of the relics of state significance and management and work will proceed

Following completion of the appropriate management of the unexpected heritage find, the Primary ED will provide written advice that all archaeological investigations within an area have been completed and issue a ***Clearance Certificate*** to allow works to commence or resume.

7.8 Archaeological Relics Management Plan

As identified in this report, there is potential for State significant relics to be present within the Barangaroo Station site. However, if the unexpected heritage find is assessed by the Primary ED, Mike Hincks, as having State significance, an Archaeological Relics Management Plan will be prepared, in consultation with the Heritage Council and in accordance with Condition E20.

Should unexpected State significant archaeological relics or features be identified, work would cease in the vicinity and the Heritage Council of NSW and the Secretary would be informed in writing concerning the find. The Primary ED would consult with the Heritage Council to determine the appropriate management for the find. This may include manual excavation to determine the full extent of the find and recorded in accordance with the methodology identified in Section 7.4 above.

The Primary ED will provide the Heritage Council and the Secretary, with a brief summary of the investigations on completion and application of the relic/feature to the relevant research themes and questions.

In the event that an early burial(s) is/are unexpectedly exposed, this/these will be managed in accordance with the Sydney Metro *Exhumation Management Plan* (2017) and the NSW Heritage Office *Skeletal Remains; Guidelines for Management of Human Skeletal Remains* (1998). The Primary ED will inform the Secretary and the Heritage Council of the discovery in the first instance.

Following completion of the appropriate management of the State significant archaeological relic, the Primary ED will provide written advice that all archaeological investigations within an area have been completed and issue a ***Clearance Certificate*** to allow works to commence or resume.

7.9 Post-Excavation Management

7.9.1 Artefact Management

Artefacts will be cleaned, bagged, and labelled in accordance with archaeological context, and appropriately stored for analysis so that any information that can contribute to the understanding

of the site and its historical development is not lost. Artefact processing and analysis will be in accordance with the system developed by AMBS and currently in use for the other Metro sites excavated by AMBS; Crows Nest, Chatswood, Sydney Metro South and Waterloo.. The database for the site will be included in the Excavation Report for that site.

Processing, analysis and storage of the artefacts for the duration of the project will be conducted at AMBS premises. However, a repository for the long-term storage of the artefacts from the Sydney Metro project will be required to be provided by Sydney Metro.

7.9.2 Final Excavation Report

At completion of the archaeological investigation program a report will be prepared detailing the results of the fieldwork and post-excavation analysis. The report will be prepared in accordance with current heritage best practice and the requirements of a standard excavation permit and will include:

- An executive summary of the archaeological programme;
- Due credit to the client paying for the excavation, on the title page;
- An accurate site location and site plan (with scale and north arrow);
- Historical research, references and bibliography;
- Detailed information on the excavation, including the aim, the context for the excavation, procedures, treatment of artefacts (cleaning, conserving, sorting, cataloguing, labelling, scale photographs and/or drawings, location of repository) and analysis of the information retrieved;
- Nominated repository for the items;
- Detailed response to research questions (at minimum those stated in the approved Research Design);
- Conclusions from the archaeological programme. The information must include a reassessment of the site's heritage significance, statement(s) on how archaeological investigations at this site have contributed to the community's understanding of the site and other comparable archaeological sites in the local area and recommendations for the future management of the site;
- Details of how information about this excavation has been publicly disseminated (for example provide details about Public Open Days and include copies of press releases, public brochures and information signs produced to explain the archaeological significance of the site).

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Appendix B
AMBS Excavation Directors

[redacted]

DIRECTOR, ABORIGINAL HERITAGE

Qualifications Bachelor of Arts (Hons) Archaeology, Flinders University of SA, 2001

Employment History

2016 – Present	AMBS Ecology & Heritage - Director, Aboriginal Heritage
2006 – 2015	Australian Museum Business Services - Project Manager, Aboriginal Heritage
2004 – 2006	Environmental Resources Management – Archaeologist/Project Manager
2002 – 2004	Tasmanian Cultural Heritage Office – Project Officer
2001 – 2002	Independent Archaeological Consultant

Expertise

- Aboriginal heritage assessment
- Multi-disciplinary project management
- Aboriginal community consultation
- Local, State & Federal Government liaison
- Archaeological report preparation
- Archaeological & cultural heritage management
- Archaeological excavation methodology design
- Direction of archaeological excavations
- Analysis of faunal & lithic cultural materials
- Provision of Aboriginal heritage advice

Professional Experience

[redacted] is an archaeologist with twenty years' experience working in Aboriginal archaeology, community consultation and heritage management planning, and is a founding director of AMBS Ecology & Heritage. Prior to 2016 he was Australian Museum Consulting's senior Aboriginal heritage Project Manager from 2006 to 2015, and was a project manager/archaeologist for ERM from 2004 to 2006. Before moving to NSW, he was a project officer with the Tasmanian Aboriginal Heritage Office, establishing site maintenance programs within Tasmania's World Heritage Wilderness Area. Past clients have included the Department of Defence, NSW Roads and Maritime Services, NSW Parks and Wildlife Service, Transport for NSW, UrbanGrowth NSW, Australian Rail and Track Corporation, Sydney Trains, Rio Tinto Coal & Allied, Centennial Coal, ERM Energy, Ausgrid, John Holland, Thiess, KMH, Parsons Brinckerhoff, APP Corporation, SMEC, and numerous local councils.

[redacted]s has a comprehensive knowledge of current Australian Aboriginal heritage management practices and archaeological methodologies, and has extensive experience working with State and Commonwealth heritage legislation and management planning requirements. He has prepared and carried out Aboriginal heritage assessments, archaeological excavations, heritage management planning, and provided heritage management advice and strategies to clients nationally. He has extensive experience consulting and negotiating with government and community interest groups on heritage matters, particularly Aboriginal groups.

[redacted] has undertaken consultation with Aboriginal communities across Australia, working with stakeholders during archaeological and heritage assessments, consulting with Elders and community groups on heritage studies, and consulting, liaising and negotiating with stakeholders on behalf of clients to achieve positive and equitable outcomes for all parties. He specialises in providing advice to clients to ensure that heritage values are addressed in a holistic, inclusive manner, taking into account not only the requirements and views of developers, managers and administrators, but also local community, government and Aboriginal community stakeholders.

Select Key Projects

Heritage Studies & Management Plans

Bankstown and Campsie Aboriginal Culture and Heritage Study for Canterbury Bankstown Council

Long Island Nature Reserve Aboriginal Cultural Values Assessment for NSW National Parks and Wildlife Service

Wollongong Botanic Gardens Aboriginal Archaeological Assessment for Wollongong City Council

Clarence Valley Aboriginal Heritage Study for Clarence Valley Council

Hungry Point Reserve Conservation Management Plan: Aboriginal Heritage Assessment for Hungry Point Reserve Trust

Tenterfield LGA Aboriginal Heritage Study for Tenterfield Shire Council

Goulburn Mulwaree LGA Aboriginal Heritage Study for Goulburn Mulwaree Council

Glen Innes Aboriginal Heritage Study for Glen Innes Shire Council

Walgett Shire Aboriginal Heritage Study for Walgett Shire Council

Port Douglas Waterfront Masterplan: Indigenous Cultural Heritage Assessment for Cairns Regional Council

Aboriginal Heritage Study; Illawarra Escarpment for Wollongong City Council

Heritage Management Plans for Defence Sites in the Wet Tropics World Heritage Area, Queensland for Department of Defence

HMAS Albatross Naval Base Heritage Management Plan for Department of Defence

Wargatta Mina & Ballawine Rock Art Monitoring & Cyclical Management Plan, World Heritage Area for Tasmanian Parks and Wildlife Service

Tasmanian Aboriginal Places Cyclical Maintenance Project for Tasmanian Heritage Office & Tasmanian Parks & Wildlife Service

Archaeological Excavations

Sydney Metro Tunnels and Stations Excavations Project Aboriginal heritage excavations and management planning for John Holland CPB Ghella Joint Venture

Captain Cook Drive, Kurnell assessment and archaeological excavations for Taleb Properties

Hamilton Road, Thirroul Aboriginal Heritage Test Excavation for the Institute of Sisters of Mercy Australia and New Zealand

Blacktown Animal Holding Facility Cultural Heritage Assessment and Test Excavation for APP on behalf of Blacktown City Council

Bungarribee Precinct 6: Archaeological Excavation for APP Corporation Pty Ltd, on behalf of UrbanGrowth NSW

Hexham Relief Roads Aboriginal Heritage Test Excavations for Upper Hunter Valley Alliance

Glenfield to Leppington Rail Line Aboriginal Heritage Salvage Excavation for John Holland

South West Rail Link: Preliminary Aboriginal Heritage Test Excavation for NSW Transport Construction Authority

Kurri Kurri to Rutherford Aboriginal Archaeological Excavation for Energy Australia

Currarong Sewerage Scheme Archaeological Excavation for NSW Department of Commerce

Wallaga Lake Midden Excavation for Bega Shire Council

Heritage Assessments

Mudies Creek Bridge & Unexploded Ordnance Clearance Aboriginal Cultural Heritage Assessment for Transport for NSW

Kyeemagh Public School Aboriginal Cultural Heritage Assessment for NSW Department of Education

Peri Urban Greenhouse & Solar Farm Heritage Assessment for Western Sydney University

Beach Road Berry Aboriginal Cultural Heritage Assessment and excavations for Shoalhaven Council

Golden Highway Upgrade project for SMEC on behalf of Roads and Maritime Services

Hamilton Rd Thirroul Aboriginal Cultural Heritage Assessment for the Institute of Sisters of Mercy Australia and New Zealand

Hungry Point Reserve Aboriginal Cultural Heritage Assessment & AHIP Application for Hungry Point Reserve Trust

Aboriginal Heritage Specialist Study, Environmental Survey of Commonwealth Land at Badgerys Creek, for SMEC Australia on behalf of the Department of Infrastructure and Regional Development

Mt Peake Mining Project Archaeological Assessment, Northern Territory for TNG

South West Rail Link – Glenfield to Leppington Rail Line: Aboriginal Heritage Assessment for NSW Transport Construction Authority

Wellington Gas Pipeline, Power Station & Compressor Station Heritage Assessment for ERM Power Pty Ltd

Split Rock Dam Preliminary Heritage Impact Assessment for State Water

Angus Place Colliery - Construction of dewatering borehole, air ventilation hole & infrastructure Heritage Assessment for Angus Place Coal

Sunshine Track Investigation (assessment & expert witness) for Tasmanian Aboriginal Heritage Office

RAAF Base Amberley Heritage Impact Assessment for Department of Defence

[redacted]

SENIOR HISTORIC HERITAGE CONSULTANT

QUALIFICATIONS

Master of Sciences, Palaeoanthropology – University of Sheffield - 2011

Post Graduate Diploma, Human Osteology and Paleopathology – University of Bradford - 2006

Bachelor of Sciences (Hons), Bioarchaeology – University of Bradford- 2005

EMPLOYMENT HISTORY

2018 – Present	AMBS Ecology and Heritage – Senior Historic Heritage Consultant
2014 – 2018	Biosis Pty Ltd – Consultant Archaeologist
2013 – 2014	Kelleher and Nightingale Consulting
2013 – 2014	Godden Mackay and Logan
2013 – 2014	Archaeological and Heritage Management Solutions
2013 – 2014	Apex Archaeology
2013 – 2013	Tardis Archaeology
2011 – 2012	Alpha Archaeology
2008 – 2009	York Archaeology Trust

PROFESSIONAL AFFILIATIONS

- Australian Archaeological Association (AAA)
- Australasian Society for Historical Archaeology (ASHA)
- American Association for the Advancement of Science (AAAS)
- Archaeological and Anthropological Society of Victoria (AASV)
- International Council for Archaeozoology (ICAZ)
- Association for Environmental Archaeology (AEA)

SELECT BIBLIOGRAPHY & PRESENTATIONS

2018 **Flannery, L.** *The archaeological works at the former dog cemetery, Moorebank*. Presented to the Australasian Society for Historical Archaeology Conference at the University of New England, Parramatta.

2017 **Flannery, L.** *Results of the excavations at 31 Crown and 16 Burelli Street*. Presented at the National Archaeology Week conference at the Wollongong Art Gallery.

2017 **Flannery, L.** *Results of the excavations at 31 Crown and 16 Burelli Street*. Presented at the Sydney Historical Archaeology Practitioners workshop.

2016 **Flannery, L.** *The archaeological investigations and artefact results from the former Oxford on Crown site.* Presented at the National Archaeology Week conference at the Old Court House, Wollongong.

2016 **Flannery, L.** *The preliminary artefact analysis for the archaeological excavations undertaken on the former Oxford on Crown site*. Presented to the Sydney Historical Archaeology Practitioners workshop.

PROFESSIONAL EXPERIENCE

[redacted] is an archaeologist with over ten year's archaeological experience and has participated in heritage projects across Australia and internationally in the UK and Italy. She has experience in the successful completion of Historical assessments, archaeological surveys, excavations, and post excavation analysis of Historical artefactual material. She has authored reports including Historical Impact Assessments, Statements of Heritage Impact, Archaeological Assessments and Historical

Archaeological Excavation reports and written the artefactual analysis components for Historical Archaeological Excavation reports.

Her specialist skills include the excavation and analysis of human osteological material and analysis of Australian faunal skeletal material. She has extensive experience in archaeological surveys and historical excavations on sites dating from early colonisation to later European settlements. She is an experienced project manager and specialises in large scale historical excavations successfully running field teams and training student archaeologists in historical excavation methods. She has proven historical expertise and meets the Heritage Council's Excavation Director's Assessment Criteria for section 140 archaeological excavations.

SELECT KEY PROJECTS

Large Scale Archaeological Excavations

Sydney Metro City and Southwest – Tunnel, Stations and Excavation works. Open area archaeological excavations of station sites for the new metro network for JHCPBG Joint Venture.

Civic Place Commercial Development. Open area archaeological excavations undertaken under a section 140 approval at 37 Burelli Street Wollongong for Piruse Constructions.

Kiama Blowhole Point Carpark development. Archaeological testing trench excavations undertaken under a section 140 permit for Kiama Municipal Council.

Darcoola West Water Efficiency Scheme. Historical and Aboriginal heritage assessment and test excavations for the Office of Environment and Heritage.

Moorebank Intermodal Development. Archaeological excavation program for multiple sites located within the decommissioned Moorebank Army Barracks for Liberty Industrial.

Crown Commercial Development. Open area archaeological excavations at 31 Crown and 16 Burelli St, Wollongong for Nicolas Daoud & Co.

Oxford Crown Mixed Use Development. Open area archaeological excavations at 47-51 Crown St, Wollongong for PSR Crown Investments.

New Grafton Rail Bridge. Archaeological unexpected finds inspections and excavations for Fulton Hogan.

Specialist Artefactual Analysis

Full cataloguing, analysis and reporting of Australian historical artefactual material collection for *Moorebank Intermodal Development*, NSW.

Cataloguing and analysis of Australian historical artefactual material for *Kiama Blowhole carpark development,* NSW

Cataloguing, analysis and specialist reporting of canine osteological material for *Moorebank Intermodal Development,* NSW.

Full cataloguing and analysis of Australian historical artefactual collection for *Darcoola West Water Efficiency Scheme,* NSW

Full cataloguing, analysis and specialist reporting of Australian historical artefactual collection for *Oxford on Crown Artefact Collection,* NSW

Human osteological analysis of unexpected human and faunal remains for FMG, Pilbara, WA.

Human osteological cataloguing and analysis of human material from excavations undertaken at Queen Victoria Markets, Alpha Archaeology, VIC.

Human osteological analysis and cataloguing of the *Inhouse teaching collection of Sheffield University*, UK.

Ecological analysis of small osteological finds for the *Anglo-American Project in Pompeii*, Italy.

Human osteological analysis and cataloguing for *Bradford University Inhouse teaching collection,* UK.

Heritage Impact Assessments and Archaeological Assessments

Statement of Heritage Impact for Meadowbank Education Precinct for Gray Puksand.

Statement of Heritage Impact for the Glenbrook to Lapstone Rail Cuttings remediation for GHD.

Archaeological Assessment for the Arms of Australia for TDK Architects.

Statement of Heritage Impact for Grafton South Railway Turntable Rejuvenation for Roads and Maritime Services.

Statement of Heritage Impact for Macdonaldtown Stabling Yard for Sydney Trains.

Statement of Heritage Impact Dibble Avenue Waterhole on behalf of Inner West Council.

Statement of Heritage Impact for Hawkesbury River Rail Bridge for SMEC.

Statement of Heritage Impact for Lapstone Station refurbishment works for SNC Lavalin.

Statement of Heritage Impact for Narrabeen Education Precinct for OCP Architects.

Statement of Heritage Impact for 251 Princes Highway Bulli for Alex Urena Design Studios.

Statement of Heritage Impact for proposed upgrades to Wombarra Scarborough Cemetery for Wollongong City Council

Historical heritage and Aboriginal assessments for the Stage 1 Station Street development, Menangle for Calibre on behalf of Mirvac.

EXCAVATION DIRECTOR APPLICATION

[redacted] SENIOR HISTORIC HERITAGE CONSULTANT

AMBS ECOLOGY AND HERITAGE

1. A TERTIARY PASS DEGREE WITH SUBJECTS IN ARCHAEOLOGY OR A RELATED DISCIPLINE AND FOUR YEARS PROFESSIONAL EXPERIENCE IN HISTORICAL ARCHAEOLOGY OR A RELATED ARCHAEOLOGICAL FIELD

Tertiary Pass Degree:

Master of Sciences, Palaeoanthropology – University of Sheffield - 2011
Post Graduate Diploma, Human Osteology and Paleopathology – University of Bradford - 2006
Bachelor of Sciences (Hons), Bioarchaeology – University of Bradford- 2005

11 Years Professional Experience in Historical Archaeology:
October 2018-present: Senior Historical Heritage Consultant, AMBS Ecology & Heritage
January 2014-October 2018: Consultant Archaeologist, Biosis Pty Ltd
January 2012-January 2014: Sub-contractor Archaeologist (various projects and roles)
July 2011-January 2012: Archaeologist, Alpha Archaeology
2008-2009: Archaeologist, York Archaeological Trust

I have been employed as an osteoarchaeologist/archaeologist in either full time, sub-contractor and permanent positions continually since 2006 with the University of Bradford, UK (2006-2007), York Archaeological Trust, UK (2008-2009), the University of Sheffield, UK (2010-2011), Alpha Archaeology Vic, Aus (2011-2013), Apex Archaeology, NSW Aus (2013-2014), Kelleher and Nightingale Consulting, NSW Aus (2013-2014), Biosis Pty Ltd, NSW Aus (2014-2018) and my current position at AMBS Ecology and Heritage. I have 6 years' experience at a supervisor level or above in historical archaeology in NSW. I have managed/supervised the excavation of a range of site types; residential, commercial, defence and industrial. I have been secondary Excavation Director for open area excavation at locally significant sites and site supervisor at State significant sites.

2. A DEMONSTRATED UNDERSTANDING OF NSW HERITAGE LEGISLATION ASSESSING HERITAGE SIGNIFICANCE CRITERIA AND RELEVANT ARCHAEOLOGICAL GUIDELINES/BEST PRACTICE METHODS AND STANDARDS INCLUDING, BUT NOT LIMITED TO, RELEVANT ARCHAEOLOGY PUBLICATIONS ISSUED BY THE HERITAGE COUNCIL OF NSW.

I have been employed as an archaeologist within Australia for 10 years where I have also been the primary author and contributed to archaeological assessments, research designs and final excavation reports. Developing appropriate excavation methodologies and strategies for individual sites requires an understanding of the potential significance and archaeological resource integrity. Resources essential to ensure compliance with best practice methodologies include the Heritage Division guidelines, specifically; *Assessing Significance for Historical Archaeological Sites and 'Relics'* (2009) and *Archaeological Assessment*s (1996). I also have a working knowledge of the requirements of Sections 139 to 146 of the *Heritage Act 1977*, for locally significant archaeological sites, and Sections 57 to 69 of Part 4, for state significant sites.

3. DEMONSTRATED EXPERIENCE IN THE INVESTIGATION OF COMPARABLE OR RELEVANT HISTORICAL ARCHAEOLOGICAL SITES (ESPECIALLY AUSTRALIAN HISTORICAL ARCHAEOLOGY) PROJECT MANAGEMENT AND PREPARING WRITTEN ARCHAEOLOGICAL ASSESSMENTS/SITE MANAGEMENT RECOMMENDATIONS.

I commenced my career in the UK with York archaeological trust working as a site assistant on the Hungate city centre development that included 2000 years of occupational history, with deeply stratified and complex archaeology that included Roman (late 1st to early 5th century), Anglo-Saxon (mid 6th to late 8th centuries), Viking age (late 8th to mid-11th centuries), Medieval (12th to 16th centuries), Post medieval (late 16th to early 19th centuries) and Modern (19th to mid-20th centuries) deposits. This included the excavation of human remains, hearths, rubbish and cess pits, wells lined with wicker and stone footings for a variety of former residential and commercial buildings. I was employed by the University of Bradford to undertake archaeological

excavations in Pompeii, Italy where I undertook supervisor duties in the excavation and analysis of sub floor deposits of residential occupational areas of Regio VI Insula 1. I was also employed as a teaching assistant for the Osteological classes assisting in the instruction of the human musculoskeletal system.

Since commencing my archaeological career in Australia, I have worked on historical archaeological excavations of local and state significance in both New South Wales and Victoria. I have supervised the excavation of human osteological material, whilst mentoring junior archaeologists and students during trench excavations at Queen Victoria Markets in Melbourne, Victoria. I have been the site supervisor and Secondary Excavation Director for Civic Place archaeological works and Kiama Blowhole investigations (s140 permits). I have undertaken supervision of archaeological monitoring at 5 Harbour Street (s140 permit) and been the site supervisor and project manager for salvage excavations of WWI isolation camp and military service dog cemetery at the former Moorebank School of Military Engineering (SSI) and undertaken archaeological monitoring and salvage excavations for the Duplicate Crossing at Grafton (SSI).

I have managed projects from the initial site assessment phase through to the final excavation and interpretation stages including archaeological testing programs and have authored the associated reports which have included the preparation and implementation of project and site management strategies. I have also undertaken artefactual analysis of recovered material from these excavations including the preparation of analysis reports for final excavation reports.

4. Ability to demonstrate that work under any approvals previously granted by the Heritage Council has been completed in accordance with the conditions of that approval and the final report has been submitted to the Heritage Council.

I was site supervisor/secondary excavation director on projects based in the Illawarra and western Sydney including the following projects; *Civic Place* in Wollongong CBD, *Kiama Blowhole* in Kiama, *Moorebank Intermodal project* in Moorebank, Liverpool, *47-51 Crown Street* in Wollongong CBD and *Crown and Burelli Street* in Wollongong CBD. I was secondary excavation director on the civic place archaeological works and the Kiama Blowhole project. I ran a team of 8 archaeologists on site for the civic place excavations undertaking initial monitoring to investigate the level of preservation before undertaking the full excavation program. The Moorebank excavations involved the management of a team of up to 12 archaeologists on site over two separate archaeological programs. The excavation at Crown and Burelli Street involved the running of the site and management of a team of 5 archaeologists. During the excavations at 47-51 Crown Street I undertook the artefact management on site and supervised the archaeological team of 4 archaeologists.

Final reports to approved applications under s140 of the Heritage Act include:

- 5 Harbour Street, Wollongong NSW monitoring, 2015 prepared for Derek Sheppard.
- 47-51 Crown Street Archaeological Excavation, 2016 prepared for PSR Crown Developments.
- Crown and Burelli Archaeological Excavation, 2017 prepared for Nicolas Daoud & Co. Pty Ltd.
- Civic Place Archaeological Excavation, 2019 prepared for Piruse Constructions

5. Historical Archaeological Fieldwork Experience

Test Excavation	
• Excavation Director needs to demonstrate his/her understanding of the meaning (date, type, common application in the past) of basic fabric types likely to be encountered • Excavation Director needs to demonstrate his/her ability to recognize and interpret taphonomic processes and his/her meaning; • Recognition by the Excavation Director of any limitations of the above	• I have been involved in the assessment, survey and excavation of a range of industrial, defence, commercial and residential site types to sufficiently identify the date and provenance of basic finds and materials likely to be encountered within the study area. I have undertaken a range of assessment and excavation projects which has resulted in my ability to identify basic fabric types. Assessments include the Corrimal coke ovens Assessment (Industrial

• Excavation Director needs to demonstrate his/her ability to complete adequate recording of stratigraphy, soil, features without needing to re-excavate previous trenches; and • Excavation Director needs to demonstrate his/her ability to prepare a report that clearly identifies what was done, why, what new information was recovered and what it means	built heritage), Harbour Street (judicial/administrative and correctional remains), Oxford-On-Crown (residential and commercial remains), Crown and Burelli Streets (residential and commercial remains), Moorebank Intermodal Terminal (military/defence remains) Kiama Blowhole (government residential and commercial remains) Civic Place (residential remains) and Pitt Street South (mixed residential and commercial remains). • I have extensive experience in identifying and interpreting taphonomic processes on both rural and complex urban archaeological sites. Examples include Oxford-on-Crown, Burelli and Crown Street, Moorebank Intermodal Terminal, Civic Place and Pitt Street South where complex urban deposits were present. • Whist I am confident in undertaking the excavation of the study area, should any fabric or materials be identified which I cannot Identify, these will be examined by the Primary Excavation director and/or a relevant specialist. • I have a high degree of competency in recording archaeological sites using single and multiple context recording systems and training others how to do so. I have experience in preparing harris matrices, scale plans and sections and photographic recording to a level which does not require the re-excavation of trenches. I have never had to undertake the latter. • In the UK I was trained in utilising single and multi-context recording systems and have honed these skills on a diverse range of urban and rural sites with a diverse range of archaeological features dating to various periods of occupation. This has assisted me in undertaking similar archaeological projects in NSW. • I have previously submitted the excavation reports for 31 Crown and 16 Burelli Street and Moorebank Intermodal Terminal and the final report for Civic Place to NSW Heritage Council which clearly outlines the excavation program and results. • I have authored in excess of 50 Aboriginal and Historical assessment reports, including test and salvage excavation reports. Please see my CV for a comprehensive list of reports prepared for clients, many of which have been submitted to regulatory bodies.

Monitoring	•
• Excavation Director needs to meet ALL of the requirements listed for "Test Excavation" above, AND Excavation Director needs to demonstrate: • Previous experience with and demonstrated understanding of how to use a machine excavator effectively and safely; • Demonstrated ability to understand when it is necessary to change from machine to manual investigation.	• I have over ten years' experience in undertaking archaeological excavations with a mechanical excavator. All projects I participated in the UK involved the use of machine excavation to reveal archaeological structures and deposits. • Projects undertaken in Australia which demonstrate this experience include Queen Victoria Market, Oxford on Crown, Harbour Street, Crown and Burelli Moorebank Intermodal Terminal, Kiama Blowhole, Civic Place and Pitt Street South. • The experience demonstrated above demonstrates the successful implementation of mechanical excavation prior to commencing hand excavation.
Larger Scale/Complex Excavation	•
• Documentation showing the nominee has been approved as Excavation Director on five (5) or more prior permits for excavation of lesser scope such as archaeological testing or monitoring permits (and/or section 63 approvals) • Excavation Director needs to demonstrate that ALL the abovementioned projects have been completed in accordance with the permit consent conditions; • Excavation Director needs to demonstrate his/her excavation experience as a Site Director or Trench/Area supervisor on at least three (3) sites subject to open area excavation; • Excavation Director needs to demonstrate his/her experience and/or clear evidence of a capacity to: (a) manage project timeframes, budgets, client's requirements; as well as (b) manage community interest/Public Relations issues; AND • Excavation Director needs to demonstrate his/her ability to synthesise excavation and post excavation analysis/historical research into a report that responds to identified research questions and makes a positive contribution to community understanding of the history and significance of the place.	• This is my third application as a secondary Excavation Director for a permit approval under the *Heritage Act 1977*, the previous two were approved. I believe that elsewhere in this document I have demonstrated my experience in undertaking open area excavations within different legislative contexts. • I would also like to submit that in accordance with the NSW Heritage Directors Criterion the purpose of being named secondary excavation director is to build evidence of such approvals. • As mentioned previously, this is my third application as a Secondary Excavation Director. However, the Primary Excavation Director, Mike Hincks has experience in completing projects in accordance with permit conditions. • I have acted as trench or site supervisor/ project director on Oxford-on-Crown, Crown and Burelli, Harbour Street, Moorebank Intermodal Terminal, Kiama Blowhole, Civic Place and Pitt Street South. The Moorebank excavation was a large-scale testing and salvage program which resulted in opening up one open area (approx. 100m x 200m) and nine trenches (average size approx. 30m x 10m). Each area was excavated initially by machine and then by archaeological hand techniques. All underwent full archaeological recording. • I believe that this experience makes me innately familiar with the techniques and

	requirements of open area excavation and associated recording practices. • As mentioned previously, since 2014 I have managed multiple Aboriginal and European heritage projects with budgets exceeding $100k. These have all included large fieldwork and excavation components, often with logistical difficulties. I have provided a selection of assessments under the above heading which demonstrate my ability to produce written assessments. • I have been involved in multiple projects which have required me to manage community relations. Particularly, I have undertaken archaeological projects within Defence bases which required consultation with the Defence community, particularly the collection of oral histories. • As project manager and site supervisor I played a key role in instigating the public open day for both the Crown and Burelli site and the Civic Place site and have fostered on-going media relations for both projects. This involved follow up media interviews outlining the results of the excavations, a newspaper article in the Wollongong Advertiser detailing a short presentation of results and public presentation of the Crown and Burelli results as part of National Archaeology Week in May 2016. The latter was undertaken in partnership with the Southern Committee of the National Trust and other local organisations. I have fostered a close relationship with the clients to ensure that the interpretation works for the projects form a central part of the building designs and eventual aesthetics.

[redacted]

SENIOR HISTORIC HERITAGE CONSULTANT

QUALIFICATIONS Bachelor of Arts (Archaeology and Art History/Theory) - 2003

EMPLOYMENT HISTORY

2020 - Present	AMBS Ecology & Heritage, Australia – Senior Historic Heritage Consultant
2016-2020	Casey & Lowe Archaeology and Heritage - Senior Archaeologist/Manager
2014-2016	Self Employed - Heritage Consultant
2013-2014	Artefact Heritage Services – Senior Heritage Consultant
2009-2013	Casey & Lowe Archaeology and Heritage – Senior Archaeologist
2008	Casey & Lowe Archaeology and Heritage – Archaeologist
2003-2008	Self-Employed – Field Archaeologist

PROFESSIONAL AFFILIATIONS

- Australasian Society for Historical Archaeology (ASHA)

SELECT BIBLIOGRAPHY & PRESENTATIONS

2018 **Hincks, M.** *The Archaeology of Idleness*. Presented to the Australasian Society for Historical Archaeology Conference at the University of New England, Parramatta.

2017 **Hincks, M.** *Interpreting Transience at Cumberland hospital, north Parramatta*. Presented at the Australasian Society for Historical Archaeology Conference at Brickendon Estate, Tasmania.

PROFESSIONAL EXPERIENCE

[redacted] is a Senior Heritage Consultant with over 15 years' experience in commercial heritage management in NSW, including over 9 years' experience as a Senior Archaeologist and Heritage Consultant in historical archaeology in Sydney and over 5 years' experience in Aboriginal archaeology across NSW. [redacted] has been Primary Excavation Director for locally significant projects in Sydney and Parramatta, and Secondary Excavation Director for state significant projects in Western Sydney and Parramatta including testing at the Female Factory site, Cumberland Hospital, North Parramatta, and open area excavation of the 1813 Market/Annual Feasts site at 7PS, Parramatta. [redacted] has managed excavations at World Heritage listed Cockatoo Island and Old Government House. He has managed large teams and multiple trenches on complex maritime industrial sites at Barangaroo and Darling Quarter. [redacted] has written excavation reports, assessments, SoHIs and interpretive works for many archaeological and built heritage sites in NSW.

SELECT KEY PROJECTS

Large Scale Archaeological Excavations

7 Paramatta Square, Parramatta. Secondary Excavation Director, open area excavation of the State significant 1813 Market site for City of Parramatta Council, 2020.

Prince of Wales Hospital: Randwick Campus Redevelopment. Primary Excavation Director, open area archaeological excavation of a locally significant 1850s homestead and grounds for NSW Health/Lend Lease, 2019.

Sydney Metro City and Southwest – Tunnel, Stations and Excavation works. Secondary Excavation Director, open area archaeological excavation of Barangaroo Station site for JHCPBG Joint Venture, 2018.

Paramatta North Program, North Parramatta. Secondary Excavation Director, archaeological testing for the State significant 1821 Female Factory, 1803 Mill Race, Parramatta Girls Industrial School and Parramatta Lunatic Asylum, for NSW DPIE, 2016-2020.

47-53 Wentworth Ave, Surry Hills. Secondary Excavation Director, archaeological testing for

the State significant Leak Pottery site for Time and Place, 2019.

Ascham School Redevelopment. Primary Excavation Director, open area excavation of late 19th-century estate house and grounds for EPM, 2014.

2 Morton Street, Parramatta. Primary Excavation Director, open area excavation of 1830s homestead and grounds, for RCP 2014.

Specialist Artefact Analysis

Cataloguing, analysis and reporting of faunal material from *Day Street, Haymarket*, for Artefact Heritage Services, 2016.

Selected Report Writing

Parramatta North Growth Centre, Parramatta North: Archaeological Management Strategy and Archaeological Research Framework. Report to UrbanGrowth NSW Development Corporation, Casey & Lowe July 2019

PNGC Cumberland Hospital (East Campus) Site & Norma Parker Centre/Kamballa Site Historical Archaeology Testing Report, Report to UrbanGrowth NSW Development Corporation, Casey & Lowe November 2018 Vols. 1 & 2

Archaeological Testing Report: Mount Pleasant Homestead Site, Soling Crescent, Cranebrook, Report to Penrith City Council, Casey & Lowe June 2016

Archaeological Testing Report, 30-42 Oxford Street, Epping, Report to Grocon, Casey & Lowe November 2016

Archaeological Excavation: Ascham School Redevelopment, Report to EPM, Artefact Heritage March 2015

Archaeological Excavation: 2 Morton Street, Parramatta, Report to RCP, Artefact Heritage July 2014

Archaeological Test Excavation: 2 Morton Street, Parramatta, Report to RCP, Artefact Heritage January 2014

EXCAVATION DIRECTOR APPLICATION
MIKE HINCKS, SENIOR HISTORIC HERITAGE CONSULTANT
AMBS ECOLOGY AND HERITAGE

1. A TERTIARY PASS DEGREE WITH SUBJECTS IN ARCHAEOLOGY OR A RELATED DISCIPLINE AND FOUR YEARS PROFESSIONAL EXPERIENCE IN HISTORICAL ARCHAEOLOGY OR A RELATED ARCHAEOLOGICAL FIELD

Tertiary Pass Degree:
2003: University of Sydney Bachelor of Arts (Archaeology (Prehistoric and Historical) and Art History/Theory)

12 Years Professional Experience in Historical Archaeology:
November 2020-present: Senior Historical Heritage Consultant, AMBS Ecology & Heritage
January 2016-November 2020: Senior Archaeologist, Casey & Lowe Pty Ltd
October 2014-January 2016: Sub-contractor Archaeologist (various projects and roles)
July 2014-October 2014: Senior Archaeologist, Casey & Lowe Pty Ltd
October 2013-May 2014: Senior Archaeologist, Artefact Heritage Services Pty Ltd
August 2008-October 2013: Archaeologist/Senior Archaeologist, Casey & Lowe Pty Ltd

I have had 11 years' experience at a supervisor level or above in historical archaeology in NSW. I have managed the excavation of a range of site types including residential, industrial, institutional, and land-creation sites. I have been primary Excavation Director for open area excavation at locally significant sites and secondary Excavation Director at State significant sites.

2. A DEMONSTRATED UNDERSTANDING OF NSW HERITAGE LEGISLATION ASSESSING HERITAGE SIGNIFICANCE CRITERIA AND RELEVANT ARCHAEOLOGICAL GUIDELINES/BEST PRACTICE METHODS AND STANDARDS INCLUDING, BUT NOT LIMITED TO, RELEVANT ARCHAEOLOGY PUBLICATIONS ISSUED BY THE HERITAGE COUNCIL OF NSW.

In my 12 years' experience in historical archaeology in NSW I have written many excavation reports, managed and directed excavations, and contributed to a variety of heritage reports including archaeological assessments, management strategies, impact statements, CMPs, and built heritage assessments. I have also reviewed and edited archaeological and heritage reports of all types. I understand that assessing the significance of archaeology in NSW requires the recognition of values that contribute to the cultural significance of a place, as defined by the Burra Charter 2013. I also understand that the values-based principles and processes outlined in the Burra Charter and expanded upon in *Assessing Heritage Significance* and *Assessing Significance for Historical Archaeological Sites and 'Relics'* remain the foundation of a significance assessment regardless of the development pathway in NSW.

The significance of a site is the defining quality that determines how the Heritage Act applies to it, and which will also guide the recommendations under the relevant state planning instrument if applicable.

While a significance assessment is most commonly associated with an initial archaeological assessment for any given project, I understand that significance is assessed before, during and after an excavation. The cultural significance of a place may be both tangible and intangible, and any assessment of significance must take this into consideration. A key example of my understanding of assessing archaeological significance throughout the archaeological process concerns objects that were found beneath the basement floor of the former Parramatta Girls Industrial School (SHR 00811, Archaeological Testing 2016-2017 Casey & Lowe). The objects were demonstrated to have multiple meanings that defied a traditional artefactual analysis and were only revealed through oral histories and interviews. I had a key role in this process. As the secondary ED I was managing the excavation of the site on a day-to-day basis. I recognised the limits of a traditional type/function analysis of the objects that were being recovered from the trench. With permission from the client and the Primary ED, I contacted former resident Bonnie Duric and invited her to visit the location of the excavation with an artefact specialist present.

The contradictions that became apparent in the competing interpretations of modified ceramic objects and combs between the artefact specialist and the former resident emphasised the importance of understanding significance through multiple value systems. In this case they were social values (as represented by Criterion [d]), and established comparative archaeological artefact analysis techniques developed in line with Criterion (e). It highlighted the need to recognise other sources of knowledge outside of the discipline and, most importantly, to recognise the limits of my knowledge and know when to engage other voices during the archaeological process to get the best outcome for the archaeology.

Only a significance assessment process that is values-based, and allows for significance to be expressed through competing but equally valid meaning systems (such as historical, aesthetic, and social), can ensure that all aspects of the cultural significance of an archaeological assemblage or site are accounted for and represented. The assessment of the finds during the excavation resulted in the site being recognised as containing State significant archaeology, which had been considered locally significant during the baseline assessment process. The re-assessment occurred in the field during excavation and was a response to the archaeological context, an awareness of the ongoing Royal Commission that involved former residents of the site, and new information from interviews with stakeholders. Understanding significance and how it is properly assessed was critical, and it guided the way that I managed the test excavation and was able to recommend changes in excavation and research strategy to the primary ED.

3. Demonstrated experience in the investigation of comparable or relevant historical archaeological sites (especially Australian Historical Archaeology) project management and preparing written archaeological assessments/site management recommendations.

My career in archaeology has been built on my skills as a field archaeologist and my ability to manage and direct sites, trenches, and large, complex investigations. Since 2008 I have worked almost exclusively on historical archaeological sites in the greater Sydney area, and have worked mostly on State significant archaeological sites in the Sydney CBD and Parramatta. These sites have been residential, industrial, institutional, and maritime in nature and have ranged from monitoring slot trenches in the course of a single night through to large-scale open area investigations covering 22,000m^2 that have been excavated over months and years.

When I worked at Artefact Heritage, I was the most senior historical archaeologist in the company and was responsible for project management, excavation direction, mentoring early-career archaeologists, budgets and timeframes and management recommendations.

Since then, on the projects I have been involved in, I have been the most senior archaeologist on site most if not all of the time. The day-to-day running of the site, excavation strategy and execution, safety audits and protocols, weekly client reports and summaries, and accountability for time and staff has all been my responsibility.

My extensive field experience augments my significance assessment skills and legislative knowledge. In 2019 I wrote the impact statement, s140 application and research design for 7 Parramatta Square (7PS). This had been a drawn-out project for the client and they had been unable to obtain approval. I was responsible for the renewed assessment strategy which involved extensive services location, in-depth consideration of the nature of the archaeology and its survivability, and I also negotiated the redesign of services and a commitment to conservation areas which I identified. I was wholly responsible for this report and strategy, which had a foundation in field experience and understanding significance.

4. Ability to demonstrate that work under any approvals previously granted by the Heritage Council has been completed in accordance with the conditions of that approval and the final report has been submitted to the Heritage Council.

All reports for which I have been nominated Primary Excavation Director have been submitted within the time stipulated in the approval. I have written many other reports as Secondary Excavation Director which are still awaiting review by the Primary ED (Dr Mary Casey, Director Casey & Lowe).

5. ADDITIONAL INFORMATION: PERMITS HELD UNDER THE HERITAGE ACT 1977:

Primary Excavation Director:

- S140/2021/012 Excavation Permit- S140 for archaeological monitoring and testing at Mudies Creek, Golden Highway Upgrade, Wittingham.
- 2018/s140/035 Prince of Wales Hospital Randwick Campus Redevelopment, Casey & Lowe
- 2014/s140 Ascham School Redevelopment; Artefact Heritage Services
- 2014/s140 2 Morton Street, Parramatta; Artefact Heritage Services
- 2013/s139 2 Morton Street, Parramatta; Artefact Heritage Services
- 2014/s139 Church Street Mall Redevelopment, Parramatta; Artefact Heritage Services
- 2013/s57 Oatley Station Redevelopment; Artefact Heritage Services

Secondary Excavation Director:

- S140/2020/004 85-97 Macquarie Street, Parramatta NSW 2150, Casey & Lowe
- 2019/s140/026 7PS &Parramatta Square Parramatta, Casey & Lowe
- 2019/S140/018 37-39 Smith Street Parramatta, Casey & Lowe
- s60/2019/038 (Norma Parker Correctional Centre SHR 000811), Casey & Lowe
- s60/2019/037 (Cumberland District Hospital Group SHR 000820), Casey & Lowe
- 2018/s140/019 47-53 Wentworth Ave, Surry Hills, Casey & Lowe
- 2017/s60/31 (Norma Parker Correctional Centre SHR 00811), Casey & Lowe
- 2016/s65a/30B (Cumberland District Hospital Group SHR 00820), Casey & Lowe
- 2016/s65a/31B (Norma Parker Correctional Centre SHR 00811), Casey & Lowe
- 2016/s65a/32B (Parramatta Correctional Centre SHR 00812), Casey & Lowe
- 2016/s140/11 Mount Pleasant Farm, Soling Crescent, Cranebrook; Casey & Lowe
- 2015/s140/29 Darling Harbour Live - Darling Square South East Plot, cnr Hay and Haymarket Streets, Haymarket, Casey & Lowe
- 2014/s140/04 Bicentennial Square (Church Street Mall), 188 Church Street Parramatta, Artefact Heritage Services

6. ADDITIONAL INFORMATION: SELECTED REPORTS

The following are reports that have either been authored solely by me, or to which I have made a significant and meaningful contribution (synthesis, analysis, assessment of potential and significance, recommendations or reporting of results). This list is not exhaustive, but provides a selection of reports from the last 10 years.

AMBS (2021a) *Addendum to Mudies Creek Golden Highway Upgrade Historical Archaeological Assessment S140 Application, Statement of Heritage Impact and Archaeological Research Design*, Report to SMEC on behalf of Transport for NSW.

AMBS (2021b) *Barangaroo Metro Station Construct Only Package (COP) Historical Archaeological Method Statement*, Report to BESIX Watpac May 2021.

AMBS (2021c) *Golden Highway Upgrade, Mudies Creek, Historical Archaeological Assessment*, Report to SMEC on behalf of Transport for NSW.

AMBS (2021d) *Sydney Gateway Road Project, Historical Archaeological Assessment & Research Design*, Report to John Holland.

AMBS (2021e) *Sydney Gateway Road Project Non-Aboriginal Heritage Management Sub Plan*, Report to John Holland Seymour Whyte Joint Venture on behalf of Transport for NSW.

AMBS (2021f) *Sydney Metro Baranagaroo COP Works Heritage Sub Management Plan*, Report to BESIX Watpac on behalf of TfNSW.

AMBS (2021g) *Sydney Metro Barangaroo COP Works Aboriginal Archaeological Method Statement*, Report to BESIX Watpac May 2021.

AMBS (2021h) *The Rocks Police Station, Historical Archaeological Assessment*, Report to Tanner Kibble Denton Architects (TKD).

Artefact Heritage (2014) *2 Morton Street Parramatta Non-Indigenous Archaeological Excavation*, Report to RCP.

Artefact Heritage (2015a) *Ascham School Redevelopment: Non-Indigenous Archaeological Excavation and Monitoring*, Report to EPM.

Artefact Heritage (2015b) *East Balmain Wharf Turning Circle Non-Indigenous Archaeological Assessment*, Report to Transport for NSW.

Artefact Heritage (2015c) *Old Parramatta Gaol Switching Station Archaeological Monitoring Report*, Report to Endeavour Energy.

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Corporation.

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TEST EXCAVATION

LOCAL SIGNIFICANCE

1. EXCAVATION DIRECTOR NEEDS TO DEMONSTRATE HIS/HER UNDERSTANDING OF THE MEANING (DATE, TYPE, COMMON APPLICATION IN THE PAST) OF BASIC FABRIC TYPES LIKELY TO BE ENCOUNTERED

I have managed and directed the excavation of a variety of historical archaeology sites in NSW including institutions, residences, industries, and convict sites. These site types all have different material signatures, and in practice many of them overlap in their own idiosyncratic way.

I understand that structural fabrics and techniques can be critical to dating a site, particularly in identifying modifications to a building or separating phases of construction. During archaeological testing at SHR 00820 Cumberland Hospital (2016-2017 Parramatta North Program), identification of building fabric was key to distinguishing early female factory remains from later institutions. Understanding the re-use value of certain fabrics was also critical in explaining their absence in an institutional environment that went through several phases of structural change and reconfiguration. The testing report which I wrote for this site demonstrates my knowledge of a variety of fabrics and construction and engineering techniques, which had to be recognised in small test trenches that contained multi-phase remains.

I understand that artefact types and uses can also be critical in the interpretation of a site, and can affect significance assessments during excavation as described in the example from item 2 above. This case demonstrates that the relationship between fabric/type and context must be considered because traditional analyses of fabric, function and type alone may exclude some values. This was equally true for objects recovered

from the sub-floor cavity of the former Criminal Ward of the Parramatta Lunatic Asylum/Hospital for the Insane at SHR 00820 during the same testing program. The institutional and penal nature of the building meant that objects had to be considered in terms of their contraband/dual use value which transcended traditional type/function analysis.

2. EXCAVATION DIRECTOR NEEDS TO DEMONSTRATE HIS/HER ABILITY TO RECOGNISE AND INTERPRET TAPHONOMIC PROCESSES AND HIS/HER MEANING.

I have managed and directed many sites for which an understanding of site formation processes is critical. At Darling Square, South East Plot, which I managed and wrote the excavation report for (2020), this involved interpretation of estuarine mudflats including the synthesis of RXF data, artefact dating and stratigraphic relationships to create a new narrative for land creation and residential subdivision at the site. These were large scale processes over long time periods that were discussed along with the day-to day data of the residential archaeology. My synthesis was able to incorporate a discussion of dramatic environmental change side by side with the relatively micro-timescales of decades and years that were discernible in the formation of underfloor deposits and building alterations.

I have also demonstrated the value of experimental archaeology on taphonomic processes for specific conditions, as at Cuddie Springs megafauna site, Brewarrina for Dr. Judith Field, University of Sydney, in 2003-2005. The site contains the remains of megafauna accumulated over several thousand years. The site showed negative selection against the preservation of certain skeletal elements, as well as unusual orientation of some bones. I conducted an archaeological experiment to test taphonomic processes at nearby Brewon Station, where a considerable number of native and domesticated animals had died in similar conditions. The experiment considered the varying morphology of the animals whose remains were preserved at the tank, the positions of the bones, known scavengers in the area, as well as dessication and articulation. The experiment showed that the skeletal morphology of the animal often affected what elements were preserved, and in what position. Scavenger preference for certain body parts also contributed significantly to the results of the taphonomic process.

3. EXCAVATION DIRECTOR NEEDS TO DEMONSTRATE HIS/HER ABILITY TO COMPLETE ADEQUATE RECORDING OF STRATIGRAPHY, SOILS, FEATURES WITHOUT NEEDING TO RE- EXCAVATE PREVIOUS TRENCHES;

AND

4. EXCAVATION DIRECTOR NEEDS TO DEMONSTRATE HIS/HER ABILITY TO PREPARE A REPORT THAT CLEARLY IDENTIFIES WHAT WAS DONE, WHY, WHAT NEW INFORMATION WAS RECOVERED AND WHAT IT MEANS.

I have written many testing reports which demonstrate this. The best example is 2 Morton Street, Parramatta (Artefact Heritage 2014), because the testing strategy was written by me, the testing was directed by me, the testing report was written by me, the research design for open area excavation was written by me, the open area excavation was directed by me (primary ED), and the final excavation report was written by me. The whole process and combined reports demonstrate my ability to design a testing strategy, undertake testing, recognise what the results mean and design an appropriate open area excavation strategy based on the results.

STATE SIGNIFICANCE

1. EXCAVATION DIRECTOR NEEDS TO DEMONSTRATE HIS/HER ABILITY TO MANAGE/WORK WITHIN A MULTI-FACETED TEAM OF HERITAGE PROFESSIONALS;

Parramatta North Program, North Parramatta (Testing, AMS)

- Working closely with heritage architects, ecologists, arborists and engineers to manage the archaeological resource.

Barangaroo Metro Station (Open Area Excavation)

- Recovery of an 1830s boat with teams of maritime archaeologists, conservators and interpretation specialists.

Old Government House, Parramatta (Testing and Monitoring)

- Working closely with Government Architects Office to achieve suitable outcomes regarding heritage aesthetics and conservation of vegetation at the site

Graythwaite House (Monitoring)

- Working with the Shore School and Robyn Stocks to create an interpretive environment incorporating archaeology from the site

MCA (Monitoring)

- Liaising with Monique Galloway and Wayne Johnson of the Sydney Harbour Foreshore Authority regarding conservation of building materials on and off site

Cockatoo Island (Excavation) and Macquarie Lightstation (Monitoring)

- Liaising with Libby Bennett of Sydney Harbour Federation Trust to achieve suitable interpretation outcomes

Cuddie Springs (Open Area Excavation)

- Working with conservators and paleontologists of The Australian Museum to effectively manage excavation of sensitive and poorly preserved items

2. EXCAVATION DIRECTOR NEEDS TO DEMONSTRATE HIS/HER COMMITMENT TO OPERATING WITHIN THE PRINCIPLES OUTLINED IN RELEVANT HERITAGE COUNCIL'S GUIDELINES AND POLICIES, INCLUDING BUT NOT LIMITED TO: HISTORICAL ARCHAEOLOGY CODE OF PRACTICE AND THE BURRA CHARTER

The example of managing the project at 2 Morton Street Parramatta (Artefact Heritage 2014), from assessment through research design, testing and excavation, writing all reports, liaising with client, the NSW Heritage Office, designing and executing budget, and directing all excavation demonstrates a commitment to the principles of the Historical Archaeology Code of Practice and the Burra Charter.

MONITORING

LOCAL SIGNIFICANCE

1. PREVIOUS EXPERIENCE WITH AND DEMONSTRATED UNDERSTANDING OF HOW TO USE A MACHINE EXCAVATOR EFFECTIVELY AND SAFELY;
AND
2. DEMONSTRATED ABILITY TO UNDERSTAND WHEN IT IS NECESSARY TO CHANGE FROM MACHINE TO MANUAL INVESTIGATION.

- 30-tonne excavator – has the advantage of being very stable, giving more accuracy under certain conditions (able to remove 100mm steadily in compact industrial fills). Used at Darling Walk Area 6, Area 8, Area 4
- 4-tonne excavator – easy to communicate with the operator. High maneouverability. Low impact. Used at many sites including Old Government House, Parramatta where it was able to perform sensitive work around the portico.
- 13-tonne excavator – facilitates good communication and reasonable stability and manoeuvrability. Able to remove reasonably large volumes without having the power to damage large structures. Used in the vicinity of the 1850s sea wall at the MCA among other locations.

Knowing when to change from machine to manual investigation is different for every site, and can also depend on non-archaeological factors such as services or toxic contaminants. However, it is always best achieved through effective communication with the operator. I always discuss with the operator prior to excavation:

- the fabric we are likely to encounter
- the power of the excavator
- how the operator understands different types of resistance in terms of different deposits
- the type of bucket to be used
- how I will communicate to the operator when I want him or her to stop excavation
- where I will stand
- what he or she can see from the cab

- the manoeuvrability of the arm and bucket head

This ensures that I know the limitations of the machine and can make a call before it is too late. Many operators have a good sense of the fabric or the nature of the deposit they are excavating by the resistance that they get from the machine. This can often be an effective tool in informing when to change from machine to manual excavation as the operator is often aware of a change in resistance before the result is visible to the archaeologist.

LARGER SCALE / COMPLEX EXCAVATION

LOCAL SIGNIFICANCE

DOCUMENTATION SHOWING THE NOMINEE HAS BEEN APPROVED AS EXCAVATION DIRECTOR ON FIVE (5) OR MORE PRIOR PERMITS FOR EXCAVATION OF LESSER SCOPE SUCH AS ARCHAEOLOGICAL TESTING OR MONITORING PERMITS (AND/OR SECTION 63 APPROVALS)

I have been primary ED for 3 open area investigations of Local significance and one test excavation:

- 2018/s140/035 Prince of Wales Hospital Randwick Campus Redevelopment, Casey & Lowe (local significance, open area excavation)
- 2014/s140 Ascham School Redevelopment; Artefact Heritage Services (local significance, open area excavation)
- 2014/s140 2 Morton Street, Parramatta; Artefact Heritage Services (local significance, open area excavation)
- 2013/s139 2 Morton Street, Parramatta; Artefact Heritage Services (local significance, testing)

All reports for the above excavations have been submitted to Heritage NSW within the timeframe stipulated in the approval.

I have been secondary ED for the following State significant sites:

- S140/2020/004 85-97 Macquarie Street, Parramatta NSW 2150, Casey & Lowe
- 2019/s140/026 7PS &Parramatta Square Parramatta, Casey & Lowe
- 2019/S140/018 37-39 Smith Street Parramatta, Casey & Lowe
- s60/2019/038 (Norma Parker Correctional Centre SHR 000811), Casey & Lowe
- s60/2019/037 (Cumberland District Hospital Group SHR 000820), Casey & Lowe
- 2018/s140/019 47-53 Wentworth Ave, Surry Hills, Casey & Lowe
- 2017/s60/31 (Norma Parker Correctional Centre SHR 00811), Casey & Lowe
- 2016/s65a/30B (Cumberland District Hospital Group SHR 00820), Casey & Lowe
- 2016/s65a/31B (Norma Parker Correctional Centre SHR 00811), Casey & Lowe
- 2016/s65a/32B (Parramatta Correctional Centre SHR 00812), Casey & Lowe

EXCAVATION DIRECTOR NEEDS TO DEMONSTRATE HIS/HER EXPERIENCE AND/OR CLEAR EVIDENCE OF A CAPACITY TO:

(A) MANAGE PROJECT TIMEFRAMES, BUDGETS, CLIENT'S REQUIREMENTS;

The 2016-2017 PNUT testing program was delivered within the predicted timeframe in co-ordination with testing for heritage repairs, maintaining access to hospital buildings, avoiding live services, taking road possession, and working with NSW Health to ensure full operation of the facility. I was secondary Excavation Director on this project and was responsible for the excavation timeframes and co-ordination, interpretation of the archaeology, and the day to day running of the site.

AS WELL AS

(B) MANAGE COMMUNITY INTEREST/PUBLIC RELATIONS ISSUES;

At Prince of Wales Hospital Randwick Campus Redevelopment I initiated and facilitated community involvement in the interpretation process while the excavation was in progress. This had a few immediate and positive effects. It diffused negative sentiment by the community towards the development, it raised the profile of the developer in the community generally, and it was a rewarding experience for the local historical society.

MANAGE AND IMPLEMENT PERMIT CONDITIONS (WHEN TRIGGERED) INCLUDING RELATIONSHIP TO OTHER LEGISLATIVE REQUIREMENTS (E.G. ABORIGINAL HERITAGE LEGISLATION AND WORK HEALTH AND SAFETY LEGISLATION)

At Randwick Campus Redevelopment (2019) I was an Excavation Director on a site where the historical archaeology was assessed as being locally significant. The site was located within a dune environment, which had been assessed as being a highly sensitive landscape for Aboriginal archaeology. Another consultant was managing the Aboriginal archaeology. There were several legislative considerations that influenced the way that the site was to be excavated:

- The project was awaiting SSD determination
- The Aboriginal archaeology was intended to be managed under the conditions of the SSD, eliminating the need for approval under the NPW Act
- The investigation and removal of the historical archaeology was covered by an s140 approval
- An AHIP (for testing only) had been issued for one part of the site
- An early works DA for demolition and excavation of peripheral areas had been approved by Council and did not require an AHIP

This meant that early works could proceed, and the historical archaeological excavation could get under way. However, the Aboriginal archaeological investigations were limited to testing in one part of the site.
The historical archaeology that I was managing was situated on the dune sands. The location of the historical archaeology corresponded to the part of the site for which the AHIP had been issued, and our works were able to proceed and be managed under the conditions of the AHIP where parts of the dune risked being disturbed. This project required me to be highly aware of the various statutory controls and planning instruments in place and how the Acts related to the planning pathway.

AND
EXCAVATION DIRECTOR NEEDS TO DEMONSTRATE HIS/HER ABILITY TO SYNTHESISE EXCAVATION AND POST EXCAVATION ANALYSIS/HISTORICAL RESEARCH INTO A REPORT THAT RESPONDS TO IDENTIFIED RESEARCH QUESTIONS AND MAKES A POSITIVE CONTRIBUTION TO COMMUNITY UNDERSTANDING OF THE HISTORY AND SIGNIFICANCE OF THE PLACE.

I have written many excavation reports for sites that in themselves lack self-evident meaning, or lack easily interpretable archaeology. However, my ability to synthesise historical records, environmental data, theoretical concepts and shifts in social attitudes has resulted in successful outcomes that are able to bring new perspectives to sites through the interpretation of the archaeology. A recent example of this is the excavation report for Darling Harbour Live: Darling Square South East Plot. Excavation revealed that most of the anticipated residential and industrial archaeology had been removed from the site. However, synthesis of the artefact data from the reclamation and interpretation of the environmental results from boreholes and excavation combined with historical accounts of the area resulted in a change in the narrative of subdivision and reclamation at the site, contradicting contemporary map and survey records and revealing clues to the squalid living conditions and piecemeal approaches to foreshore reclamation that occurred at the head of the bay.

STATE SIGNIFICANCE

EXCAVATION DIRECTOR NEEDS TO CLEARLY DEMONSTRATE HIS/HER UNDERSTANDING OF THE SIGNIFICANCE AND ARCHAEOLOGICAL RESEARCH POTENTIAL OF SITES OF STATE SIGNIFICANCE AND OF THE LOSS OF INFORMATION THAT CAN BE INCURRED BY APPLICATION OF LESS THAN BEST PRACTICE AND/OR RIGOROUS METHODS BOTH ON-SITE AND DURING PREPARATION OFF SITE (INCLUDING REVIEWS OF THE SITE ASSESSMENT).
AND
EXCAVATION DIRECTOR NEEDS TO CLEARLY DEMONSTRATE HIS/HER EXPERIENCE IN PROJECT MANAGEMENT OF ON-SITE INTERPRETATION.

As discussed above, I have a demonstrated understanding of the need to constantly re-assess significance and strategy during excavation, and have shown that I understand the loss that can occur if a reflexive and adaptive attitude is not adopted by the ED. I have shown that I understand when to change tactic and methodology to ensure the best archaeological outcomes. I have also demonstrated that I understand archaeological significance to be values-based and highly contextual, and have shown this in the context of the excavation of a State significant site.

I have been secondary excavation director on 6 testing permits in SHR items 00811 and 00820, which contain State and nationally significant archaeology. Conditions of all of the permits for these sites indicated that State significant archaeology was not to be disturbed. The Primary ED was on call but was not present on site during excavation. This required me to identify and interpret State significant archaeology in each case without disturbing it, which I was able to do and which is demonstrated most clearly in the PNUT Testing Report (2017). I have shown that I can identify, interpret and understand significance in the field, and understand how significance is represented in archaeological contexts and objects. This has been demonstrated in previous sections, particularly item 2, page 1.

At Cockatoo Island (2009-2010) I worked on site with Libby Bennett of Sydney Harbour Trust during excavation of the convict solitary cells, tanks and cookhouse to achieve good interpretation outcomes. This required an excavation strategy that responded to the exposure of contemporary phases across the three features that were evocative and that also satisfied research and conservation requirements.

Independently I have provided historical and archaeological interpretation advice to renowned Australian contemporary artist Mikala Dwyer on a number of projects including her work *An Apparition of a Subtraction (2010)* at the 17th Biennale of Sydney on Cockatoo Island, which incorporated waste material from the excavation of the solitary cells.

Appendix C
Compliance Matrix

Compliance Matrix

Table 5 Compliance Matrix – Consolidated Conditions of Approval

Condition	Requirement	Document Reference
C4	The CEMP sub-plans must state how: (a) the environmental performance outcomes identified in the EIS as amended by the documents listed in A1 will be achieved; (b) the mitigation measures identified in the EIS as amended by documents listed in A1 will be implemented; (c) the relevant terms of this approval will be complied with; and (d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.	(a) Table 7 (b) **Error! Reference source not found.** (c) Appendix C (d) Table 3
C5	The CEMP sub-plans must be developed in consultation with relevant government agencies. Where an agency(ies) request(s) is not included, the Proponent must provide the Secretary justification as to why. Details of all information requested by an agency to be included in a CEMP sub-plan as a result of consultation and copies of all correspondence from those agencies, must be provided with the relevant CEMP sub-plan.	Appendix D
C8	Construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the Secretary, including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration sub-plan), must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary.	Section 1.4
E10	The Proponent must not destroy, modify or otherwise physically affect any Heritage item not identified in documents referred to in Condition A1.	Section 3
E13	The Proponent must prepare a Heritage Archival Recording Report, including photographic recording of the heritage items identified in documents referred to in Condition A1. Archival recording must include but not be limited to the following heritage items: (a) any component of the Blues Point Waterfront Group and the McMahons Point South heritage conservation area to be directly affected or altered, including vegetation and significant landscape features; (b) Hickson Road wall in the vicinity of proposed ventilation risers and skylights for Barangaroo Station or any other project elements to be located in front of the Hickson Road wall; (c) Martin Place, between Elizabeth and Castlereagh Streets, Sydney; (d) the Rolling Stock Officers' Garden, Rolling Stock Officers' Building and Cleaners' Amenities Building in Sydney Yard and any other component of the Sydney Terminal and Central Railway Stations group to be removed or altered; (e) any component of Sydenham Station or Sydenham Pit and Pumping Station to be removed or altered; (f) views from Mortuary Station before construction of the Sydney Yard Access Bridge; and (g) Former "Metro Goldwyn Mayer' building including interior, 22-28 Chalmers Street, Surry Hills. The archival recording must be undertaken by a suitably qualified heritage specialist and prepared in accordance with NSW Heritage Office's How to Prepare Archival Records of Heritage Items (1998) and Photographic Recording of Heritage Items Using Film or Digital Capture (2006). Within two (2) years of completing the archival recording, or any other later time agreed by the Secretary, the Proponent must submit the Heritage Archival Recording Report to the Department, the OEH, Heritage Council of	Only Item (b) is applicable to this project. Archival recording of this item has already been undertaken by Sydney Metro. 4.1.2.1

Condition	Requirement	Document Reference
	NSW, Relevant Council(s), relevant local libraries and local historical societies in the respective local government area(s).	
E14	In addition to the archival recording as required by Condition E13, the Proponent must, prior to demolition, undertake external photography of all buildings and structures to be demolished, in consultation with and to the standards of the relevant Council. The recordings must be made available to the relevant Council.	Not relevant to this plan. No buildings or structures are being demolished during construction
E15	The Proponent must salvage items of heritage value from heritage listed buildings and structures to be demolished before demolition, and assess options for its sympathetic reuse (including integrated heritage displays) on the project or other options for repository, reuse and display. Suitable repository locations must be established in consultation with Relevant Council(s). Any State listed items or elements suitable for salvage must be determined in consultation with the Heritage Division of the OEH.	Not relevant to this plan. No buildings or structures are being demolished during construction
E16	The Proponent must prepare a Salvage Report, including photographic recording of the heritage items identified for salvage in Condition A1. The Salvage Report must include: a) the internal heritage fabric removed from within the curtilage of Mowbray House, Chatswood; b) the interior, exterior and setting of the shop at 187 Miller Street, North Sydney; c) the fabric and setting of the North Sydney bus shelters; d) the interior, exterior and setting of the 'Flat Building' at 7 Elizabeth Street, Sydney; e) the heritage fabric of the existing Martin Place Station affected by the project; f) the heritage fabric of the existing Sydenham Station affected by the project; g) directly impacted parts of the Congregational Church at Waterloo; and the former 'Metro Goldwyn Mayer' building including interior, 22-28 Chalmers Street, Surry Hills.	Not relevant to this plan.
E17	The Archaeological Assessment Research Design Report (AARD) in the documents listed in PIR must be implemented. Final Archaeological Method Statements must be prepared in consultation with the Heritage Council of NSW (or its delegate) before commencement of archaeological excavation works. The final methodology must: (a) provide for the detailed analysis of any heritage items discovered during the investigations; (b) include detailed site specific archaeological management and artefact management strategies; (c) include cored soil samples for soil and pollen for the Pitt Street site within the Tank Stream Valley; and (d) provide for a sieving strategy.	Historical and Aboriginal Archaeological Method Statements provided with this Plan Section 6, Section 8.1.2
E18	Before excavation of archaeological management sites, the Proponent must nominate a suitably qualified Excavation Director who complies with the Heritage Council of NSW's Criteria for Assessment of Excavation Directors (July 2011) to oversee and advise on matters associated with historic archaeology and advise the Department and OEH. Where archaeological excavation is required, the Excavation Director must be present to oversee excavation and advise on archaeological issues. The Excavation Director must be given the authority to advise on the duration and extent of oversight required as informed by the provisions of the approved AARD and Excavation Methodology. A final archaeological report must be submitted to the Heritage Council of NSW within two (2) years of the completion of archaeological excavation on	Section 5.1.1 and 7.1.4. Barangaroo is the only archaeological management site relevant to this report

Condition	Requirement	Document Reference
	the project. The report must include information on the entire historical archaeological program relating to the CSSI.	
E19	An Unexpected Heritage Finds Procedure must be prepared: (a) to manage unexpected heritage finds in accordance with any guidelines and standards prepared by the Heritage Council of NSW or OEH; and (b) by a suitably qualified and experienced heritage specialist. The procedure must be included in the AARD and must be implemented for the life of the project.	Sydney Metro Unexpected Heritage Finds Procedure [SM-18-00105232] Section 7 this plan
E20	In the event that a potential relic/s is/are discovered, relevant construction must cease in the affected area and the Excavation Director must be notified and assess the significance level of the find/s and provide mitigation advice according to the significance level and the impact proposed. The Excavation Director must attend the site in accordance with E18 to oversee the excavation where relics of State significance are found. The Secretary must be notified at the same time as the Heritage Council of NSW (or its delegate) of any relic of State significance found. An Archaeological Relic Management Plan specific to the relic of State significance must be prepared in consultation with the Heritage Council of NSW (or its delegate) to outline measures to be implemented to avoid and/or minimise harm to and/or salvage the relic of State significance. Construction in the vicinity of the discovery must not recommence until the requirements of the ARMP have been implemented, in consultation with the Excavation Director. The Proponent must notify the Secretary in writing of the outcome of consultation on the Archaeological Relic Management Plan with the Heritage Council of NSW.	Section 7 Unexpected heritage finds, Section 7.1.1 Archaeological Relics Management Plan, AMS
E21	The Proponent must prepare a Heritage Interpretation Plan which identifies and interprets the key Aboriginal and Non-Aboriginal heritage values and stories of heritage items and heritage conservation areas impacted by the CSSI. The Heritage Interpretation Plan must inform the Station Design and Precinct Plan referred to in Condition E101. The Heritage Interpretation Plan must be prepared in accordance with the NSW Heritage Manual, the NSW Heritage Office's Interpreting Heritage Places and Items: Guidelines (August 2005), and the NSW Heritage Council's Heritage Interpretation Policy and include, but not be limited to: (a) a discussion of key interpretive themes, stories and messages proposed to interpret the history and significance of the affected heritage items and sections of heritage conservation areas including, but not limited to the Sydney Terminal and Central Railway Stations Group, Martin Place Station, Sydenham Station and Sydenham Pit and Drainage Pumping Station Precincts; (b) identification and confirmation of interpretive initiatives implemented to mitigate impacts to archaeological Relics, heritage items and conservation areas affected by the CSSI including; i. use of interpretative hoardings during construction ii. community open days iii. community updates iv. station and precinct design; and (c) Aboriginal cultural and heritage values of the project area including the results of any archaeological investigations undertaken.	Section 9.2 Section 3.2.2
E23	The Proponent must take all reasonable steps so as not to harm, modify or otherwise impact any Aboriginal object associated with the CSSI except as authorised by this approval.	Section 6.5 Heritage induction Section 8.1.2
E24	Before excavation, the Proponent must implement the Aboriginal Cultural Heritage Assessment prepared for the CSSI and included in the PIR. Excavation and/or salvage must be undertaken by a qualified archaeologist in consultation with the Registered Aboriginal Parties for the CSSI.	Section 6.0 Aboriginal AMS prepared in accordance with ACHA, 6.1 Excavation Director
E25	Where previously unidentified Aboriginal objects are discovered during construction of the CSSI, construction must stop in the vicinity of the affected area and a suitably qualified and experienced Aboriginal heritage expert must	Section 6.3 Unexpected heritage finds

Condition	Requirement	Document Reference
	be contacted to provide specialist heritage advice, before works recommence. The measures to consider and manage this process must be specified in the Heritage Management sub-plan required by Condition C3 and, where relevant, include registration in the OEH's Aboriginal Heritage Information Management System (AHIMS).	
E26	This approval does not allow the Proponent to harm, modify, or otherwise impact human remains uncovered during the construction and operation of the CSSI, except in accordance with the Exhumation Management Plan (Condition E27).	6.3 Unexpected heritage finds 8.5 Exhumation Management
E27	An Exhumation Management Plan must be prepared to guide the relocation of recovered human remains. The Exhumation Management Plan must be prepared: (a) in consultation with, and meeting the requirements of, the OEH and NSW Health; and (b) in accordance with the Guidelines for Management of Human Skeletal Remains (NSW Heritage Office, 1998b) and NSW Health Policy Directive – Exhumation of human remains (December, 2013), and other relevant guidelines and standards prepared by the Heritage Council of NSW or OEH. The Exhumation Management Plan must be provided to the Secretary for information before the commencement of excavation works. Note: Human remains that are found unexpectedly during works are under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately	Section 8.5 : Sydney Metro Exhumation Management Plan to be implemented in event of human remains being uncovered.
E30	The Proponent must conduct vibration testing before and during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic damage. In the event that the vibration testing and monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures.	Section 4.1 and addressed in the CNVMP
E31	The Proponent must seek the advice of a heritage specialist on methods and locations for installing equipment used for vibration, movement and noise monitoring of heritage-listed structures	Section 4

Table 6 Revised Environmental Mitigation Measures (REMMs)

Condition	Requirement	
NAH1	Archival recording and reporting of the following heritage items would be carried out in accordance with the NSW Heritage Office's How to Prepare Archival Records of Heritage Items (1998a), and Photographic Recording of Heritage Items Using Film or Digital Capture (2006): • The internal heritage fabric and any non-original elements removed from within the curtilage of Mowbray House, Chatswood • The interior, exterior and setting of the shop at 187 Miller Street, North Sydney • The fabric and setting of the North Sydney bus shelters requiring removal and temporary relocation at Victoria Cross Station and Blues Point temporary site • Any component of the Blues Point Waterfront Group and the McMahons Point South heritage conservation area to be directly affected or altered, including vegetation and significant landscape features • Hickson Road wall in the vicinity of proposed ventilation risers and skylights for Barangaroo Station • The interior, exterior and setting of the 'Flat Building' at 7 Elizabeth Street, Sydney • Martin Place, between Elizabeth and Castlereagh streets, Sydney • The heritage fabric of areas of the existing Martin Place Station affected by the project • The Rolling Stock Officers Garden, Rolling Stock Officers Building and Cleaners Amenities Building in Sydney Yard and any other component of the Sydney Terminal and Central Railway Stations group to be removed or altered • The Bounce Hostel building (former MGM building) • Directly impacted parts of the Congregational Church at Waterloo	Archival recording and reporting has previously been undertaken by Sydney Metro as outlined in 4.3.1.

	• Sydenham Pit and Drainage Pumping Station 1 • Sydenham Railway Station Group: Platform 6 building and Platform 1 Parcels Office	
NAH2	The archaeological research design would be implemented. Significant archaeological findings would be considered for inclusion in heritage interpretation (as per NAH8) for the project and be developed in consultation with the relevant local council.	To be undertaken in accordance with Sydney Metro City and Southwest Heritage Interpretation Plan [SM ES-PW-316/1.0] Section 9.1.2
NAH3	An Exhumation Policy and Guideline would be prepared and implemented. It would be developed in accordance with the Guidelines for Management of Human Skeletal Remains (NSW Heritage Office, 1998b) and NSW Health Policy Directive – Exhumation of human remains (December, 2013). It would be prepared in consultation with NSW Heritage Office and NSW Health.	Sydney Metro Exhumation Management Plan to be implemented in event of human remains being uncovered. Section 7 and 8.1.4
NAH4	The method for the demolition of existing buildings and / or structures at Chatswood dive site, Victoria Cross Station, Martin Place Station, Pitt Street Station, Central Station, Waterloo Station and Sydenham Station would be developed to minimise direct and indirect impacts to adjacent and / or adjoining heritage items.	Not relevant to this plan
NAH5	Prior to total or partial demolition of heritage items at Victoria Cross and Martin Place stations, and the Bounce Hostel building (former MGM building at Central Station), heritage fabric for salvage would be identified and reuse opportunities for salvaged fabric considered. This would include salvage and reuse of heritage tiles to be impacted at Martin Place Station.	Not relevant to this plan
NAH6	An appropriately qualified and experienced heritage architect would form part of the Sydney Metro Design Review Panel and would provide independent review periodically throughout detailed design.	Section 3.2.2
NAH7	The project design would be sympathetic to heritage items and, where reasonable and feasible, minimise impacts to the setting of heritage items. The detailed design for Martin Place Station and Central Station, Sydenham Station and the aqueduct over the Sydenham Pit and Drainage Pumping Station would be developed with input from a heritage architect.	Not relevant to this plan
NAH8	Appropriate heritage interpretation would be incorporated into the design for the project in accordance with the NSW Heritage Manual, the NSW Heritage Office's Interpreting Heritage Places and Items: Guidelines (August 2005), and the NSW Heritage Council's Heritage Interpretation Policy.	Section 3.2.2
NAH9	A Central Station heritage interpretation plan would be developed and implemented. It would be consistent with the Central Station Conservation Management Plan (Rappoport and Government Architects Office, 2013) and in accordance with the guidelines identified in NAH8.	Not relevant to this plan
NAH10	The detailed design of the Sydney Yard Access Bridge would be carried out in accordance with the relevant specific element principles in the Design Guidelines.	Not relevant to this plan
NAH11	Except for heritage significant elements affected by the project, direct impact on other heritage significant elements forming part of the following items would be avoided: • The Blues Point Waterfront Group (including the former tram turning circle, stone retaining wall, bollards and steps) • The Millers Point and Dawes Point Village Precinct • The existing Martin Place Station • Sydney Terminal and Central Railway Stations group • Sydney Yard (including the Shunters Hut and Prince Alfred Sewer). • The existing Sydenham Station • Brick retaining walls near Sydenham Station.	The Miller's Point and Dawes Point Village Precinct is relevant to this project. Refer to Section 4.1 Adjacent Historic Heritage Items
NAH12	Power supply works would be designed and constructed to avoid impacts to the Tank Stream and Bennelong Stormwater Channel.	Not relevant to this plan
NAH13	The design and detailed construction planning of work at Central Station would consider the requirements of the Central Station Conservation Management Plan (Rappoport and Government Architects Office, 2013) and include consideration of opportunities for the retention, conservation and / or reuse of original and significant heritage fabric and movable heritage items. Consultation would be carried out with Sydney Trains and the Heritage Council of NSW during design development.	Not relevant to this plan
NAH14	The final design and location of the new connection and opening at Martin Place Railway Station would minimise removal of the significant red ceramic tiling where feasible and reasonable.	Not relevant to this plan

NAH15	Opportunities for the reuse of any tiles at Martin Place Railway Station that are removed would be investigated.	Not relevant to this plan
NAH16	Opportunities for the reuse of the circular seating within Martin Place Station would be investigated.	Not relevant to this plan
NAH17	Opportunities for the salvage and reuse of the bus shelters temporarily removed at Victoria Cross and Blues Point would be investigated in consultation with North Sydney Council.	Not relevant to this plan
NAH18	Works at Central Station would be carried out with the oversight of heritage specialists.	Not relevant to this plan
NAH19	Subject to outcomes of consultation with the church, temporary and permanent works at the Congregational Church would: › Minimise impacts to heritage fabric › Be sympathetic to the heritage values and architectural form of the building.	Not relevant to this plan
AH1	Aboriginal stakeholder consultation would be carried out in accordance with the NSW Office of Environment and Heritage's Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.	Section 2.1.5
AH2	The cultural heritage assessment report would be implemented.	Section 8.1.3 Scope of Aboriginal archaeological investigation
AH3	Archaeological test excavation (and salvage when required) would be carried out where intact natural soil profiles with the potential to contain significant archaeological deposits are encountered at the Blues Point temporary site, Barangaroo Station, Martin Place Station, Pitt Street Station, Central Station, Waterloo Station and Marrickville dive site. Excavations would be conducted in accordance with the methodology outlined in the Aboriginal cultural heritage assessment report	Section 8.1.3 Scope of Aboriginal archaeological investigation
AH3	Appropriate Aboriginal heritage interpretation would be incorporated into the design for the project in consultation with Aboriginal stakeholders.	Section 9.1.2

Table 6 Construction Environmental Framework (CEMF)

Condition	Requirement	Document Reference
10.1	Heritage Management Objectives a. The following heritage management objectives will apply to construction: i. Embed significant heritage values through any architectural design, education or physical interpretation; ii. Minimise impacts on items or places of heritage value; iii. Avoid accidental impacts on heritage items; and iv. Maximise worker's awareness of indigenous and non-indigenous heritage.	i: Section 9.2 ii: Table 3 in Section 4 iii: Section 6.1.2 and 8.1.7 Heritage induction
10.2	Heritage Management Implementation a. Principal Contractors will develop and implement a Heritage Management Plan which will include as a minimum: i. Evidence of consultation with Registered Aboriginal Parties and the NSW Heritage Council; ii. Identify initiatives that will be implemented for the enhancement of heritage values and minimisation of heritage impacts, including procedures and processes that will be used to implement and document heritage management initiatives; iii. The heritage mitigation measures as detailed in the environmental approval documentation; iv. The responsibilities of key project personnel with respect to the implementation of the plan; v. Procedures for interpretation of heritage values uncovered through salvage or excavation during detailed design; vi. Procedures for undertaking salvage or excavation of heritage relics or sites (where relevant), consistent with and any recordings of heritage relics prior to works commencing that would affect them; vii. Details for the short and / or long term management of artefacts or movable heritage; viii. Details of management measures to be implemented to prevent and minimise impacts on heritage items (including further heritage investigations, archival recordings and/or measures to protect unaffected sites during construction works in the vicinity); ix. Procedures for unexpected heritage finds, including procedures for dealing with human remains; x. Heritage monitoring requirements; and xi. Compliance record generation and management.	i: Section 2.1.5 ii: Section 9.2 and the Sydney Metro City and Southwest Heritage Interpretation Plan (Section 5.6) iii: Section 1.1 iv: Sections 5.1.1,8.1.1 and Table 1 in Section 2.4 v: Sydney Metro City and Southwest Heritage Interpretation Plan and Section 9.2 vi: Sections 6.1.1 and 8.1.3 and AMS vii: Section 9 viii: Section 4 ix: Section 7 and Appendix E x: Section 2.6.1 xi. Section 2.6.2 b. Section 2.6.1 c. Section 2.6.2

Condition	Requirement	Document Reference
	b. The Contractor's regular inspections will include checking of heritage mitigation measures. c. Compliance records will be retained by the Contractor. These will include: i. Inspections undertaken in relation to heritage management measures; ii. Archival recordings undertaken of any heritage item; iii. Unexpected finds and stop work orders; and iv. Records of any impacts avoided or minimised through design or construction methods.	
10.3	Heritage Mitigation a. Examples of heritage mitigation measures include: i. Any heritage item not affected by the works will be retained and protected throughout construction; ii. During construction undertake professional archaeological investigation, excavation, and reporting of any historical Indigenous heritage sites of state significance which will be affected. Reporting may be completed as construction progresses; iii. Undertake archival recordings of all non-Indigenous heritage items affected by the works prior to commencement of works; and iv. Implement unexpected heritage find procedures for Indigenous and non-Indigenous heritage items.	i. Section 4.1.1 ii: Sections 6.1.1 and 8.1.3 iii: Section 4.3 iv: Follow Sydney Metro Unexpected Heritage Finds Procedure [SM-18-00105232] and Section 7

Table 7 Revised Environmental Performance Outcomes

Condition	Document Reference
Non-Aboriginal Heritage The Project would be sympathetic to heritage items and, where feasible and reasonable, avoid and minimise impacts to non-Aboriginal heritage items and archaeology	This Plan Section 4
The design of the project would reflect the input of an independent heritage architect, relevant stakeholder and the design review panel	Section 4
Aboriginal Heritage The project would be sympathetic to heritage items and, where feasible and reasonable, avoid and minimise impacts to Aboriginal heritage items and archaeology	Section 8
The design of the project would reflect the input of an independent heritage architect, relevant stakeholders and the design review panel	Section 4

Appendix D
Consultation Matrix

Table 8 Heritage Management Plan Consultation Matrix

Authority / Organisation	Contact(s)	Date Issued	Status
Heritage Management Plan – C3(g)			
Heritage Council (Heritage NSW)	[redacted]	[redacted]-06-21	The Heritage Council responded on 6th August 21 finding the Heritage Management Plan to be "fit for purpose" document.
City of Sydney Council	[redacted]	11-06-21	City of Sydney responded 6th of July 2021 finding the plan satisfactory (accepted)
Darug Land Observations	[redacted]	18-06-21	No comments received. Follow up phone call on the 9th of July 21 and email resent 9th of July 21 (overdue)
Murra Bidgee Mullangari Aboriginal Corporation	[redacted]	18-06-21	Endorsement received on the 21st of June 21 (accepted)
Tocomwall	[redacted]	18-06-21	Endorsement received on 14th July 21 (accepted)
Kamilaroi-Yankuntjatjara Working Group	[redacted]	18-06-21	Endorsement received on the 29th of June 21 (accepted)
Woronora Plateau Gundangarra Elders Council	[redacted]	18-06-21	No comments received. Follow up phone call on the 9th of July 21 and email resent 9th of July 21 (overdue)
Aboriginal Archaeology Service	[redacted]	18-06-21	No comments received. Follow up phone call on the 9th of July 21 and email resent 9th of July 21 (overdue)
Metropolitan Local Aboriginal Land Council	[redacted]	18-06-21	No comments received. Follow up phone call on the 9th of July 21 and email resent 9th of July 21 (overdue)
Gundungurra Tribal Technical Services	[redacted]	18-06-21	No comments received. Follow up phone call on the 9th of July 21 and email resent 9th of July 21 (overdue)
Darug Aboriginal Cultural Heritage Assessments	[redacted]	13-07-21	No comments received. Follow up phone call on the 20th of July 21. Plan issued by mail on 13th July 2021.
Bilinga Cultural Heritage Technical Services	[redacted]	18-06-21	No comments received. Follow up phone call on the 9th of July 21 and email resent 9th of July 21 (overdue)
Gunyuu Cultural Heritage Technical Services	[redacted]	18-06-21	No comments received. Follow up phone call on the 9th of July 21 and email resent 9th of July 21 (overdue)
Munyunga Cultural Heritage Technical Services	[redacted]	18-06-21	No comments received. Follow up phone call on the 9th of July 21 and email resent 9th of July 21 (overdue)
Wingikara Cultural Heritage Technical Services	[redacted]	18-06-21	No comments received. Follow up phone call on the 9th of July 21 and email resent 9th of July 21 (overdue)
Duncan Suey & Associates	[redacted]	18-06-21	No comments received. Follow up phone call on the 9th of July 21 and email resent 9th of July 21 (overdue)

Table 9 Heritage Management Plan Comment Log

Authority / Organisation Providing Comment	Date	Comment Received (Email)	Response
Murra Bidgee Mullangari Aboriginal Corporation	21-06-21	I have read the project information and Heritage Management Plan for the above project (Barangaroo). I endorse the recommendations made.	No action required
Tocomwall	14-07-21	Thank you for your time on the phone today regarding the Barangaroo Metro Station Heritage Management Plan. As advised, I reached out to Chris Langeluddecke, as you would be aware Chris was the consultant that provided the draft document that was sent to Tocomwall for review. After talking with Chris and having him go over his findings and recommendations for the Barangaroo Metro Station and to save time with responding, Tocomwall accepts and agrees with the recommendations contained within the Barangaroo Metro Station – Heritage Management Plan provided by Chris Langeluddecke.	No action required
Kamilaroi-Yankuntjatjara Working Group	29-06-21	Thank you for your HMP for Barangaroo Metro Station and associated civil and landscaping works. The whole study areas is highly important to us Aboriginal people. As we have walked this land for tens of thousands of years and continue to do so. We look to the skies for guidance and we follow the water ways, we care of the land as she cares of us. We would like to agree to your heritage management plan.	No action required
Heritage Council NSW	06-08-21	p. 8 relevant guidelines, should reference NSW Heritage Council's Criteria for Assessment of Excavation Directors (2019) as these are updated from the prior 2011 version. p.9 the Primary Excavation Director should be responsible for all archaeological works, so the identified responsibility for 'testing and monitoring of historical archaeological sites by secondary excavation/site director' is unclear	Comments adopted and HMP revised

Appendix E
Procedures & Plans

Sydney Metro Unexpected Heritage Finds Procedure

[SM-18-00105232]

Sydney Metro Integrated Management System (IMS)

Applicable to:	Sydney Metro
Document Owner:	Author/Document owner
System Owner:	IMS element owner (generally a member of the Executive)
Status:	Draft/Final
Version:	2.0
Date of issue:	19 March 2019
Review date:	22 March 2020

Table of contents

Figures

Tables

1. Purpose

This procedure is applicable to the Sydney Metro program of works including major projects delivered under Critical State Significant Infrastructure Planning Approvals (CSSI), early CSSI minor and enabling works and works that are subject to the NSW Heritage Act (1977) including s57/139 and s60/140 exemptions and permit approvals.

This procedure has been prepared for Sydney Metro programs to provide a method for managing unexpected heritage items (both Aboriginal and non-Aboriginal) that are discovered during preconstruction (pre-Construction Heritage Manage Plan approval), construction phases (post Construction Heritage Manage Plan approval) and for works subject to the NSW Heritage Act (1977).

An 'unexpected heritage find' can be defined as any unanticipated archaeological discovery, that has not been previously assessed or is not covered by an existing approval under the Heritage Act 1977 (Heritage Act) or National Parks and Wildlife Act 1974 (NPW Act).

In NSW, there are strict laws to protect and manage heritage objects and relics. As a result, appropriate heritage management measures need to be implemented to minimise impacts on heritage values; ensure compliance with relevant heritage notification and other obligations; and to minimise the risk of penalties to individuals, Sydney Metro and its contractors. This procedure includes Sydney Metro's heritage notification obligations under the Heritage Act, NPW Act and the Coroner's Act 2009 and the requirements of the conditions of approval(CoA) issued by NSW Department of Planning and Environment.
Note that a Contractor must not amend the Sydney Metro Unexpected Finds Procedure without the prior approval of Sydney Metro.

It should be noted that this procedure must be read in conjunction with the relevant CCSI conditionals of approval (if applicable), the contract documents and other plans including the Sydney Metro Exhumation Management Plan and procedures developed by the contractor during the delivery of the Sydney Metro works.

1.1. Legislation that does not apply

The following authorisations are not required for Sydney Metro approved Critical State Significant Infrastructure (and accordingly the provisions of any Act that prohibits an activity without such an authority do not apply):

- Division 8 of Part 6 of the Heritage Act 1977 does not apply to prevent or interfere with the carrying out of approved State significant infrastructure.
- An approval under Part 4, or an excavation permit under section 139, of the Heritage Act 1977,
- An Aboriginal heritage impact permit under section 90 of the National Parks and Wildlife Act 1974,

This document provides relevant background information in Section 4, followed by the technical procedure in Sections 6 and 7. Associated guidance referred to in the procedure can be found in Appendices 1-6.

2. Scope

Despite earlier investigation, unexpected heritage items may still be discovered during works on a Sydney Metro site. When this happens, this procedure must be followed. This procedure provides direction on when to stop work, where to seek technical advice and how to notify the regulator, if required.
This procedure **applies to**:

- the discovery of any unexpected heritage item, relic or object, where the find is not anticipated in an approved Archaeological Assessment Design Report (AARD) or Archaeological Method Statements (AMS) that are prepared as part of the planning approval for that project.

This procedure must be followed by all Sydney Metro staff, contractors, subcontractors or any person undertaking works for Sydney Metro. It includes references to some of the relevant legislative and regulatory requirements, but is not intended to replace them.
This procedure **does not apply** to:

- The discovery and disturbance of heritage items as a result of investigations being undertaken in accordance with the Office of Environment and Heritage's (OEH) *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW 2010*[1]; an Aboriginal Heritage Impact Permit (AHIP) issued under the NPW Act; or a permit approval issued under the Heritage Act.
- the discovery and disturbance of heritage items as a result of construction related activities, where the disturbance is permissible in accordance with an AHIP; or an approval issued under the Heritage Act or CSSI /CSSD planning approval;

3. Definitions

All terminology in this procedure is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

	Definitions
AHIP	Aboriginal Heritage Impact Permit
Aboriginal object	An Aboriginal object is any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains. An Aboriginal object may include a shell midden, stone tools, bones, rock art, Aboriginal-built fences and stockyards, scarred trees and the remains of fringe camps.
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
CSSD	Critical State Significant Development
CSSI	Critical State Significant Infrastructure
EP&A Act	**NSW *Environmental Planning and Assessment Act 1979***
Excavation	A person that complies with the Heritage Council of NSW's Criteria for Assessment of

[1] An act carried out in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* as published by the Department in the Gazette on 24 September 2010 is excluded from the definition of ***harm*** an object or place in section 5 (1) of the NPW Act.

Director	Excavation Directors (July 2011) to oversee and advise on matters associated with historic archaeology. Note this applies to a specific project/program and requires consultation and/or approval by OEH.
Heritage Act	NSW *Heritage Act 1977*
NPW Act	NSW *National Parks and Wildlife Act 1974*
OEH	Office of Environment and Heritage
SM	Sydney Metro
Relic (non-Aboriginal heritage)	A relic means any deposit, artefact, object or material evidence that: a) relates to the settlement of the area that comprises NSW, not being Aboriginal settlement, and b) is of State or local significance. A relic may include items such as bottles, utensils, remnants of clothing, crockery, personal effects, tools, machinery and domestic or industrial refuse.
TfNSW	Transport for New South Wales
Work (non-Aboriginal heritage)	Archaeological features such as historic utilities or buried infrastructure that provide evidence of prior occupations such as former rail or tram tracks, timber sleepers, kerbing, historic road pavement, fences, culverts, historic pavement, buried retaining walls, cisterns, conduits, sheds or building foundations, but are also subject to assessment by the Excavation Director to determine its classification

4. Types of unexpected heritage items and corresponding statutory protections

The roles of project, field and environmental personnel (including construction contractors) are critical to the early identification and protection of unexpected heritage items.

Appendix 1 illustrates the wide range of heritage discoveries found on Sydney Metro projects and provides a useful photographic guide. Subsequent to confirmation of a heritage discovery it must then be identified and assessed by Excavation Director. An 'unexpected heritage item' means any unanticipated discovery of an actual or potential heritage item, for which Sydney Metro does not have approval to disturb[2] and/or have an existing management process in place.

These discoveries are categorised as either:

(a) Aboriginal objects

(b) Historic (non-Aboriginal) heritage items

(c) Human skeletal remains.

The relevant legislation that applies to each of these categories is described below and is also addressed in the Sydney Metro Exhumation Management Plan).

4.1. Aboriginal objects

The NPW Act protects Aboriginal objects which are defined as:

[2] Disturbance is considered to be any physical interference with the item that results in it being destroyed, defaced, damaged, harmed, impacted or altered in any way (this includes archaeological investigation activities).

> *"any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains"*[3].

Examples of Aboriginal objects include stone tool artefacts, shell middens, axe grinding grooves, pigment or engraved rock art, burials and scarred trees.

IMPORTANT!

All Aboriginal objects, regardless of significance, are protected under law.

If any impact is expected to an Aboriginal object, an AHIP is usually required from OEH Also, when a person becomes aware of an Aboriginal object they must notify the Director-General of OEH about its location[4]. Assistance on how to do this is provided in Section 7 (Step 5).

4.2. Historic heritage items

Historic (non-Aboriginal) heritage items may include:

- Archaeological 'relics'
- Other historic items (i.e. works, structures, buildings or movable objects).

4.2.1. Archaeological relics

The Heritage Act protects *relics* which are defined as:

> "*any deposit, artefact, object or material evidence that relates to the settlement of the area that comprises NSW, not being Aboriginal settlement; and is of State or local heritage significance*"[5].

Relics are archaeological items of local or state significance which may relate to past domestic, industrial or agricultural activities in NSW, and can include bottles, remnants of clothing, pottery, building materials and general refuse.

IMPORTANT!

All relics are subject to statutory controls and protections.

If a relic is likely to be disturbed, a heritage approval is usually required from the NSW Heritage Council[6]. Also, when a person discovers a relic they must notify the NSW Heritage Council of its location[7].

4.2.2. Other historic items

Some historic heritage items are not considered to be 'relics', but are instead referred to as works, *buildings, structures or movable objects. Examples of these items that may be encountered include culverts, historic pavements, retaining walls, tramlines, rail tracks, timber sleepers, cisterns*, fences, sheds, buildings and conduits. Although an approval under the Heritage Act may not be required to disturb these items, their discovery must be managed in accordance with this procedure.

[3] Section 5(1) NPW Act.
[4] This is required under section 89(A) of the NPW Act and applies to all Sydney Metro projects.
[5] Section 4(1) Heritage Act.

[7] This is required under section 146 of the Heritage Act and applies to all Sydney Metro projects.

As a general rule, an archaeological relic requires discovery or examination through the act of excavation. For an unexpected find an archaeological excavation permit under section 140 of the Heritage Act may be required to do this. In contrast, 'other historic items' either exist above the ground surface (e.g. a shed), or they are designed to operate and exist beneath the ground surface (e.g. a culvert).

4.3. Human skeletal remains

Also refer to Sydney Metro Exhumation Management Plan for a more detailed explanation of the approval processes.

Human skeletal remains can be identified as either an Aboriginal object or non-Aboriginal relic depending on ancestry of the individual (Aboriginal or non-Aboriginal) and burial context (archaeological or non-archaeological). Remains are considered to be archaeological when the time elapsed since death is suspected of being 100 years or more. Depending on ancestry and context, different legislation applies.

As a simple example, a pre-European settlement archaeological Aboriginal burial would be protected under the NPW Act, while a historic (non-Aboriginal) archaeological burial within a cemetery would be protected under the Heritage Act. For a non-Aboriginal archaeological burial, the relevant heritage approval and notification requirement described in Section 3.1 would apply. In addition to the NPW Act, finding Aboriginal human remains also triggers notification requirements to the Commonwealth Minister for the Environment under section 20(1) of the Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth).

IMPORTANT!

All human skeletal remains are subject to statutory controls and protections.

All bones must be treated as potential human skeletal remains and work around them must stop while they are protected and investigated urgently.

However, where it is suspected that less than 100 years has elapsed since death, the human skeletal remains come under the jurisdiction of the State Coroner and the Coroners Act 2009 (NSW). Such a case would be considered a 'reportable death' and under legal notification obligations set out in section 35(2); a person must report the death to a police officer, a coroner or an assistant coroner as soon as possible. This applies to all human remains less than 100 years old8 regardless of ancestry (i.e. both Aboriginal and non-Aboriginal remains). Public health controls may also apply.

Guidance on what to do when suspected human remains are found is provided in Appendix 5.

5. Legislative Requirements

Table 1 identifies some of the relevant legislation/regulations for the protection of heritage and the management of unexpected heritage finds in NSW. It should be noted that significant

[8] Under section 19 of the *Coroners Act 2009*, the coroner has no jurisdiction to conduct an inquest into reportable death unless it appears to the coroner that (or that there is reasonable cause to suspect that) the death or suspected death occurred within the last 100 years.

penalties exist for breaches of the listed legislation as a result of actions that relate to unauthorised impacts on heritage items. Further, it is noted that heritage that has been assessed and is being managed in accordance with relevant statutory approvals(s) is exempt from these offences.

To avoid breaches of legislation, it is important that Sydney Metro and its contractors are aware of their statutory obligations under relevant legislation and that appropriate control measures are in place to ensure that unexpected heritage items are appropriately managed during construction. Contractors/Alliances will need to ensure that they undertake their own due diligence to identify any other legislative requirements that may apply for a given project.

Table 1 Legislation and guidelines for management of unexpected heritage finds

Relevant Requirement	Objectives and offences
Environmental Planning and Assessment Act 1979 (EP&A Act)	Section 115ZB Giving of approval by Minister to carry out a project.
Environmental Planning and Assessment Act 1979 (EP&A Act)	Requires heritage to be considered within the environmental impact assessment of projects. This guideline is based on the premise that an appropriate level of Aboriginal and non-Aboriginal cultural heritage assessment and investigations and mitigation have already been undertaken under the relevant legislation, including the EP&A Act, during the assessment and determination process. It also assumes that appropriate mitigation measures have been included in the conditions of any approval.
Heritage Act 1977 **(Heritage Act)**	The Heritage Act provides for the care, protection and management of heritage items in NSW. Under section 139, it is an offence to 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 issued by the Heritage Division of the OEH. Under the Act, a relic is defined as: *'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 heritage significance.'* A person must notify the Heritage Division of OEH, if a person is aware or believes that they have discovered or located a relic (section 146). Penalties for offences under the Heritage Act can include six months imprisonment and/or a fine of up to $1.1million.

Relevant Requirement	Objectives and offences
***National Parks and Wildlife Act 1974* (NPW Act)**	The NPW Act provides the basis for the care, protection and management of Aboriginal objects and places in NSW. An Aboriginal object is defined as: *'any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains'*. An 'Aboriginal place' is an area declared by the Minister administering the Act to be of special significance with respect to Aboriginal culture. An Aboriginal place does not have to contain physical evidence of occupation (such as Aboriginal objects). Under section 87 of the Act, it is an offence to harm or desecrate an Aboriginal object or place. There are strict liability offences. An offence cannot be upheld where the harm or desecration was authorised by an AHIP and the permit's conditions were not contravened. Defences and exemptions to the offence of harming an Aboriginal object or Aboriginal place are provided in section 87, 87A and 87B of the Act. A person must notify OEH if a person is aware of the location of an Aboriginal object. Penalties for some of the offences can include two years imprisonment and/or up to $550,000 (for individuals), and a maximum penalty of $1.1 million (for corporations).

6. Unexpected heritage finds protocol

6.1. What is an unexpected heritage find?

An 'unexpected heritage find' can be defined as any unanticipated archaeological discovery that has not been identified during a previous assessment or is not covered by an existing permit under the Heritage Act. The find may have potential cultural heritage value, which may require some type of statutory cultural heritage permit or notification if any interference of the heritage item is proposed or anticipated.

The range of potential archaeological discoveries can include but are not limited to:

- remains of rail infrastructure including buildings, footings, stations, signal boxes, rail lines, bridges and culverts
- remains of other infrastructure including sandstone or brick buildings, wells, cisterns, drainage services, conduits, old kerbing and pavement, former road surfaces, timber and stone culverts, bridge footings and retaining walls
- artefact scatters including clustering of broken and complete bottles, glass, ceramics, animal bones and clay pipes
- Archaeological human skeletal remains.

6.2. Managing unexpected heritage finds

In the event that an unexpected heritage find (the find) is encountered on a Sydney Metro site, the flowchart in Figure 1 must be followed. There are eight steps in the procedure. These steps are summarised in Figure 1 and explained in detail in Table 2.

Figure 1 Overview of steps to be undertaken on the discovery of an unexpected heritage item

IMPORTANT!

Sydney Metro may have approval to impact on certain heritage items during construction. If you think that you may have discovered a heritage item and you are unsure whether an approval is in place or not, **STOP** works and follow this procedure.

Table 2 Specific tasks to be implemented following the discovery of an unexpected heritage item

Step	Task	Responsibility	Guidance and tools
1	**Stop work, protect item and inform the Excavation Director**		
1.1	Stop all work in the immediate area of the item and notify the Project Manager	Contractor/ Supervisor	**Appendix 1** (Identifying Unexpected Heritage items)
1.2	Establish a 'no-go zone' around the item. Use high visibility fencing, where practical. No work is to be undertaken within this zone until further investigations are completed and, if required, appropriate approvals are obtained. Inform all site personnel about the no-go zone.	Project Manager/ Contractor/ Supervisor	
1.3	Inspect, document and photograph the item.	Archaeologist and or Excavation Director	**Appendix 2** (Unexpected Heritage Item Recording Form) **Appendix 3** (Photographing Unexpected Heritage items)
1.4	Is the item likely to be bone? If **yes**, follow the steps in Appendix 4 – 'Uncovering bones'. Where it is obvious that the bones are human remains, you must notify the local police by telephone immediately. They may take command of all or part of the site. Also refer to the Sydney Metro Exhumation Management Plan If **no**, proceed to next step.	Excavation Director	**Appendix 4** (Uncovering Bones)

Step	Task	Responsibility	Guidance and tools
1.5	Inform the Excavation Director of the item and provide as much information as possible, including photos and completed form (**Appendix 2**). Where the project has a Sydney Metro Environmental Manager, the Environmental Manager should be involved in the tasks/process.	Contractors Project Manager	
1.6	Can the works avoid further disturbance to the item? Project Manager to confirm with Sydney Metros Environment Manager. Complete the remaining tasks in Step 1.	Contractors Project Manager	
1.7	Excavation Director and Sydney Metro Environmental Manager to advise the Project Manager whether Sydney Metro has approval to impact on the 'item'. Does Sydney Metro have an approval or permit to impact on the item? If **yes**, work may recommence in accordance with that approval or permit. There is no further requirement to follow this procedure. If **no**, continue to next step.	Contractors Project Manager	
1.8	Has the 'find' been damaged or harmed? If **yes**, record the incident in the Incident Management System Implement any additional reporting requirements related to the planning approval and CEMP, where relevant.	Contractors Project Manager, Excavation Director	
2	**Contact and engage an archaeologist and/or an Aboriginal heritage consultant**		
2.1	If an archaeologist and/or Aboriginal heritage consultant has been previously appointed for the project, contact them to discuss the location and extent of the item and arrange a site inspection, if required. The project CEMP may contain contact details of the archaeologist/Aboriginal heritage consultant. Where there is no project archaeologist engaged for the works engage a suitably qualified consultant to assess the find: if the find is a non-Aboriginal deposit, engage a suitably qualified and experienced archaeological consultant if the find is likely to be an Aboriginal object, engage an Aboriginal heritage consultant to assess the find.	Contractors Project Manager, Excavation Director	
2.2	If requested, provide photographs of the item taken during Step 1.3 to the archaeologist or Aboriginal heritage consultant.	Contractors Project Manager, Excavation Director	**Appendix 3** (Photographing Unexpected Heritage items)

Step	Task	Responsibility	Guidance and tools
3	**Preliminary assessment and recording of the find**		
3.1	In a minority of cases, the archaeologist/Aboriginal heritage consultant may determine from the photographs that no site inspection is required because no heritage constraint exists for the project (*e.g. the item is not a 'relic', a 'heritage item' or an 'Aboriginal object'*). Any such advice should be provided in writing (e.g. via email or letter with the consultant's name and company details clearly identifiable) to the Sydney Metro Project Manager.	Archaeologist/ Aboriginal heritage consultant/ , Excavation Director	Proceed to Step 8
3.2	Arrange site access for the archaeologist/Aboriginal heritage consultant to inspect the item as soon as practicable. In the majority of cases a site inspection is required to conduct a preliminary assessment.	Contractors Project Manager, Excavation Director	
3.3	Subject to the archaeologist/Aboriginal heritage consultant's assessment, work may recommence at a set distance from the item. This is to protect any other archaeological material that may exist in the vicinity, which may have not yet been uncovered. Existing protective fencing established in Step 1.2 may need to be adjusted to reflect the extent of the newly assessed protective area. No works are to take place within this area once established.	Archaeologist/ Aboriginal heritage consultant Contractors Project Manager, Excavation Director	
3.4	The archaeologist/Aboriginal heritage consultant may provide advice after the site inspection and preliminary assessment that no heritage constraint exists for the project (e.g. the item is not a '*relic*' or a '*heritage item'* or an '*aboriginal item'*. Any such advice should be provided in writing (e.g. via email or letter with the consultant's name and company details clearly identifiable) to the Metro Project Manager. Note that : a relic is evidence of past human activity which has local or State heritage significance. It may include items such as bottles, utensils, remnants of clothing, crockery, personal effects, tools, machinery and domestic or industrial refuse an Aboriginal object may include a shell midden, stone tools, bones, rock art or a scarred tree a "work", building or standing structure may include tram or train tracks, kerbing, historic road pavement, fences, sheds or building foundations.	Archaeologist/ Aboriginal heritage consultant/ Contractors Project Manager, Excavation Director	Proceed to Step 8 Refer to **Appendix 1** (Identifying heritage items)

Step	Task	Responsibility	Guidance and tools
3.5	Where required, seek additional specialist technical advice (such as a forensic or physical anthropologist to identify skeletal remains). The archaeologist/Aboriginal heritage consultant can provide contacts for such specialist consultants.	Excavation Director Archaeologist	
3.6	Where the item has been identified as a 'relic' or 'heritage item' or an 'Aboriginal object' the archaeologist should formally record the item.	Archaeologist/ Aboriginal heritage consultant	
3.7	OEH (Heritage Division for non-Aboriginal relics and Planning and Aboriginal Heritage Section for Aboriginal objects) can be notified informally by telephone at this stage by the Sydney Metro Environmental Manager Any verbal conversations with regulators must be noted on the project file for future reference.	Contractors Project Manager, Excavation Director	
4	**Section 4 not used**		
5	**Notify the regulator, if required.**		
5.1	Based on the findings of the archaeological or heritage management plan and corresponding legislative requirements, is the find required to be notified to OEH and the Secretary? If **no**, proceed directly to Step 6 If **yes**, proceed to next step.	Sydney Metro Environmental Manager Excavation Director	
5.2	If notification is required, complete the template notification letter, including the archaeological/heritage management plan and other relevant supporting information and forward to the Sydney Metro Principal Manager Sustainability Environment and Planning (Program) for signature.	Sydney Metro Environmental Manager Excavation Director	**Appendix 6** (Template Notification Letter)
5.3	Forward the signed notification letter to OEH and the Secretary. Informal notification (via a phone call or email) to OEH prior to sending the letter is appropriate. The archaeological or heritage management plan and the completed site recording form (Appendix 2) must be submitted with the notification letter (for both Aboriginal objects and non-Aboriginal relics). For Part 5.1 projects, the Department of Planning and Environment must also be notified.		

Step	Task	Responsibility	Guidance and tools
5.4	A copy of the final signed notification letter, archaeological or heritage management plan and the site recording form is to be kept on file and a copy sent to the Sydney Metro Project Manager.	Contractors Project Manager, Excavation Director	
6	**Implement archaeological or heritage management plan**		
6.1	Modify the archaeological or heritage management plan to take into account any additional advice resulting from notification and discussions with OEH.	Contractors Project Manager, Excavation Director	
6.2	Implement the archaeological or heritage management plan. Where impact is expected, this may include a formal assessment of significance and heritage impact assessment, preparation of excavation or recording methodologies, consultation with Registered Aboriginal Parties, obtaining heritage approvals etc., if required.	Contractors Project Manager, Excavation Director	
6.3	Where heritage approval is required contact the Sydney Metro Environment Manager for further advice and support material. Please note there are time constraints associated with heritage approval preparation and processing.	Contractors Project Manager, Excavation Director	
6.4	Assess whether heritage impact is consistent with the project approval or if project approval modification is required from the Department of Planning and Environment.	, Excavation Director/Sydney Metro Environmental Manager	
6.5	Where statutory approvals (or project approval modification) are required, impact upon relics and/or Aboriginal objects must not occur until heritage approvals are issued by the appropriate regulator.	Contractors Project Manager, Excavation Director	
6.6	Where statutory approval is not required but where recording is recommended by the archaeologist/Aboriginal heritage consultant, sufficient time must be allowed for this to occur.	Contractors Project Manager, Excavation Director	
6.7	Ensure short term and permanent storage locations are identified for archaeological material or other heritage material removed from site, where required. Interested third parties (e.g. museums, local Aboriginal land councils, or local councils) should be consulted on this issue. Contact the archaeologist or Aboriginal heritage consultant for advice on this matter, if required.	Contractors Project Manager, Excavation Director	
7	**Section 7 Not Used**		

Step	Task	Responsibility	Guidance and tools
8	**Resume work**		
8.1	Seek written clearance to resume project work from the project Excavation Director/Archaeologist/Aboriginal heritage consultant. Clearance would only be given once all archaeological excavation and/or heritage recommendations and approvals (where required) are complete. Resumption of project work must be in accordance with the all relevant project/heritage approvals/determinations.	Contractors Project Manager, Excavation Director	
8.2	If required, ensure archaeological excavation/heritage reporting and other heritage approval conditions are completed in the required timeframes. This includes artefact retention repositories, conservation and/or disposal strategies.	Contractors Project Manager, Excavation Director	
8.3	Deleted		
8.4	If additional unexpected items are discovered this procedure must begin again from Step 1.	All	

7. Responsibilities

Table 3 Roles and Responsibilities

Role	Responsibility or role under this guideline
Contractor / Supervisor	Stop work immediately when an unexpected heritage find is encountered. Cordon off area until Environmental Manager /Excavation Director advises that work can recommence.
Contractor or Environment Manager	Manage the process of identifying, protecting and mitigating impacts on the 'find'. Liaise with Sydney Metro Project Manager and Environment Manager and assist the archaeologist/Aboriginal heritage consultant with mitigation and regulatory requirements. Complete Incident Report and review CEMP for any changes required. Propose amendments to the CEMP if any changes are required.
Contractor's or Project Heritage Advisor or Consultant	Provide expert advice to the Sydney Metro Environment Manager on 'find' identification, significance, mitigation, legislative procedures and regulatory requirements.
Environmental Representative	Independent environmental advisor engaged by Sydney Metro Ensures compliance with relevant approvals (new and existing).
Heritage Division of OEH	Regulate the care, protection and management of relics (non-Aboriginal heritage). Delegated authority for Heritage Council Issue excavation permits.

Role	Responsibility or role under this guideline
Registered Aboriginal Parties (RAPs)	Aboriginal people who have registered with Sydney Metro to be consulted about a proposed project or activity in accordance with the OEH *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.
Sydney Metro Environment Manager	Notify the Sydney Metro Principal Manager, Environmental Management of 'find' and manage Incident Reporting once completed by Environmental Manager.
Contractors Project Manager	Ensures all aspects of this procedure are implemented. Advise Contractor / Supervisor to recommence work if all applicable requirements have been satisfied and the Excavation Director /Project Archaeologist has approved recommend of work.

8. Seeking Advice

Advice on this procedure should be sought from the Sydney Metro Environment a Manager in the first instance. Contractors and alliance partners should ensure their own project environment managers are aware of and understand this procedure.
Technical archaeological or heritage advice regarding an unexpected heritage item should be sought from a suitably qualified and experienced archaeologist/Aboriginal heritage consultant.

9. Related documents and references

- Environmental Incident Classification and Reporting – 9TP-PR-105
- Guide to Environmental Control Map – 3TP-SD-015
- NSW Heritage Office (1998), *Skeletal remains: guidelines for the management of human skeletal remains.*
- Roads and Maritime Services (2015), *Standard Management Procedure Unexpected Heritage Items.*
- Department of Environment and Conservation NSW (2006), *Manual for the identification of Aboriginal remains.*
- Sydney Metro Exhumation Management Plan

10. List of appendices

The following appendices are included to support this procedure:

Appendix 1: Examples of finds encountered during construction works
Appendix 2: Unexpected Heritage Item Recording Form
Appendix 3: Photographing Unexpected Heritage Items
Appendix 4: Uncovering Bones
Appendix 5: Archaeological Advice Checklist
Appendix 6: Template Notification Letter

11. Document history

Version	Date of approval	Notes
1.1		Incorporates ER comments 21/06/17
1.2		Amends p13 step 8 reference to s146 added
1.3		Incorporates Planning Mods 1-4 including amended CoA E20
1.4		Incorporates ER comments 21/03/18
2.0		Removes SSI 15-7400 COA reference

Appendix 1: Examples of finds encountered during construction works

Photo 1 - Aboriginal artefacts found at the Wickham Transport Interchange, 2015

Photo 2 – Aboriginal artefacts (shell material) found at the Wickham Transport Interchange, 2015

Photo 3 1840s seawall and 1880s retaining wall uncovered at Balmain East, 2016

Photo 4 Sandstone pavers uncovered at Balmain East, 2016

Photo 5 - Platform structure at Hamilton Railway Station classified as a 'work' by the project archaeologist - Wickham Transport Interchange project, 2015

Photo 6 - Platform structure at Hamilton Railway Station classified as a 'work' by the project archaeologist - Wickham Transport Interchange project, 2015

Photo 7 - Sandstone flagging and cesspit - Wynyard Walk project, 2014

Photo 8 - Chinese Ming Dynasty pottery and English porcelain/pottery dating back to early 19th century - Wynyard Walk project, 2014

Photo 9 - Pottery made by convict potter Thomas Ball during the early settlement - Wynyard Walk project, 2014

The following images, obtained from the Roads and Maritime Services' *Standard Management Procedure for Unexpected Heritage items 2015,* can be used to assist in the preliminary identification of potential unexpected items during construction and maintenance works.

Photo 10 - Top left hand picture continuing clockwise: Stock camp remnants (Hume Highway Bypass at Tarcutta); Linear archaeological feature with post holes (Hume Highway Duplication), Animal bones (Hume Highway Bypass at Woomargama); Cut wooden stake; Glass jars, bottles, spoon and fork recovered from refuse pit associated with a Newcastle Hotel (Pacific Highway, Adamstown Heights, Newcastle area) (RMS, 2015).

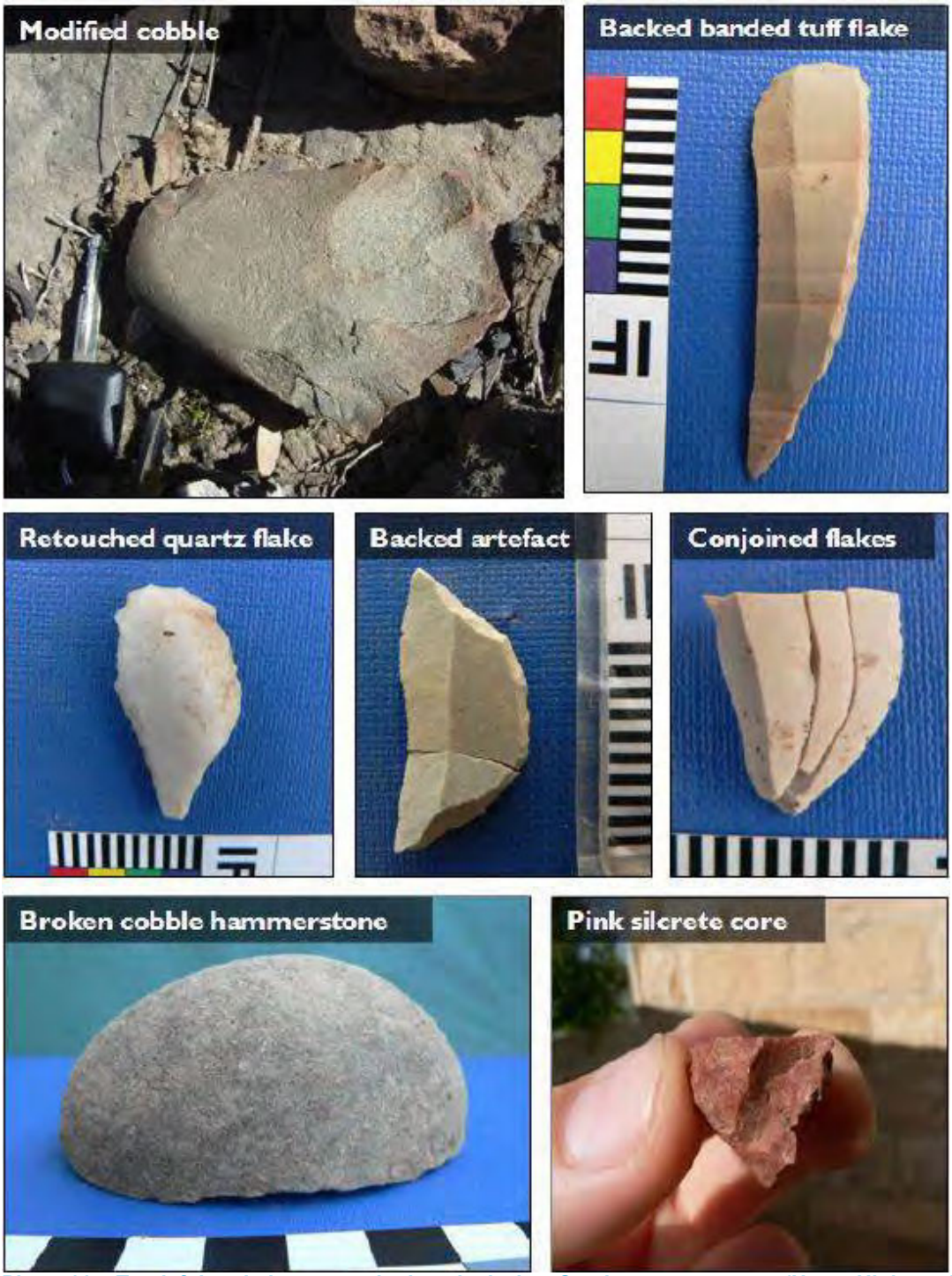


Photo 11 - Top left hand picture continuing clockwise: Stock camp remnants (Hume Highway Bypass at Tarcutta); Linear archaeological feature with post holes (Hume Highway Duplication), Animal bones (Hume Highway Bypass at Woomargama); Cut wooden stake; Glass jars, bottles, spoon and fork recovered from refuse pit associated with a Newcastle Hotel (Pacific Highway, Adamstown Heights, Newcastle area) (RMS, 2015).

Appendix 2 - Unexpected heritage item recording form

Example of unexpected heritage item recording form:

This form is to be completed Excavation Director on the discovery of an archaeological heritage item during construction or maintenance works			
Date:		**Recorded by:** (include name and position)	
Project name:			
Description of works being undertaken:			
Description of exact location of item			
Description of item found *(What type of item is it likely to be? Tick the relevant boxes).*			
A. A relic	☐	A 'relic' is evidence of a past human activity relating to the settlement of NSW with local or state heritage significance. A relic might include bottle, utensils, plates, cups, household items, tools, implements, and similar items	
B. A 'work', building or structure'	☐	A 'work' can generally be defined as a form infrastructure such as track or rail tracks, timber sleepers, a culvert, road base, a bridge pier, kerbing, and similar items	
C. An Aboriginal object	☐	An 'Aboriginal object' may include stone tools, stone flakes, shell middens, rock art, scarred trees and human bones	
D. Bone	☐	Bones can either be human or animal remains. **Remember that you must contact the local police immediately by telephone if you are certain that the bone(s) are human remains.**	
E. Other	☐		
Provide a short description of the item *(E.g. metal rail tracks running parallel to the rail corridor. Good condition. Tracks set in concrete, approximately 10 cm below the current ground surface).*			

Sketch *(Provide a sketch of the item's general location in relation to other road features so its approximate location can be mapped without having to re-excavate it. In addition, please include details of the location and direction of any photographs of the item taken)*			
Action taken (Tick either A *or* B)			
A. Unexpected item **would not** be further impacts on by the works	☐	**Describe how works would avoid impact on the item.** *(E.g. the rail tracks would be left in situ and recovered with paving).*	
B. Unexpected item would be further impacted by the works	☐	**Describe how works would impact on the item**. *(E.g. milling is required to be continued to a depth of 200 mm depth to ensure the pavement requirements are met. Rail tracks would need to be removed.)*	
Excavation Director		Signature	
		Signature	

Important

It is a statutory offence to disturb Aboriginal objects and historic relics (including human remains) without an approval. All works affecting objects and relics must cease until an approval is sought.

Approvals may also be required to impact on certain works.

Appendix 3 - Photographing unexpected heritage items

Photographs of unexpected items in their current context (*in situ*) may assist archaeologists/Aboriginal heritage consultants to better identify the heritage values of the item. Emailing good quality photographs to specialists can allow for better quality and faster heritage advice. The key elements that must be captured in photographs of the item include its position, the item itself and any distinguishing features. All photographs must have a scale (ruler, scale bar, mobile phone, coin etc.) and a note describing the direction of the photograph.

Context and detailed photographs

It is important to take a general photograph (Figure 1) to convey the location and setting of the item. This will add value to the subsequent detailed photographs also required (Figure 2).

Removal of the item from its context (e.g. excavating from the ground) for photographic purposes is not permitted.

Figure 2: Close up detail of the sandstone surface showing material type, formation and construction detail. This is essential for establishing date of the feature.

Figure 1: Telford road uncovered on the Great Western Highway (Leura) in 2008 (RMS, 2015).

Photographing distinguishing features

Where unexpected items have a distinguishing feature, close up detailed photographs must be taken of these features, where practicable. In the case of a building or bridge, this may include diagnostic details architectural or technical features. See Figures 3 and 4 for examples.

Figure 3: Ceramic bottle artefact with stamp.

Figure 4: Detail of the stamp allows '*Tooth & Co Limited*' to be made out. This is helpful to a specialist in gauging the artefact's origin, manufacturing date and likely significance.

Photographing bones

The majority of bones found on site will those of be recently deceased animal bones often requiring no further assessment (unless they are in archaeological context). However, if bones are human, the police must be contacted immediately (see Appendix 6 for detailed guidance). Taking quality photographs of the bones can often resolve this issue quickly. The project archaeologist can confirm if bones are human or non-human if provided with appropriate photographs.

Ensure that photographs of bones are not concealed by foliage (Figure 5) as this makes it difficult to identify. Minor hand removal of foliage can be undertaken as long as disturbance of the bone does not occur. Excavation of the ground to remove bone(s) should not occur, nor should they be pulled out of the ground if partially exposed.

Where sediment (adhering to a bone found on the ground surface) conceals portions of a bone (Figure 6) ensure the photograph is taken of the bone (if any) that is not concealed by sediment.

Figure 5: Bone concealed by foliage.

Figure 6: Bone covered in sediment

Ensure that all close up photographs include the whole bone and then specific details of the bone (especially the ends of long bones, the *epiphysis*, which is critical for species identification). Figures 7 and 8 are examples of good photographs of bones that can easily

be identified from the photograph alone. They show sufficient detail of the complete bone and the epiphysis.

Figure 7: Photograph showing complete bone.

Figure 8: Close up of a long bone's epiphysis.

Appendix 4 - Uncovering bones

This appendix provides advice regarding:

- what to do on first discovering bones
- the range of human skeletal notification pathways
- additional considerations and requirements when managing the discovery of human remains.

1. First uncovering bones

Refer to the Sydney Metro Exhumation Management Plan

Stop all work in the vicinity of the find. All bones uncovered during project works should be **treated with care and urgency** as they have the potential to be human remains. The bones must be identified as either human or non-human as soon as possible by a qualified forensic or physical anthropologist.

On the very rare occasion where it is immediately obvious from the remains that they are human, the Project Manager (or a delegate) should **inform the police by telephone** prior to seeking specialist advice. It will be obvious that it is human skeletal remains where there is no doubt, as demonstrated by the example in Figure 1[9]. Often skeletal elements in isolation (such as a skull) can also clearly be identified as human. Note it may also be obvious that human remains have been uncovered when soft tissue and/or clothing are present.

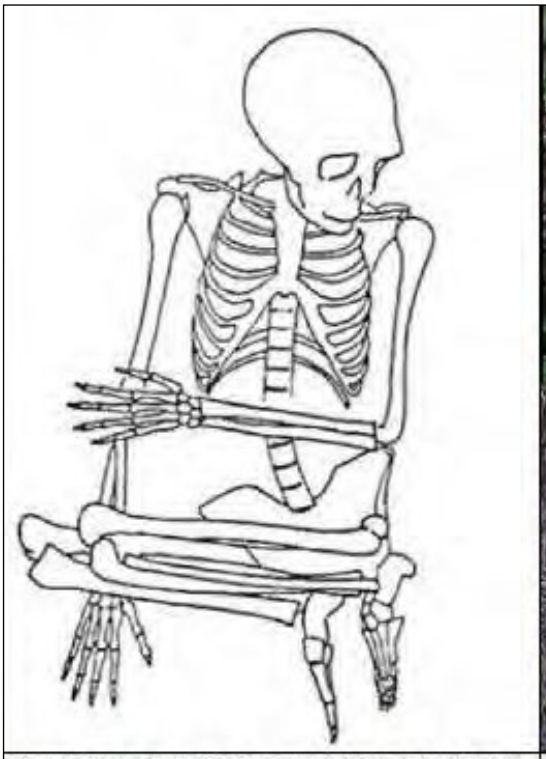


Figure 1: Schematic of a complete skeleton that is 'obviously' human [12].

Figure 2: Disarticulated bones that require assessment to determine species.

[9] After Department of Environment and Conservation NSW (2006), *Manual for the identification of Aboriginal Remains: 17*

This preliminary phone call is to let the police know that a specialist skeletal assessment to determine the approximate date of death which will inform legal jurisdiction. The police may wish to take control of the site at this stage. If not, a forensic or physical anthropologist must be requested to make an on-site assessment of the skeletal remains.

Where it is not immediately obvious that the bones are human (in the majority of cases, illustrated by Figure 2), specialist assessment is required to establish the species of the bones. Photographs of the bones can assist this assessment if they are clear and taken in accordance with guidance provided in Appendix 3. Good photographs often result in the bones being identified by a specialist without requiring a site visit; noting they are nearly always non-human. In these cases, non-human skeletal remains must be treated like any other unexpected archaeological find.

If the bones are identified as human (either by photographs or an on-site inspection) a technical specialist must determine the likely ancestry (Aboriginal or non-Aboriginal) and burial context (archaeological or forensic). This assessment is required to identify the legal regulator of the human remains so **urgent notification** (as below) can occur.

Preliminary telephone or verbal notification by the archaeologist to the Sydney Metro Principal Manager Sustainability Environment and Planning (Program) is appropriate. This must be followed up later by a formal letter notification to the relevant regulator when a management plan has been developed and agreed to by the relevant parties.

2. Range of human skeletal notification pathways

The following is a summary of the different notification pathways required for human skeletal remains depending on the preliminary skeletal assessment of ancestry and burial context.

A. Human bones are from a recently deceased person (less than 100 years old).

Action
A police officer must be notified immediately as per the obligations to report a death or suspected death under s35 of the *Coroners Act 2009* (NSW). It should be assumed the police will then take command of the site until otherwise directed.

B. Human bones are archaeological in nature (more than 100 years old) and are likely to be *Aboriginal* remains.

Action
The OEH (Planning and Aboriginal Heritage Section) must be notified immediately. The Aboriginal Cultural Heritage Advisor must contact and inform the relevant Aboriginal community stakeholders who may request to be present on site.

C. Human bones are archaeological in nature (more than 100 years old) and likely to be non-Aboriginal remains.

Action
The OEH (Heritage Division) must be notified immediately

Figure 3 summarises the notification pathways on finding bones.

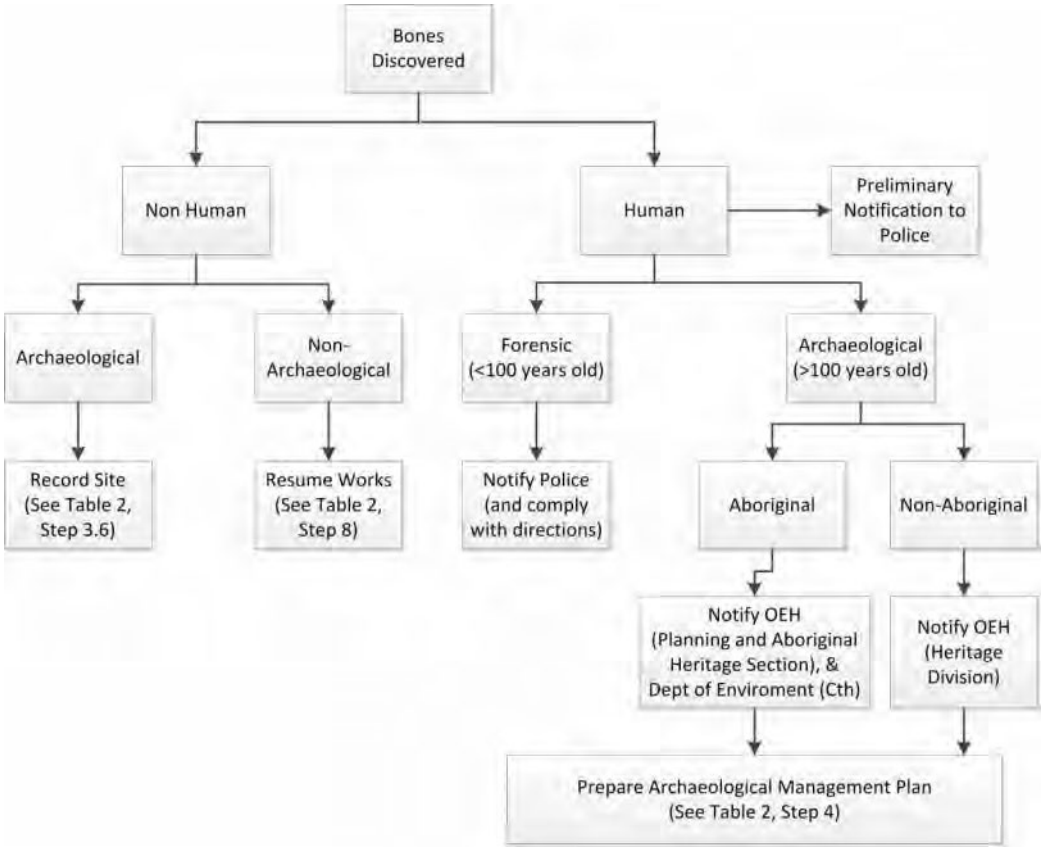


Figure 3 Overview of steps to be undertaken on the discovery of bones

After the appropriate verbal notifications (as described in 2B and 2C above), the Project Manager must proceed through the *Unexpected Heritage Items Exhumation Management Plan* (Step 4). It is noted that no *Exhumation Management Plan* is required for forensic cases (2A), as all future management is a police matter. Non-human skeletal remains must be treated like any other unexpected archaeological find and so must proceed to record the find as per Step 3.6.

3. Additional considerations and requirements

Uncovering archaeological human remains must be managed intensively and needs to consider a number of additional specific issues. These issues might include facilitating culturally appropriate processes when dealing with Aboriginal remains (such as repatriation and cultural ceremonies). Project Managers may need to consider overnight site security of any exposed remains and may need to manage the onsite attendance of a number of different external stakeholders during assessment and/or investigation of remains.

Project Managers may also be advised to liaise with local church/religious groups and the media to manage community issues arising from the find. Additional investigations may be required to identify living descendants, particularly if the remains are to be removed and relocated.

If exhumation of the remains (from a formal burial or a vault) is required, Project Managers should also be aware of additional approval requirements under the *Public Health Act 1991* (NSW). Specifically, Sydney Metro may be required to apply to the Director General of NSW

Department of Health for approval to exhume human remains as per Clause 26 of the *Public Health (Disposal of Bodies) Regulation 2002* (NSW)[10].

Further, the exhumation of such remains needs to consider health risks such as infectious disease control, exhumation procedures and reburial approval and registration. Further guidance on this matter can be found at the NSW Department of Health website.

In addition, due to the potential significant statutory and common law controls and prohibitions associated with interfering with a public cemetery, project teams are advised, when works uncover human remains adjacent to cemeteries, to confirm the cemetery's exact boundaries.

[10] This requirement is in addition to heritage approvals under the *Heritage Act 1977.*

Appendix 5 - Archaeological/heritage advice checklist

The archaeologist/Aboriginal heritage consultant must advise the Sydney Metro Principal Manager Sustainability Environment and Planning (Program) of an appropriate archaeological or heritage management plan as soon as possible after an inspection of the site has been completed (see Step 4). An archaeological or heritage management plan can include a range of activities and processes, which differ depending on the find and its significance.

In discussions with the archaeologist/Aboriginal heritage consultant the following checklist can be used as a prompt to ensure all relevant heritage issues are considered when developing this plan. This will allow the project team to receive clear and full advice to move forward quickly. Archaeological and/or heritage advice on how to proceed can be received in a letter or email outlining all relevant archaeological and/or heritage issues.

	Required	Outcome/notes
Assessment and investigation		
• Assessment of significance	Yes/No	
• Assessment of heritage impact	Yes/No	
• Archaeological excavation	Yes/No	
• Archival photographic recording	Yes/No	
Heritage approvals and notifications		
• AHIP, section 140, section 139 exceptions etc.	Yes/No	
• Regulator relics/objects notification	Yes/No	
• Notification to Sydney Trains for s170 heritage conservation register	Yes/No	
• Compliance with CEMP or other project heritage approvals	Yes/No	
Stakeholder consultation		
• Aboriginal stakeholder consultation	Yes/No	
Artefact/heritage item management		
• Retention or conservation strategy (e.g. items may be subject to long conservation and interpretation)	Yes/No	
• Disposal strategy	Yes/No	
• Short term and permanent storage locations (interested third parties should be consulted on this issue).	Yes/No	
• Control Agreement for Aboriginal objects	Yes/No	

Appendix 6 - Template notification letter

Insert on TfNSW letterhead
Select and type date]
[Select and type reference number]

XXX
Manager, Conservation
Heritage Division, Office of Environment and Heritage
Locked Bag 5020
Parramatta NSW 2124

[Select and type salutation and name],

Re: Unexpected heritage item discovered during Sydney Metro activities.

I write to inform you of an unexpected [select: relic, heritage item or Aboriginal object] found during Sydney Infrastructure and Services construction works at [insert location] on [insert date] in accordance with the notification requirement under select: section 146 of the *Heritage Act 1977* (NSW). [Where the regulator has been informally notified at an earlier date by telephone, this should be referred to here].

NB: On finding Aboriginal human skeletal remains this letter must also be sent to the Commonwealth Minister for the Environment in accordance with notification requirements under section 20(1) of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Commonwealth).

[Provide a brief overview of the project background and project area. Provide a summary of the description and location of the item, including a map and image where possible. Also include how the project was assessed under the *Environmental Planning and Assessment Act 1979* (NSW) (e.g. Part 5). Also include any project approval number, if available].

Sydney Metro [*or contractor*] has sought professional archaeological advice regarding the item. A preliminary assessment indicates [provide a summary description and likely significance of the item]. Please find additional information on the site recording form attached.

Based on the preliminary findings, Sydney Metro *[or contractor]* is proposing [provide a summary of the proposed archaeological/heritage approach (e.g. develop archaeological research design (where relevant), seek heritage approvals, undertake archaeological investigation or conservation/interpretation strategy). Also include preliminary justification of such heritage impact with regard to project design constraints and delivery program].

The proposed approach will be further developed in consultation with a nominated Office of Environment and Heritage staff member.

Should you have any feedback on the proposed approach, or if you require any further information, please do not hesitate to contact [Environment and Planning Project Manager] on (02) XXXX XXXX.

Yours sincerely

[Sender name]

Sydney Metro Principal Manager Sustainability Environment and Planning (Program) [Attach the archaeological/heritage management plan and site recording form]

Integrated Management System

Exhumation Management Plan

SM ES-PW-315/1.0

Sydney Metro Integrated Management System (IMS)

Applicable to:	Sydney Metro
Document Owner:	Heritage Manager
System Owner:	Sustainability, Environment and Planning
Status:	Final issued for Implementation
Version:	3.0
Date of issue:	14 May 2019
Review date:	14 May 2020

Table of Contents

1. Introduction

Sydney Metro have developed this Exhumation Management Plan (ExMP) to provide Sydney Metro and their contractors with guidance on managing the discovery of human skeletal remains during the course of the Sydney Metro program of works.

Sydney Metro is Australia's biggest public transport project. From the northwest, metro rail is being extended under Sydney Harbour, through new underground city stations and beyond to the south west. In 2024, Sydney will have 31 metro railway stations and a 66km standalone metro railway system, revolutionising the way Australia's biggest city travels (refer to Figure 1).

The purpose of this ExMP is to address relevant planning conditions of approval where required, by providing a clear and concise process to follow in the event of the discovery of potential human remains during project works.

The policy document may be used for the Sydney Metro program, although there is a focus on human remains at Central Station (associated with the former Devonshire Street cemetery). Potential for human remains had been identified in the Archaeological Assessment and Research Design (AARD) for Sydney Metro – City & Southwest Chatswood to Sydenham (Artefact Heritage, 2016) and subsequently presence of human remains has been confirmed during archaeological investigation for the Central Station Main Works (CSMW).

This ExMP will be reviewed prior to its implementation on any future Sydney Metro project that has potential to impact on a known cemetery or burial ground. A review may require amendment the ExMP to tailor additional controls or management procedures that are specific to the impacted cemetery or burial ground. In addition, the requirements of the relevant Planning Approval, including consultation on any amendment, will be assessed during the review of this ExMP prior to its implementation.

2. Methodology

This ExMP satisfies the relevant planning requirements, by outlining the procedure for the discovery and management of human remains within the Sydney Metro program. The ExMP addresses the following:

- Discussion of relevant legislation and guidelines, (e.g. Coroners Act 2009, Heritage Act 1977, Guidelines for the Management of Human Skeletal Remains and the Public Health Regulations 2012).
- Archaeological methodology for excavation of remains including processes for appropriately handling remains in accordance with the relevant guidelines.
- Preparation of a flow chart process to be used by contractors to respond to the discovery of suspected human remains.
- Post-exhumation management primarily around relocation, processing and long-term arrangements.
- Process for nomination of a physical anthropologist and temporary storage location.
- Process for additional analysis including DNA testing, isotope analysis and environmental sampling, and discussion on requirements for public involvement.

Figure 1: 2019 Sydney Metro Program Project overview and station locations

2.1. Overview of legislative requirements for dealing with human remains

The following section provides an overview of the various legislation that would apply to the discovery, management and relocation of human remains. A discovery of suspected human remains may be subject to different Acts and requirements, thereby triggering different notification pathways based on the specific circumstances involved.

For all areas other than Central Station within the CSMW boundary, the first step will always be to notify the NSW Police. Confirmation of the age (antiquity) and nature of the skeletal remains as well as the reasons for the disturbance will dictate which Act and provisions will be applicable. Note that provisions for Central Station would not require Police notification as it is confirmed by the Coroner that the remains are associated with the Devonshire Street Cemetery and would follow the requirements in Section 4, Central Station.

Although approval under the Heritage Act 1977 and the National Parks and Wildlife Act 1974, is not required for a Critical State Significant Infrastructure (CSSI) project, notification to the Heritage Council under s146 of the Heritage Act, and notification of an Aboriginal object under the National Parks and Wildlife Act is still required for discovery of archaeological human remains.

The provisions of the Coroners Act 2009 and Public Health Regulation 2012 apply under a CSSI approval. Compliance with this legislation would be fulfilled through adhering to the processes outlined in this plan, noting the special considerations for the CSMW site.

2.2. Discovery of human remains and forensic cases: Coroners Act 2009 (NSW)

For a discovery of suspected human remains less than 100 years old, the remains would come under the jurisdiction of the State Coroner and the Coroners Act 2009 (NSW). Such a case would be considered a 'reportable death' and, under legal notification obligations set out in s35 (2); a person must report the death to a police officer, a coroner or an assistant coroner as soon as possible. This applies to all human remains less than 100 years old, regardless of ancestry (i.e. both Aboriginal and non-Aboriginal remains).

> *35 Obligation to report death or suspected death*
>
> *(1) This section applies to any person who has reasonable grounds to believe that a death or suspected death of another person:*
>
> *(a) is a reportable death or occurred in circumstances that would be examinable under Division 2 of Part 3.2, and*
>
> *(b) has not been reported in accordance with subsection (2).*
>
> *(2) A person to whom this section applies must report the death or suspected death concerned to a police officer, a coroner or an assistant coroner as soon as possible after becoming aware of the grounds referred to in subsection (1).*
>
> *Maximum penalty (subsection (2)): 10 penalty units.*
>
> *(3) A police officer to whom a death or suspected death is reported under this section is required to report the death or suspected death to a coroner or assistant coroner as soon as possible after the report is made.*
>
> *(4) An assistant coroner to whom a death or suspected death is reported under this section is required to report the death or suspected death to a coroner as soon as possible after the report is made.*
>
> *(5) A coroner to whom a death or suspected death is reported under this section is required to inform the State Coroner of the report as soon as practicable after the report is made.*

2.3. Historical human remains: Heritage Act 1977 and Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977

The Heritage Act 1977 and Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977[1] apply to historic burials in New South Wales. It should be noted that the Guidelines are outdated in terms of the current statutory framework.

The definition of an archaeological 'relic' under the Heritage Act changed in 2009. A relic is no longer defined as an object of at least 50 years of age, but is now defined as an archaeological deposit or artefact that has heritage significance at a local or State level. New guidelines, Assessing Significance for Historical Archaeological Sites and `Relics', have been endorsed by the Heritage Council and should be used to assess the level of heritage or archaeological significance of the remains. With reference to burial grounds, objects such as headstones, grave enclosures and grave goods, as well as buried human remains, may be a 'relic'.

[1] NSW Heritage Office, 1998.

If the project is approved as CSSI, an application to the NSW Heritage Council for an excavation permit (either Section 140 or Section 60) is not required. Notification to the NSW Heritage Council (or delegate) is required under the CSSI approval if unexpected relics of State significance or human remains are located.

2.4. Aboriginal human remains: National Parks and Wildlife Act 1974

The National Parks and Wildlife Act, administered by the NSW Office of Environment and Heritage (OEH), provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 84.

Discovery of Aboriginal burials and/or human remains would be addressed in the projects Aboriginal Cultural Heritage Assessment Report (ACHAR). ACHARs would be prepared in accordance with the OEH 'Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation'[2], the OEH 'Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW'[3] , the OEH 'Aboriginal cultural heritage consultation requirements for proponents 2010'[4], the OEH 'Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales'[5].

If suspected human skeletal remains are uncovered at any time during the archaeological management program, the process outlined in this ExMP and detailed in the flow chart is to be followed. Management of the remains would be guided by consultation with the nominated Registered Aboriginal Parties (RAPs) for the project, in adherence to the ACHAR.

2.5. Exhumation of human remains: Public Health Regulation 2012 (NSW) and the NSW Health Policy Statement – Exhumation of human remains (2013)

Public Health Regulation 2012 and the NSW Health Policy Statement – Exhumation of human remains of the Public Health Regulation 2012 provides specific regulation for the exhumation of bodies in NSW.

Under Clause 70, an application for approval to exhume the remains of a dead person may be made to the Director-General via an approved form to the Director of the local Public Health Unit that acts on behalf of the Director-General of NSW Health. Exhumation is not to take place unless an authorised officer or a NSW Health member of staff is present at the exhumation (the grave may be excavated to the lid of the coffin but nothing must be disturbed until the arrival of the authorised officer) (Clause 72). An authorised officer must be present at the exhumation to ensure the correct interment is opened and that all of the remains are exhumed, and to enforce the protection of public health should this be necessary.

Sydney Metro would be required to apply to the Secretary of Health for approval to exhume human remains as per Clause 26 of the Regulations.

[2] NSW Department of Environment and Conservation, 2005.
[3] OEH 2011.
[4] Department of Environment, Climate Change and Water 2010.
[5] OEH 2010.

Note that special consideration has been made for works at Central Station within the CSMW boundary that impact the former Devonshire Street Cemetery (Section 4).

2.6. NSW Ministry of Health Policy Statement – Exhumation of human remains (2013)

The NSW Ministry of Health Policy Statement on the exhumation of human remains provides the policy to be observed by Public Health Units located in Local Health Districts on receipt of an application to seek permission for approval of the exhumation of human remains under the Public Health Regulation 2012. Public Health Units (PHUs) of Local Health Districts (LHDs) in NSW facilitate the approval for an exhumation.
Under Clause 69 a person must not exhume a body unless the exhumation of the remains has been approved by the Director-General. An application for permission to exhume the remains of a deceased person is to be made to the Public Health Unit on the approved form which is contained at the NSW Health website.

The required form is appended to this ExMP for ease of reference.

Note that the title of Director General of Health was replaced with the Secretary of Health when the Public Health Act and Public Health Regulation were amended. However, the Policy Directive PD2013-046 has not been amended to reflect this change.

2.7. Work Health and Safety Act 2011

The Work Health and Safety Act 2011 provisions apply to protect personnel involved in the exhumation procedure by creating and maintaining safe and healthy work practices and are enforced by WorkCover NSW. Graves, crypts and vaults could be considered to be confined spaces in some circumstances under health and safety legislation. More information on safe work practices is available at or by contacting SafeWork NSW via their website or directly.

Health and safety aspects of working with human remains should be considered. Generally, working with archaeological human skeletal remains requires no extra precautions to be taken beyond normal health and safety regulations. Once any necessary site health and safety precautions have been taken, the exhumation of human remains can proceed.

3. Procedure for the discovery, management and relocation of human remains

This procedure provides project managers, principal contractors and the project archaeologist/Excavation Director with advice on the steps to follow upon uncovering suspected human remains. Information on the potential for burials and human remains would be included in the general project induction for all personnel. The induction would include the procedure to manage these finds as set out in this ExMP.

3.1. Initial discovery of bones: What do we do?

To avoid doubt, all suspected bone items must be treated as potential human skeletal remains, and work around them must stop while they are protected and investigated as a matter of urgency.

1. Stop Work and preliminary notification

Upon the discovery of bone (suspected human remains), all work in the area of the find must stop and the remains must be confirmed as being human or not.

The Project Archaeologist/Excavation Director must be notified

Preliminary notification must be made to the NSW Police in compliance with Section 35 of the Coroners Act 2009 (also refer to special conditions for Central Station noted in section 4).

What?	When bones are uncovered at a site, all work in the area the find must **stop immediately** and the site must be secured.
Who?	The discoverer will **immediately** notify machinery operators so that no further disturbance of the remains will occur, as well as notify the foreman/site supervisor, principal contractor, project archaeologist/Excavation Director and Sydney Metro Environmental Manager). Preliminary notification to the NSW Police will be undertaken by the Sydney Metro Environmental Manager. Notification should provide verbal description of the remains and inform the police that consultation with technical specialists is being undertaken to confirm that the remains are human, as well as the burial context (archaeological or less than 100 years old, refer Step 2).
How?	Inform all site personnel of restricted access to the area of the discovery until further notice. Area must be fenced off (flagging or temporary exclusion fencing).
Actions	Notify site supervisor, principal contractor, project archaeologist / Excavation Director and Sydney Metro Environmental Manger of the find and protect the suspected remains until an initial assessment can be undertaken by a technical specialist. Preliminary notification to NSW Police.

2. Confirm human provenance

Skeletal remains could either be articulated and in a recognisable form of burial such as a coffin or common burial position of the body (e.g. supine, prone or flexed) or they could be disarticulated or fragmented remains. Within the boundaries of a known historic burial ground, there is a high probability of the remains being human. In a suspected forensic case (less than 100 years old), the remains may have clothing and/or human tissue. Disarticulated or fragmented bones are often uncovered and these may require specialist assessment to determine legal jurisdiction.

If suspected human remains are identified during the course of project works, preliminary notification must be made to the NSW Police in compliance with Section 35 of the Coroners Act 1999 (refer Step 1) (also refer to special conditions for Central Station noted in section 4, Central Station). NSW Police would be contacted immediately upon receipt of confirmation of human provenance (also refer to special conditions for Central Station noted in section 4).

What?	Confirmation that the remains are human, their burial context - whether they are forensic (less than 100 years) or archaeological (older than 100 years) and suspected ancestry (Aboriginal or non-Aboriginal).
Who?	Excavation Director and or Forensic or physical anthropologist, or archaeologist with specialist skills such as an osteoarchaeologist.
How?	Consultation could be undertaken as either an on-site inspection or via good quality photos sent to the nominated technical specialist of 1) the remains; and 2) the site general site location of the discovery.
Actions	Contact nominated technical specialists to confirm that the remains are: a) human, b) burial context (archaeological or forensic), and c) suspected ancestry (Aboriginal or non-Aboriginal). For the duration of the Sydney Metro project, the nominated technical specialists are: • Forensic Anthropologist – TBC by contractor for project area.

	• Nominated Excavation Director – TBC by contractor for project area. The archaeologist may be able to identify the nature of remains without input from the Forensic Anthropologist. The Forensic Anthropologist should be contacted as required.

3. Notification based on jurisdiction (forensic or archaeological)

Once confirmation is received from the technical specialist that the remains are of human origin, there are three possible statutory pathways to follow based on the assessment:

- **Forensic case (remains are less than 100 years old**): If it is determined by specialist assessment (Step 2) that the remains are forensic, the remains come under the jurisdiction of the State Coroner and the Coroners Act 2009. The NSW Police would likely secure the site and will advise on the procedure to be followed.
- **Archaeological – non-Aboriginal human remains (more than 100 years old).** Actions: Notification to OEH Heritage Division. Follow the Archaeology Exhumation Methodology as set out in Step 4.
- **Archaeological – suspected Aboriginal human remains (more than 100 years old).** The RAPs must be present where it is reasonably suspected that Aboriginal burials or human remains have been encountered. Recording of Aboriginal ancestral remains must be undertaken by, or be conducted under the direct supervision of a specialist. Actions: Notify RAPs and follow ACHAR Notification to OEH. Follow the Archaeology Exhumation Methodology as set out in Step 4.

4. Archaeological Exhumation Methodology

The following section provides the archaeological methodology for exhumation and the appropriate handling of human remains.

Securing the Site: The strategy for the excavation and removal of human remains must be sensitive to public opinion and ethical issues and exhumation activities should not be visible to the general public. The site may need to be screened off from public areas, not only with hoarding but also in some cases with a roof to screen the site off from overlooking buildings. At all times, human remains should be treated with respect and dignity. The perimeter of the excavation site should be demarcated by plastic tape or flagging, with only technical staff allowed within this area for the duration of exhumation activities.

The site should be protected from the elements including flooding, contamination with dust or debris, and other disturbance. These measures would be formulated by the Excavation Director in consultation with the contractor and Sydney Metro where required and may differ from site to site.

Excavation Director: Archaeological investigations are to be managed by a suitably qualified Excavation Director with experience in the historical archaeology of Sydney and management of human remains. For sites with potential for locally significant remains, the Excavation Director should meet the NSW Heritage Council criteria for locally significant archaeological sites. For sites with potential for State significant archaeology the Excavation Director should meet the NSW Heritage Council criteria for State significant archaeological sites.

Excavation and Recording: Exhumation and recording is to be undertaken in accordance with best practice forensic and Heritage Council guidelines. Prior to

removal, the remains should be fully recorded in situ to understand their surrounding archaeological context. This will include recording any disturbances to the burial, identification of bones present. In some cases, the deposit of bones may be a mixture of articulated and disarticulated remains. Care should be taken to distinguish articulated remains and to assess if they represent commingled individuals or disturbed remains belonging to one individual, and to record them accordingly.

Recording:

- A standard context recording system will be employed.
- Detailed survey and/or measured drawings would be prepared and include location of remains within the overall site (position of the body, the direction of the burial, noting any stratigraphic relationships with other archaeological features).
- Any associated artefacts (potential grave goods, burial furniture) would be recorded and collected by context for later analysis.
- Digital photography, in RAW format, using photographic scales and photo boards where appropriate. A photographic record of all phases of the work on site would be undertaken.
- Registers of contexts, photos, samples and drawings would be kept.

Excavation:

- Detection of the extent of the grave/remains (if disarticulated).
- Surface soils removed in excavation units of 100mm (site dependent) using small tools.
- Expose remains with soft paint brushes and pedestal the remains.
- Record position and depth of remains.
- Soil removed would be sieved through 3mm mesh to examine for teeth and bone fragments.
- Soil samples may be taken from the abdominal and/or chest areas of the body (articulated remains) to retrieve evidence of gallstones or worm infestations.
- Exhumation must be under the control of the Excavation Director,with the assistance of a Forensic Anthropologist if required. Exhumation permit/s, provided by NSW Ministry of Health may also require the presence of an authorised officer or a member of staff of the Ministry of Health.
- Further excavation of the bottom of the pit (grave) following removal to confirm the absence of further remains.

Relocation of bones:

- Removal and collection of skeletal remains to follow standard forensic practice of labelling.
- Remove remains from the ground systematically and place in plastic bags according to anatomical areas of the body.
- Bags should not be air-tight and should have ventilation holes to prevent deterioration of fragile skeletal material. Each bag should contain labels and

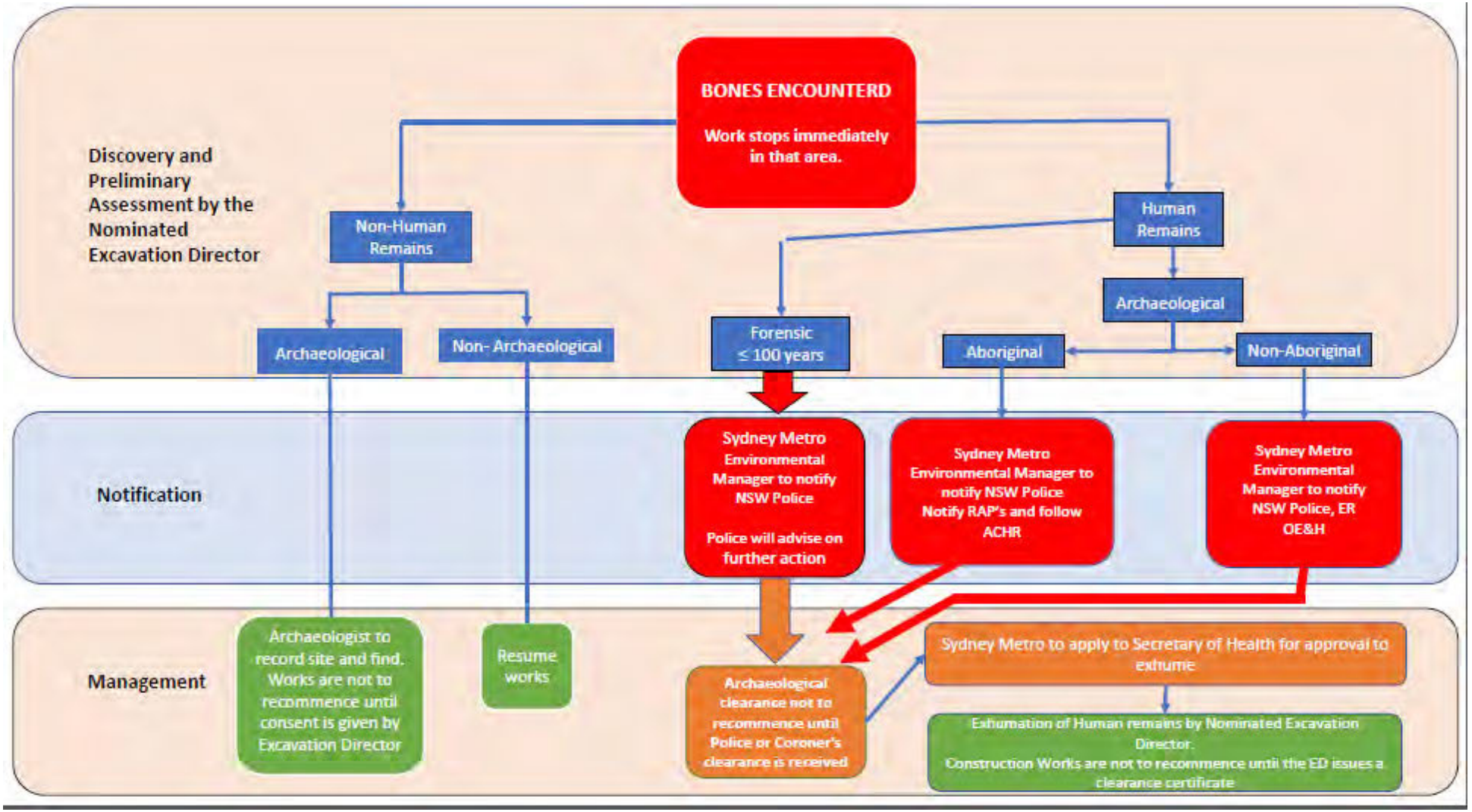
the separate bags should then be placed in a large plastic bag, crate or box, labelled with the context information.

- The remains should be placed in a sturdy, large cardboard box (approximately 600 x 300 x 200 mm) for relocation to off-site processing location.

Resume work: Construction work may only recommence upon receipt of clearance certificate from the Excavation Director and may require additional NSW Ministry of Health approval. If a forensic case, written authorisation from the NSW Police is required.

Reporting: A report would be prepared following the completion of the program of exhumation works, separate to the archaeological excavation report for the project. This report would include skeletal analysis catalogue, comprehensively describe the process of exhumation, detail the recording of the remains and synthesise the results of any further laboratory testing. An assessment of significance for the remains would be provided and interpreted within the context of the archaeological research design (response to research questions.)

Figure 2: Exhumation Policy flow chart



4. Central Station

4.1. Brief historical overview: Devonshire Street cemetery (Central Station)

The northern part of the Central Station site was formerly occupied by the nineteenth century Devonshire Street cemetery; specifically the Church of England, Presbyterian, Wesleyan and Roman Catholic burial areas. The burial grounds, called the Sandhills Cemetery or the Devonshire Street Cemetery, was consecrated in 1820[6]. The site was chosen due to the remote location of the cemetery compared to the growing town of Sydney. The cemetery was eventually declared at capacity, and took no more burials from 1865 onwards. Images from the 1890s, shortly before the cemetery was resumed for the expansion of the station, show that the original brick walls for the burial ground were still intact[7].

Proposals raised in the 1880s and 1890s for the construction of a larger station facility at Central Station were adopted, and the clearing of the Devonshire Street cemetery commenced in 1901. On 17 January 1901, the government issued a notice declaring that representatives of any deceased in the cemetery must remove their relatives within two months[8]. By 1902 clearing had been completed.

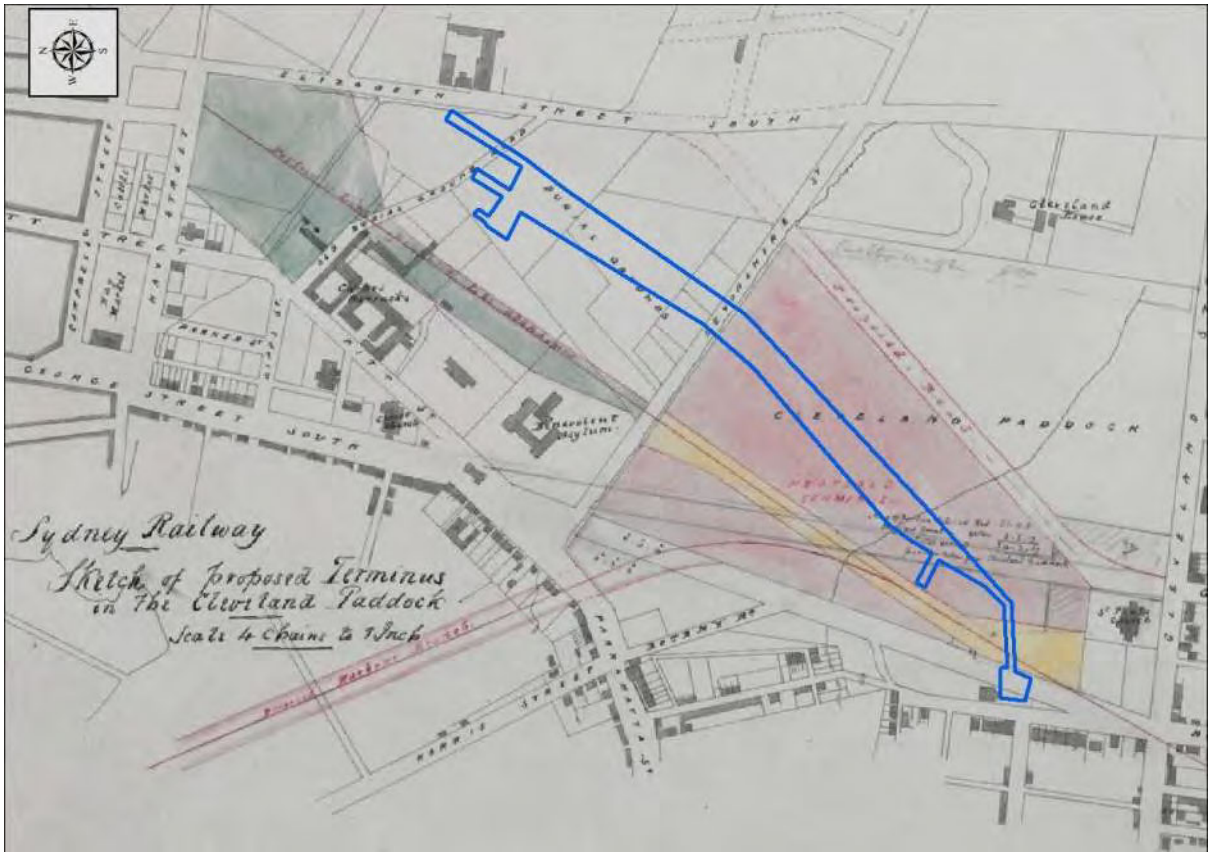


Figure 3: Plan of proposed Central railway station with Devonshire Street cemetery marked in red and the current station footprint indicated by the blue line[9]

[6] *The Sydney Gazette and New South Wales Advertiser*, 5 February 1820.
[7] Artefact Heritage, 2016. *Sydney Metro City & Southwest Chatswood to Sydenham Historical Archaeological Assessment & Research Design*. Report to Jacobs/Arcadis/RPS, pp.227-228.
[8] *The Sydney Morning Herald*, 25 January 1901.
[9] Source: State Records NSW, SR Map 6408 with overlay by Artefact Heritage 2016.

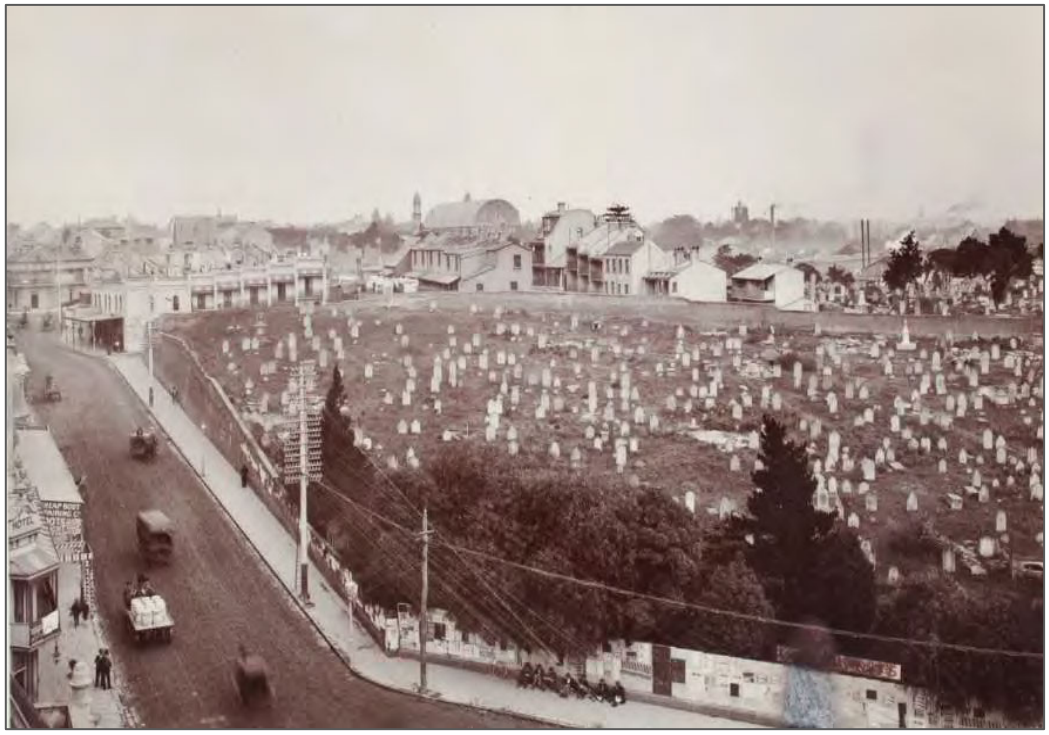


Figure 4: 1890s photo of the Church of England area of the Devonshire Street cemetery, facing south from north-eastern corner[10]

4.2. Archaeological potential of former Devonshire Street cemetery, Central Station

Artefact Heritage have prepared an historical AARD for the City & Southwest Chatswood to Sydenham project to assess archaeological potential and recommend appropriate management and mitigation measures. Central Station was assessed as having low potential for State significant archaeological remains associated with Devonshire Street cemetery as follows:

> *The Devonshire Street cemetery was located in the northern half of the Central Station site. Remaining material from the cemetery could include structural remains such as former footings for the deconstructed burial ground walls, residual brick and stone tombs, and tombstones. Coffins, coffin furniture and human skeletal remains and associated artefacts may also be preserved. Evidence of grave excavation in the form of cut soils and potential clay and sand backfill would be located from the base of the grave shaft to the top of the former ground level.*[11]

During works at the CSMW site, human remains were located in definable burials (including vaults) and scattered in redeposited fill. This ExMP applies to human skeletal remains or burial-related archaeological material.[12]

[10] Source: State Library of New South Wales
[11] Artefact Heritage 2016: 238.
[12] Ibid, pp.255-257

4.3. Special consideration for approvals at the CSMW site

4.3.1. Discovery of human remains and forensic cases: Coroners Act 2009 (NSW)

Consultation with the Coroner has confirmed that fragmented human remains discovered at the CSMW site do not require notification to the NSW Police, as the Coroners Act would not apply, if they meet **all** of the following criteria:

- They are disarticulated bone pieces or fragments, either within an identified burial site such as a grave cut or vault, or dissociated from their original context. For example disarticulated bones, bone fragments or teeth including those found in situ, in redeposited fill or when sieving deposits.
- Are not associated, in a definable burial site, with elements that could identify the interred such as a name plate, certain types of coffin goods such as personal effects, and or a headstone;
- They are more than 100 years old;
- They meet the requirements for exhumation under the Permit issued by SLHDPHU dated 21 January 2019; and
- They have been confirmed to meet the above criteria by a forensic or physical anthropologist, or archaeologist with specialist skills such as an osteoarchaeologist.

Exhumation of human remains: Public Health Regulation 2012 (NSW) and the **h.**

4.3.2. NSW Ministry of Health Policy Statement – Exhumation of human remains (2013)

Sydney Local Health District Public Health Unit has issued a permit, dated 21 January 2019, approving site wide (CSMW) exhumation of fragmented skeletal remains under certain conditions as outlined in the permit. This provides for the management of fragmented remains without the need to seek separate permits for scattered remains that are often only identified during the sieving process, or are not associated with definable burial sites (for example within redeposited fill).

Note that additional health permits may be required if substantial remains such as full or partial articulated skeletal remains, or other elements such as grave goods or coffin nameplates, are found on site.

5. Excavation and post-excavation tasks

The following tasks relate to responses to the identification of human remains on site. All management should be in accordance with the AARD and relevant Archaeological Method Statement (AMS), and be overseen by the Excavation Director. The Excavation Director would nominate a Forensic Anthropologist where required.

5.1. Research Questions

The following research questions should be used guide exhumations, should intact burials, disarticulated remain, burial cuttings or associated material culture be uncovered during works. These research questions are based on research undertaken for the Sydney Metro City & Southwest Chatswood to Sydenham AARD, and review of previous archaeological

excavations that involved recording and removal of human remains. Additional research questions may be provided in project specific AMS documents. Note that some of the questions particularly relate to the former Devonshire Street Century at Central Station.

The research questions are a guide only, and could be added to or amended by the Excavation Director, depending on the nature of the find.

Social History and Burial Practices

- Does the location of the burial/burial cutting correspond with historic plans/descriptions of the Devonshire Street Cemetery? Are these sources reliable?
- Is there evidence of exhumation?
- Do graves cut into older ones? What can this tell us about nineteenth century burial practices in Sydney, and how does this compare to other excavated cemetery sites in the region?
- What is the distance between burials (if multiple burials uncovered)? Does this conform to known nineteenth century burial practices?
- What type of fill was used within grave cuttings? What can this tell us about the surrounding environment and burial practices at the time?
- What materials/tree species were used to produce coffins? Can coffin manufacturing techniques or fastening methods (use of mortar, screws, nails, tacks) be identified? Does this match known burial practices of the time? If alternative methods are identified, what can this tell us about the manufacturer or economic/social landscape?
- Evidence of brick vaults were found during excavations at the Old Sydney Burial Ground in 1991 and 2003,13 is there evidence of similar practices at the Devonshire Street Cemetery?
- Can the class or rank of the individual be identified via coffin materials, grave goods or clothing/shrouds?
- Which direction is the burial orientated? How does this correspond with the known/hypothesised location of denomination areas?
- Previous excavations of historic cemeteries have noted the use of quicklime in burials,14 is there evidence for similar practices at the Devonshire Street Cemetery?
- If the burial is associated with additional individuals, can a familial relationship be assessed through DNA or other genetic markers identifiable within the skeletal remains (e.g. impacted third molar)?
- Can an exchange between burial practices in Britain and colonial Sydney be identified through the burial remains? Is there evidence for alternative burial practices associated with additional cultures?

[13] Godden Mackay, 1991. Old Sydney Burial Ground, Sydney Town Hall: Archaeological monitoring excavation. Prepared for the Council of the City of Sydney and the Heritage Council of NSW and Casey & Lowe, 2006. Recording of Graves, Old Sydney Burial Ground, Sydney Town Hall, 2003-2005, for Otto Cserhalmi i + Partners, on behalf of the City of Sydney.

[14] Hewitt, G. & Wright, R., 2004. Identification and Historical Truth: The Russell Street Police Garage Burials. Australasian Historical Archaeology, Vol. 22.

Environmental Factors and Scientific Analysis

- What is the condition of the bones? How does their condition compare to known or nearby burials of the same age? What environmental or man-made factors may have influenced the decomposition process?
- Can the health, nutrition, sex, race, stature or age be identified through the skeletal remains? Is there evidence of trauma on the bones? Is there evidence of pathology on the bones (e.g. syphilis, tuberculosis, tumours)?
- If archaeobotanical analysis is carried out, what can it tell us about the surrounding environment and nearby plant species? Can pre/post-European landscapes be determined within the archaeobotanical record?
- Can stable isotope analysis address any questions regarding diet, country of origin and nutrition?
- Can DNA testing address any questions not answerable by the skeletal remains themselves, such as sex, familial relationships (if buried with another individual/s) or race?
- Is there potential for DNA to be tested against any individuals who may come forward as a descendant of the deceased?

5.2. Process for DNA Testing, Isotope Analysis and Environmental Sampling

5.2.1. Pre-Excavation

The Excavation Director, in consultation with the Forensic Anthropologist, will nominate a suitable laboratory prior to works commencing. Approval for the analysis of skeletal remains, soil samples and material samples from the laboratory would also be sought prior to works commencing.

5.2.2. Excavation

In order to prevent cross-contamination, the following sample collection and excavation process should be followed:

- The location, quantity and material (bone, teeth, hair, soil, wood) of samples will be determined by the Excavation Director or Forensic Anthropologist prior to its collection;
- Samples would be stored in a safe, secure and climate controlled location while excavations are in progress. This would be chosen by the Excavation Director or Forensic Anthropologist on site;
- Each collected sample would be given a unique catalogue number and a sample register would be recorded throughout the excavation;
- “Clean Excavation’ procedures would be followed during the excavation of burials and during the sample collection process.15 This would include:

[15] Guidelines for ‘clean excavation’ are based on procedures outlined in: Yang, D. Y. & Watt, K. 2005. Contamination controls when preparing archaeological remains for ancient DNA analysis. Journal of Archaeological Science, vol. 32, pp. 331–336 and Society for Historical Archaeology, 2015-2017. Research and Analysis of Artefacts. Accessed online at: https://sha.org/conservation-facts/faq/analysis/#C on 25/5/2017.

- Latex gloves would be worn by individuals excavating and/or handling bone or soil samples. Gloves would be changed for each bone and/or individual to prevent cross-contamination;
- Excavation tools/brushes would be cleaned prior to and after the collection of each sample to prevent cross-contamination;
- In some cases, a face mask would be worn when samples for DNA analysis are being collected;
- Bone samples for DNA testing would be collected with surrounding in situ soil and should not be cleaned prior to bagging;
- It may be necessary for individuals involved in sample collection to submit DNA for comparison in the event of cross-contamination; and
- All bags containing samples for analysis would be bagged and labelled appropriately to prevent cross contamination and ensure they are handled and stored correctly.

5.2.3. Post-Excavation

Upon the completion of excavations, samples will be transported to nominated laboratories for analysis. A record of their location will be taken.

5.3. Reporting

The results of the investigation of human remains and the exhumation will be included in the archaeological reporting for the project in accordance with the project AARD.

Once finalised, all archaeological excavation and data analysis reports will be submitted to:

- The relevant local Council and Library;
- The Heritage Office Library;
- The State Library of NSW; and
- Made available online for public access and educational purposes.

Further, if significant remains are identified during excavations, the results and findings would be published in academic journals and conference papers where feasible.

5.4. Public Involvement

Archaeological excavations associated with the Devonshire Street Cemetery have uncovered remains directly associated with early settlement and burial practices in colonial Sydney. Such remains are likely to generate public interest. Therefore, public engagement and education would be incorporated into the Central Station project and other Metro projects, if relevant and feasible.

Public involvement may include:

- Media releases;
- Public Open Days;
- Preparation of brochures detailing the archaeological excavations;
- Interpretive signage and online blog posts or site diaries while excavations are taking place; and

- The preparation of a Heritage Interpretation Plan designed to provide interpretation of the site within the new development upon the completion of works.

Due to sensitive nature of human skeletal remains, these recommendations would be adapted and modified as appropriate under the direction of Sydney Metro and the Excavation Director.

Such recommendations would also be considered and require approval from relevant Stakeholder Groups such as known or potential descendants of the deceased, the NSW Heritage Division/Heritage Council, local Council and the Royal Australian Historical Society.

5.5. Temporary Storage and Permanent Repository or Resting Place for Remains

5.5.1. Temporary Storage

Upon the completion of archaeological excavations, skeletal remains should be boxed separately and temporarily stored within a safe, secure and temperature controlled environment to allow for further analysis of the remains. This location would be chosen by the Excavation Director and the Forensic Anthropologist and comply with NSW legislative requirements. Permanent Repository or Resting Place for Remains.

A permanent repository or resting place for remains is dependent on the nature and volume of skeletal remains. As this cannot be determined prior to excavations taking place, the following recommendations should act as guidelines only. Final arrangements would be dictated by Sydney Metro the Excavation Director, Forensic Anthropologist, identified descendants of the deceased and/or Stakeholder Groups upon the completion of excavations and subsequent analysis.

Recommendations for permanent repositories or resting places for remains include:

- Reinterment and Commemoration at:
  - Rookwood Cemetery (where many exhumed burials from the Devonshire Street Cemetery were historically re-buried);
  - An appropriate and respectful location within the former permitters of the Devonshire Street Cemetery; and
  - A cemetery chosen by descendants of the deceased (if identified and confirmed by DNA testing).

6. Accountabilities

The Sydney Metro Executive Director, Safety, Sustainability & Environment is accountable for this Plan including authorising the document, monitoring its effectiveness and performing a formal document review.

Direct Reports to the Program Director are accountable for ensuring the requirements of this Plan are implemented within their area of responsibility.

Direct Reports to the Program Director who are accountable for specific projects/programs are accountable for ensuring associated contractors comply with the requirements of this Plan.

7. Definitions

All terminology in this Plan is taken to mean the generally accepted or dictionary definition. Other terms and jargon specific to this Plan are defined within SM QM-FT-435 Integrated Management System (IMS) Glossary.

8. Related Documents and References

Related Documents and References
• n/a

9. Superseded Documents

Superseded Documents
Exhumation Management Plan Version 2.2

10. Document History

Version	Date of approval	Notes
1.1	May 2017	New IMS document.
2.0	July 2017	Incorporates Stage 2 (Section 3)
2.1	February 2019	Extended for Metro Program wide application, includes changes specific Central Station management, incorporates comments received from the State Coroner's Office, NSW Police, NSW Health, Sydney Metro Environmental, Environmental Representatives engaged on the Central site and the Office of Environment and Heritage.
2.2	February 2019	Incorporates comments received from Artefact Heritage and Denise Donlan issued to Health and OEH HD for consultation
3.0	May 2019	Incorporates Health, Coroner and OEH comments

11. Schedule of Acronyms

Acronym	Meaning
AARD	Archaeological Assessment and Research Design
ACHAR	Aboriginal Cultural Heritage Assessment Report
AMS	Archaeological Method Statement
CSMW	Central Station Main Works
CSSI	Critical State Significant Infrastructure
ER	Environmental Representative (Independent)
ExMP	Exhumation Management Plan (this plan)
OEH	Office of Environment and Heritage
PHU	Public Health Unit
RAPs	Registered Aboriginal Parties
SLHDPHU	Sydney Local Health District Public Health Unit
SMEM	Sydney Metro Environmental Manager

Appendix 1

NSW Heath Policy Directive for Exhumation of Human Remains

Policy Directive

Ministry of Health, NSW
73 Miller Street North Sydney NSW 2060
Locked Mail Bag 961 North Sydney NSW 2059
Telephone (02) 9391 9000 Fax (02) 9391 9101
http://www.health.nsw.gov.au/policies/

Exhumation of Human Remains

Document Number PD2013_046

Publication date 05-Dec-2013

Functional Sub group Population Health - Environmental

Summary This document provides the policy to be observed by NSW Health in receipt of an application to seek permission for approval of the exhumation of human remains under clauses 69-72 of the Public Health Regulation 2012. This Policy Directive will provide the conditions on which approvals may be granted for exhumation of human remains.

Replaces Doc. No. Burials - Exhumation of Human Remains [PD2008_022]

Author Branch Environmental Health

Branch contact Environmental Health 94245823

Applies to Local Health Districts, Environmental Health Officers of Local Councils, Ministry of Health, Public Health Units, Public Hospitals

Audience Authorised officers from Public Health Units and local councils

Distributed to Public Health System, Environmental Health Officers of Local Councils, NSW Ambulance Service, Ministry of Health, Public Health Units, Public Hospitals

Review date 05-Dec-2018

Policy Manual Patient Matters

File No. 08/1292

Status Active

Director-General

POLICY STATEMENT

EXHUMATION OF HUMAN REMAINS

PURPOSE

This document provides the policy to be observed by Public Health Units located in Local Health Districts, on receipt of an application to seek permission for approval of the exhumation of human remains under the *Public Health Regulation* 2012. Common reasons for exhuming bodies include to repatriate the remains overseas or to relocate the body to another cemetery plot or vault.

MANDATORY REQUIREMENTS

Under Clause 69 of the *Public Health Regulation 2012* a person must not exhume a body unless the exhumation of the remains has been approved by the Director-General.

An application for approval to exhume the remains of the body of a dead person may be made to the Director General by:

- An executor of the estate of the dead person
- The nearest surviving relative of the dead person
- If there is no such executor or relative available to make the application a person who, in the opinion of the Director-General, is a proper person may make the application.

An application is to be made in the approved form and it is to be accompanied by:

- A certified copy of the death certificate relating to the dead person
- A statutory declaration as to the relationship of the applicant to the dead person and the dead persons wishes, if any, regarding the disposal of his or her body
- An application fee.

Under Clause 71 of the *Public Health Regulation 2012* the Director-General may:

- Grant an approval to exhume the remains of a body
- Refuse the application.

Under Clause 72, an exhumation cannot take place without an authorised officer or a Ministry of Health staff member present. A person must not proceed with an exhumation if the authorised officer or Ministry of Health staff member who is present at the exhumation, orders the exhumation to stop.

Under Clause 78, if the applicant seeks to have the exhumed body cremated a separate application can be made for an exemption from providing the required cremation documentation, provided the body has been buried for longer than 10 years. The minimum 10 year period is strictly enforced. An application under this clause is to be accompanied by a fee of $100.

IMPLEMENTATION

Authorised officers in Public Health Units of Local Health Districts are responsible for assessing applications for exhumation of human remains and either approving with a set of conditions or rejecting the application. Authorised officers should ensure that all of the required document has been submitted with the application fee and that an appropriate person has applied for the application. The approval granted is valid for a period of three months after the approval is granted.

REVISION HISTORY

Version	Approved by	Amendment notes
December 2013 PD2013_046	Deputy Director-General, Population and Public Health	This document is an updating of the original document due to legal changes under the Public Health Regulation 2012
23 April 2008 PD2008_022	Director-General	This document provided the policy to be observed by NSW Health in receipt of an application to seek permission for approval of exhumation of human remains under clauses 25 – 28 of the Public Health (Disposal of Bodies) Regulation 2002. It provided the conditions upon which approvals could be granted for the exhumation of human remains.

ATTACHMENTS

1. Exhumation of Human Remains: Procedures

Exhumation of Human Remains

NSW GOVERNMENT Health

PROCEDURES

Issue date: December-2013

PD2013_046

CONTENTS

1 BACKGROUND

1.1 Introduction

Exhumation of human remains may occur for a number of reasons, including:

- To satisfy family wishes, where the family of the deceased person may want the remains to be moved to another burial ground, to another part of the state or country or abroad, or even to have the remains cremated
- To obey Coronial orders requiring exhumation for forensic (criminal) investigation
- To enable the use of closed cemeteries for redevelopment or for the construction of new infrastructure such as a road or airport.

A variety of people, including authorised officers, cemetery authorities, and funeral directors are involved at different stages of exhumation procedures.

Public Health Units (PHUs) of Local Health Districts (LHDs) in NSW facilitate the approval for an exhumation however there is no obligation to proceed with an exhumation once it has been approved.

The objectives of this document are:

- To assist authorised officers with processing applications to exhume
- To standardise the management of an exhumation so as to prevent a public health risk and protect community amenity in the handling of remains.

1.2 Key definitions

These definitions are repeated from the *Public Health Act 2010* and Public Health Regulation 2012 for clarity:

Body	Means the body of a dead person, but does not include the cremated remains of the person
Burial	Includes putting the body in a vault
Cemetery Authority	Means the person or body that directs the operations of a cemetery
Coroner	Means a person who exercises or performs the functions of a coroner in accordance with the *Coroners Act 2009*
Dead person	Includes a still-born child (see definition of Still birth)
Exhumation	Means the removal of a dead person's remains (not being cremated remains) from a grave or vault, but does not include their removal from one vault for immediate transfer to another vault in the same cemetery or their temporary removal for the purposes of reburial in the same grave or vault

Funeral director	Means a person (other than the operator of a mortuary transport service) who, in the conduct of the person's business, engages, for the purpose of burial, cremation or transport, in the collection, transport, storage, preparation or embalming of bodies or engages in the conduct of exhumations
Prescribed infectious diseases	Means any one of the following diseases: avian influenza in humans, diphtheria; plague, respiratory anthrax; smallpox; severe acute respiratory syndrome, tuberculosis and any viral haemorrhagic fever (including Lassa, Marburg, Ebola, and Congo-Crimean fevers)
Proper person	The Director General has the power to decide whether a person is a 'proper person' to make an application to exhume the remains of a dead person
Nearest surviving relative	Means: (a) In relation to a still-born child a parent, or sibling at or above the age of 16 years, of the child (b) In relation to a dead person who is not a still-born child – the spouse or de facto partner of the dead person immediately before death, a parent of the dead person, a child at or above the age of 16 years of the dead person or any relative of the dead person who was residing with the dead person when he or she died
Still-birth	Consistent with the *Births, Deaths & Marriages Act 1995*, means the birth of a child that exhibits no sign of respiration or heartbeat, or other sign of life, after birth and that: (a) Is of at least 20 weeks' gestation (b) If it cannot be reliably established whether the period of gestation is more or less than 20 weeks, has a body mass of at least 400 grams at birth

1.3 Legal and legislative framework

Public Health Regulation 2012

Division 4 of Part 8 of the Public Health Regulation 2012 provides specific regulation for the exhumation of bodies.

Clause 69 Exhumation without approval prohibited

(1) A person must not exhume the remains of a body unless the exhumation of those remains has been:

(a) Ordered by a coroner

(b) Approved by the Director-General.

(2) However, a funeral director may, without a coroner's order or Director-General's approval, transfer a coffin from a vault in a cemetery to a mortuary for the purpose of the coffin being immediately repaired and returned to the vault.

(3) A funeral director must return the coffin to the cemetery within 24 hours of its transfer.

Clause 70 Application to exhume remains

(1) An application for approval to exhume the remains of the body of a dead person may be made to the Director-General by:

(a) An executor of the estate of the dead person

(b) The nearest surviving relative of the dead person

(c) If there is no such executor or relative available to make the application a person who, in the opinion of the Director-General, is a proper person in all the circumstances may make the application.

(2) An application is to be made in the approved form and is to be accompanied by:

(a) A certified copy of the death certificate relating to the dead person

(b) A statutory declaration as to the relationship of the applicant to the dead person and the dead person's wishes, if any, regarding the disposal of his or her body (so far as any such wishes are known to the applicant)

(c) An application fee (please check with the PHU for the current fee).

(3) In this clause, death certificate means a certificate given by a medical practitioner as to the cause of death or issued under the *Births, Deaths and Marriages Registration Act 1995*.

All applications to exhume remains must be made in writing using an approved form to the Director of the local Public Health Unit that acts on behalf of the Director-General of the NSW Ministry of Health. The application fee may increase periodically in line with the Consumer Price Index.

Clause 71 Approval to exhume remains

(1) The Director-General may:

(a) Grant an approval to exhume the remains of a body, subject to any conditions specified in the approval

(b) Refuse the application.

(2) An approval granted under this clause remains valid for three months from the date of the approval or for a period agreed to by the Director-General.

The PHU is not bound to approve the application. The PHU may approve, subject to conditions, or refuse the application. An approval is normally given for 3 calendar months and this date will be specified in a schedule of conditions attached to the approval document. Any further extension of time may require re-application and re-approval. An approval initially for longer than three calendar months should be negotiated with the PHU.

Clause 72 Exhumation not to take place without authorised officer present

(1) A person must not proceed with an exhumation unless an authorised officer or a member of staff of the Ministry of Health is present at the exhumation.

(2) A person must not proceed with an exhumation if the authorised officer or Ministry staff member who is present at the exhumation orders the exhumation to stop.

The grave may be excavated to the lid of the coffin but nothing must be disturbed until the arrival of the authorised officer. An authorised officer must be present at the exhumation to ensure that the correct interment is opened, to ensure that all of the remains are exhumed and to enforce the protection of public health should this be necessary. The authorised officer has the power to order that the exhumation be stopped immediately under adverse circumstances. An example of where this may occur is where the weather is very poor with heavy rain. The initial order to stop is to be given verbally and then confirmed in writing to all parties involved, within 24 hours.

Division 5 of Part 8 of the Public Health Regulation 2012 provides for cremation of deceased persons.

Clause 78 No cremation without documentation

Clause 78 does not apply to a cremation of the body of a dead person that has been buried for at least 10 years if the cremation is carried out in accordance with an exemption granted by the Director-General following an application by:

1) An executor of the estate of the dead person
2) The nearest surviving relative of the dead person
3) If there is no such executor or relative available to make the application a person who, in the opinion of the Director-General, is a proper person in all the circumstances to make the application.

This is a new addition to the Exhumation section of the Regulation that may be used where a person makes a separate application to have the exhumed body cremated following the exhumation.

Note: The Director-General's authority under Clause 78 (4) of the Public Health Regulation 2012 (Delegations Manual page 8.66, delegation (PH590)) is the power to decide whether a person is a "proper person" to make an application in the absence of an executor or surviving relative.

Work Health and Safety Act 2011

The *Work Health and Safety Act 2011* and Code of Practice for Excavation provisions apply to protect personnel involved in the exhumation procedure by creating and maintaining safe and healthy work practices. Graves, crypts and vaults could be considered to be confined spaces in some circumstances under health and safety legislation. The *Work Health and Safety Act 2011* makes reference to working in confined spaces.

WH&S matters are enforced by WorkCover NSW. More information on safe work practices is available at http://www.workcover.nsw.gov.au/default or by contacting Workcover NSW direct on 13 10 50.

Heritage Act 1977

The *Heritage Act 1977* and Guidelines for the Management of Human Skeletal Remains under the *Heritage Act 1977* applies to relic burials. Any burial site over 50 years old is considered to be relic under the *Heritage Act*. If the site is listed on the State Heritage Register then approval is required from the Heritage Council of NSW.

An application must be made to the Heritage Office before any disturbance, removal or work commences on the site. Approval for an exhumation under the Public Health Regulation 2012 does not obviate the necessity to obtain approval under the *Heritage Act 1977*. For further information contact the Heritage Office of NSW or visit: http://www.heritage.nsw.gov.au.

Coroner's Act 2009

A coroner may order an exhumation for the purposes of forensic investigation or a criminal investigation. Such an order is outside the ambit of the Public Health Regulation 2012. The Police may request that an authorised officer from the Ministry of Health or the local Public Health Unit be present at the coronial exhumation.

Births, Deaths and Marriages Registration Act 1995

Section 41(2) of the *Births, Deaths and Marriages Registration Act 1995* requires that if human remains (other than cremated remains) are removed from NSW, the funeral director or other person who arranges for the removal of the remains from NSW must, within 28 days of disposal of the remains outside NSW, give the Registrar notice of the new location of interment. The act is available at: http://www.austlii.edu.au/au/legis/nsw/consol_act/bdamra1995383/. The Registry of Births, Deaths and Marriages may be contacted via: http://www.bdm.nsw.gov.au.

2 APPLICATION REQUIREMENTS

An application for permission to exhume the remains of a deceased person is to be made to the PHU on the approved form which is contained at the NSW Ministry of Health website at http://www.health.nsw.gov.au/environment/dotd/Documents/form-c70-application-to-exhume.pdf

The application must be made by either:

- An executor of the estate of the deceased
- The nearest surviving relative

- If there is no such executor or relative available to make the application a person who, in the opinion of the Director-General, is a proper person in all the circumstances to make the application.

The application must be accompanied by:

- A certified copy of the death certificate (death certificate issued by the Registry of Births, Deaths and Marriages)
- A statutory declaration that states:
  - The relationship between the applicant and the deceased or the reason the applicant is the proper person to make the application
  - If the deceased left any instructions regarding the disposal of their body/remains if known
  - In addition to the above an applicant should declare that he or she has consulted each nearest surviving relative and that they have no objection to the proposed exhumation
  - An application fee (please check with the PHU for the current fee).

Note: If there is no agreement amongst nearest surviving relatives, the applicant should seek independent legal advice regarding this issue. The applicant should advise if there is an intention to cremate the body following the body being exhumed, and the appropriate form completed.

3 APPROVAL BY PUBLIC HEALTH UNITS

Approval by PHUs for an exhumation must be given by formal correspondence.

3.1 Delegation

The Director-General's authority under clauses 69(1), 70(1)(c) and 71 of the Public Health Regulation 2012 has been delegated to the Chief Health Officer, Director Health Protection, Public Health Officer or Public Health Unit Director as appointed under Section 121 of the Act (delegation PH/308, PH309).

3.2 Special Considerations on Exhumation Approval

Special consideration should be given to the approval of an exhumation if the deceased was infected with a prescribed infectious disease. For example if the deceased was infected with diphtheria or tuberculosis, exhumation should not permitted in the first year of interment.

Although not prohibited, an exhumation of the remains of a body that was buried without a coffin will be approved only where the cemetery authority and funeral director have agreed to proceed with the exhumation, especially during the first three years of interment.

3.3 Conditions of Approval

After due consideration of the application and the statutory declaration(s), the PHU should then consider applying appropriate conditions to facilitate an approval.

There are two standard sets of approval conditions which can be applied as appropriate:

- Appendix 2 – Schedule A - Conditions of Approval for Exhumation from a Grave
- Appendix 3 – Schedule B - Conditions of Approval for Exhumation from an Above Ground Structure

Any other additional conditions that are deemed necessary to permit the exhumation may be added to schedule A or B based on the individual circumstances of the exhumation. If some conditions are unwarranted they may be removed from the relevant schedule.

3.4 Approval Instrument

An approval must be in writing and must be signed the Director General or their delegate. A template to assist in the approval process can be found at Appendix 4. This template is to be completed by the Authorised Officer in order to facilitate approval by the delegate.

3.5 Notification of Approval

The approval instrument is retained on file as a record that approval was granted by the Director General or their delegate. Therefore it is necessary to advise the applicant, the cemetery authority and the funeral director of the approval.

The attached letter templates may be used for approval notification of the exhumation to the applicant, funeral director and Cemetery Authority.

- Appendix 5 – Sample Letter to Applicant
- Appendix 6 – Sample Letter to the Cemetery Authority and Funeral Director

3.6 Refusals

If after due consideration the application is to be refused then the applicant should be notified in writing specifying the reasons for refusal. Ideally the applicant should consult the PHU in the first instance to discuss the requirements and possible restrictions on an application to exhume.

3.7 Cremation of Remains

Division 5 of Part 8 of the Public Health Regulation 2012 sets out the requirements for documentation for cremations in NSW and includes the requirement for a cremation application form, a cremation certificate and the cremation permit. The documentation confirms the identity of the body to be cremated and the cause of death and ensures that a coroner's investigation has been conducted where necessary.

After the body is exhumed the next of kin may wish to have the body cremated. However there may be cases whereby the body does not have the required paperwork necessary for cremation. Clause 78 of the Public Health Regulation 2012 provides an exemption for

the required documentation for cremation where the body has been buried for longer than 10 years. An application under this clause is to be accompanied by a fee.

The Director General has the power to approve an exemption and the executor or the nearest surviving relative or another proper person may make application on form 'Application for Exemption by the Director – General to the Requirement for Documentation for Cremation to Proceed: Permission for Cremation of Exhumed Remains of a Body Buried more than 10 years ago with statutory declaration'. The minimum 10 year period will be strictly enforced and this matter should be clarified prior to any exhumation approval where it is planned for the remains to be subsequently cremated. The application form is available at: http://www.health.nsw.gov.au/environment/dotd/Documents/form-c78-application-for-exemption.pdf

APPENDIX 1

Schedule A

CONDITIONS OF APPROVAL FOR EXHUMATION FROM GRAVE

1. The exhumation is to be carried out in the presence of a Public Health Unit's authorised officer or other authorised officer of the NSW Ministry of Health or Local Council authorised Officer and person appointed by Cemetery Authority.
2. At least 48 hours notice of the exhumation arrangements shall be given to the Public Health Unit.
3. Day and time of the exhumation shall be arranged by the participating parties and agreed to by the Public Health Unit.
4. The approval granted is valid for a period of three months and shall lapse on ___ /____/_____, unless a further approval is granted.
5. The presence of any relative of the deceased at the exhumation is strictly prohibited.
6. No animals are to be permitted within the exhumation site.
7. The cemetery authority and funeral director shall be responsible for the work health and safety of all persons involved in the exhumation and shall ensure that all NSW WorkCover requirements are complied with.
8. If, during the course of the exhumation, it is determined necessary to stop the exhumation by either the exhumation supervisor / cemetery manager or authorised Officer, for any valid reason e.g. work health and / or public health risk, then the exhumation must cease.
9. The remains of the deceased shall be enclosed in a body bag and placed into a new coffin with a name plate attached inscribed with the name of the deceased.
10. The remains of the original coffin are to be placed in the new coffin where possible. Where there is an excess of remains of the original coffin, these remains should be disposed in a sanitary and agreed manner.
11. Excavated soil should be back filled. The soil that was removed from immediately above and around the coffin should be replaced first.
12. If the exhumed remains are to be transferred to another cemetery, a funeral director shall be contracted to transfer the remains from the cemetery grounds or carry out preparatory work for the safe reinterment of the remains.
13. The exhumation will not proceed during or following a period of heavy rainfall within the preceding 24 hours of the appointed time of exhumation. The cemetery manager is to confirm that satisfactory conditions exist for the exhumation to proceed two hours prior to the commencement of the exhumation.
14. Used disposable protective equipment and materials are to be placed in a sealed plastic bag and disposed of in a sanitary manner.

APPENDIX 2

Schedule B

CONDITIONS OF APPROVAL FOR EXHUMATION FROM ABOVE GROUND STRUCTURE

1. The exhumation is to be carried out in presence of a Public Health Unit authorised officer or other authorised officer of the NSW Ministry of Health or Local Council authorised Officer and person appointed by Cemetery Authority.

2. At least 48 hours notice of the exhumation arrangements shall be given to the Public Health Unit.

3. Date and time of the exhumation shall be arranged by the participating parties and agreed to by the Public Health Unit.

4. An approval granted is valid for a period of three months and shall lapse on ___ /____/_____, unless a further approval is granted.

5. The cemetery authority and funeral director shall be responsible for the work health and safety of all persons involved in the exhumation and shall ensure that all NSW WorkCover requirements are complied with.

6. If, during the course of the exhumation, it is determined necessary to stop the exhumation by either the exhumation supervisor / Cemetery Manager or authorised officer, if for any valid reason e.g. worker health and/or public health risks, then the exhumation must cease.

7. Used disposable protective equipment and materials are to be placed in a sealed plastic bag and disposed in a sanitary manner.

APPENDIX 3

{LETTERHEAD}

APPROVAL INSTRUMENT TEMPLATE

Public Health Unit
Environmental Health Section

File Number: [XXXXX]

PURPOSE: To approve of the exhumation of the late _____

RECOMMENDATION:

Approval is granted by the Director General pursuant to clause 71(1)(a) Public *Health Regulation* 2012 to [NAME OF APPLICANT] to exhume the remains of the late [NAME OF DECEASED].

KEY ISSUES:

[DETAILS OF THE APPLICATION, STATUTORY DECLARATION, RELEVANT ISSUES, MANAGEMENT PLAN AND JUSTIFICATION OF SUGGESTED CONDITIONS ARE TO BE INCLUDED HERE]

BACKGROUND: (TO BE COMPLETED BY PHU)

CONSULTATION: (TO BE COMPLETED BY PHU WHERE APPROPRIATE)
The approval be subject to compliance with the conditions specified in *Schedule A / Schedule B and to expire on _____/____/_____.

Signature: Authorised officer

Author: **Telephone:** **Date:**

---

1 Authorised officer

2 Public Health Unit Director/ Public Health Officer [SIGN AND DATE]:
Approved via delegation from the Director-General PH308, PH309 page 8.63 Public Health Delegations Manual under clause 69(1) and 70(1) (C) *Public Health Regulation* 2012.

3. Authorised officer

APPENDIX 4

{LETTERHEAD}

SAMPLE LETTER TO APPLICANT

[APPLICANT'S NAME]
[ADDRESS]

Dear [APPLICANT'S NAME]

Reference is made to your application of [DATE] requesting approval to exhume the remains of late [NAME OF DECEASED] from *grave / vault / crypt No: _____, Section _____, [NAME OF PLACE OF INTERMENT OR CEMETERY] for the purpose of re-interment to [NAME OF PLACE FOR RE-INTERMENT].

Approval has been granted by the Director-General pursuant to clause 71 (1) (a) *Public Health Regulation* 2012, subject to compliance with the conditions specified in *Schedule A / Schedule B attached.

The funeral director and cemetery authority have been advised of the approval.

Should you have any inquiries please contact the authorised officer [EHO] on [TELEPHONE] or (EMAIL ADDRESS).

Yours sincerely,

[NAME]
Public Health Unit Director/Public Health Officer

APPENDIX 5

{LETTERHEAD}

SAMPLE LETTER TO CEMETERY AUTHORITY AND FUNERAL DIRECTORS

[NAME]
[ADDRESS]

[DATE]

Dear [NAME]

EXHUMATION OF THE REMAINS OF THE LATE [NAME OF DECEASED]

Approval has been granted for the exhumation of the late [NAME OF DECEASED] from *grave / vault / crypt No: _____, Section _____, [NAME OF PLACE OF INTERMENT OR CEMETERY] in accordance with clause 71(1) (a) of the *Public Health Regulation 2012,* and subject to compliance with the conditions specified in Schedule A / Schedule B attached.

A copy of the approval letter is attached for your information.

Should you have any inquiries please contact [Authorised Officer) on [TELEPHONE] or email address.

Yours sincerely,

[NAME]
Public Health Unit Director/Public Health Officer

Addendum 2

NSW Heath Permit Application form

APPLICATION TO EXHUME REMAINS

PUBLIC HEALTH REGULATION, 2012 Clause 70(2)

In accordance with the requirements of Clause 70 (2) of the Public Health Regulation 2012, I …….
(Full name of applicant)

…… of …… hereby
(Address)

apply for permission to exhume the remains of the late ……..
(Name of deceased)

from Grave No:…….., Section: ……, being a single

interment within the ……..……Cemetery, for the purpose of ……

……

I seek permission to exhume for the following reason/s:

……

The deceased: *(cross out which is not applicable)*

- was not known to be infected with a prescribed infectious disease as defined in clause 53 of the Public Health Regulation 2012; or
- was known to be infected with a prescribed infectious disease as defined in clause 53 of the Public Health Regulation 2012

I am entitled to make this application, because I am: *(tick one)*

1. [ ] The executor of the estate of the deceased; or
2. [ ] The nearest surviving relative of the deceased; or
3. [ ] If there is no such executor or relative available to make the application, another the proper person to make the application for the reasons set out below:

…….
(Full reasons for proper person to make application)

Attached is:

1. A certified copy of the death certificate of the deceased.
2. A statutory declaration as to:
   - My relationship to the deceased; and
   - the wishes of the deceased regarding the disposal of the body (if known);
   - the reasons why the Director-General may consider me the proper person in all the circumstances to make the application (if applicable)
3. The application fee of $……

The exhumation is to be supervised in strict accordance with the attached Plan of Management

by …….

employed with ……..(Funeral Director/Cemetery)

in the capacity of ……

Signature: ……. Date: ……..
(Applicant)

Addendum 3

Central Station Heath Permit

Public Health Unit

Health
Sydney
Local Health District

[redacted]
Director Environment, Sustainability and Planning Sydney Metro
Level 43, 680 George Street
SYDNEY NSW 2000

Dear [redacted]

Reference is made to your application of 16th January 2019 requesting approval to exhume the fragmented skeletal remains from an old burial vault at the former Devonshire Street Cemetery located at Central Railway Station near Platform 13. I note that this is for the purpose of salvage and reburial of the remains.

Approval has been granted pursuant to clause 71(1)(a) of the *Public Health Regulation 2012* to exhume and re-inter the remains, subject to the remains being treated with dignity and respect, and in compliance with Sydney Metro's *Exhumation Management Plan Version 2.0* (SMEMP2). If the remains are to be transferred to another cemetery for re-interment, a funeral director shall be contracted to transfer the remains to the cemetery and to carry out any necessary preparatory work for the safe reinterment of the remains. The remains are to be placed in a coffin for reinterment and an identifying plate with name (if known) or other identifying details should be attached. For example the plate might state "Unknown Burial from Former Devonshire St Cemetery, reinterred here on <date>".

This approval will extend to any further fragmented skeletal remains found at the former Devonshire Street Cemetery located at Central Railway Station in the areas being excavated for the new Sydney Metro, as shown on the site plan in Annexure A. Should any substantial remains, such as full or partial articulated skeletal remains, or other elements such as grave goods or coffin name plate be found on the site that could identify the interred, the Sydney Local Health District Public Health Unit (SLHDPHU) will need to be advised as soon as practicable. Additional assessment or further approvals may be required at that time subject to the nature of the discovery.

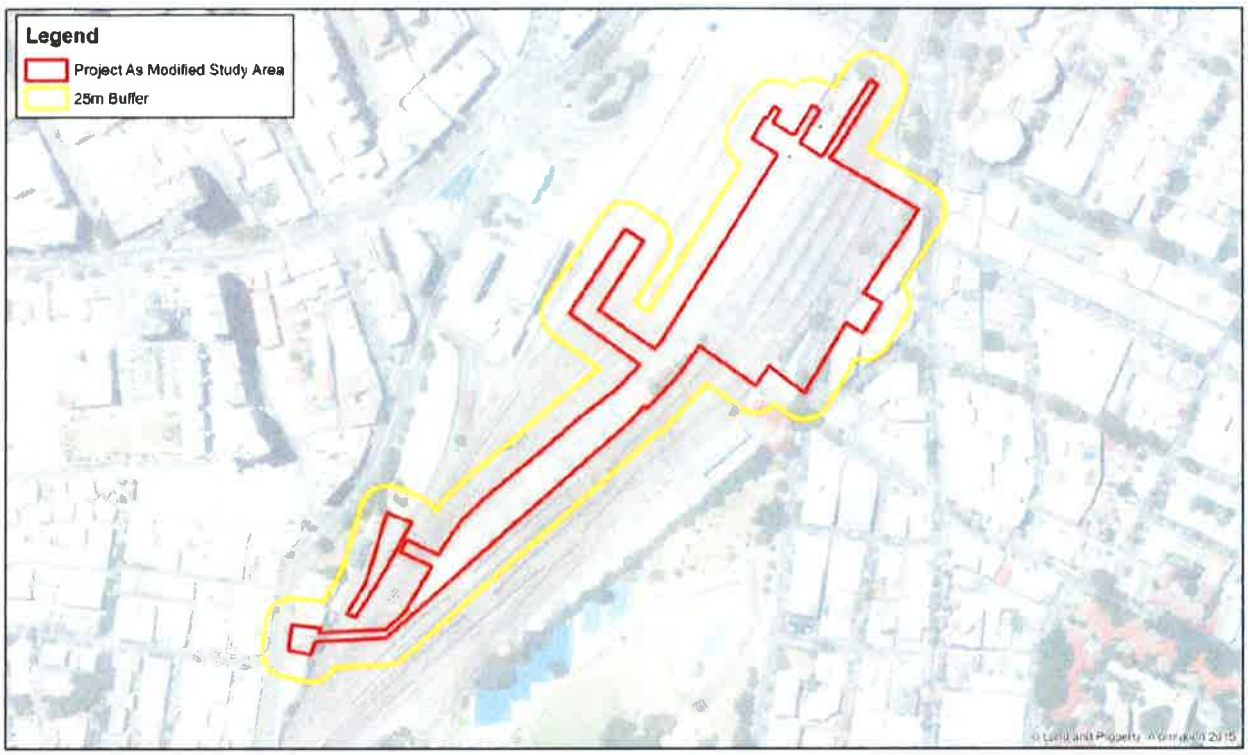
Should you have any enquiries, please do not hesitate to contact Geoff Tan, Environmental Health Officer on (02) 9515-9420.

Yours sincerely

[redacted]
Acting Director, Public Health

21st January 2019

Annexure A


Legend
Project As Modified Study Area
25m Buffer
N
Central Walk Project As Modified Study Area
Sydney Metro City and Southwest Chatswood to Sydenham
LGA: Sydney
SCALE
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SIZE
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0
75
150
300
Metres
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Appendix F
Heritage Wall Memo

MEMO

DATE: 4 July 2022 **AMBS Ref**: 20870M5

TO: [redacted] Design Manager, Construction, Watpac Besix Group

FROM: [redacted], AMBS Senior Historical Heritage Consultant

SUBJECT: Statement of Heritage Impact: Installation of temporary stormwater pipes, High Street retaining wall and cutting, Barangaroo

The Sydney Metro & City Southwest project was approved by the Minster for Planning on 9 January 2017 as Critical State Significant Infrastructure. AMBS Ecology & Heritage (AMBS) was responsible for managing all heritage aspects of the Sydney Metro City & Southwest Chatswood to Sydenham Metro project TSE works, and production of the overarching Construction Heritage Management Plan for the project.

The construction of the new Barangaroo Station for the project involved substantial excavations for the station box in Hickson Road, adjacent to the High Street cutting and retaining wall. The Barangaroo Station site is within the *Millers Point & Dawes Point Village Precinct*, which is Item 01682 on the State Heritage Register (SHR). The Precinct has identified historical, associative, aesthetic, and social significance, research potential, rarity and representativeness. The High Street cutting and retaining wall (High Street wall) is a contributory element to item 01682 and shares its State significant heritage values.

In 2017 AMBS prepared the *Statement of Heritage Impact* (SoHI) for the protective measures; rock anchoring and protective mesh, used to protect the High Street Wall during construction of the station box under Hickson Road. Additionally, a memo prepared by AMBS in April 2018 outlined specific details regarding the method of fixing the rockfall protective mesh as well as recommendations surrounding its future removal. In 2021 AMBS prepared a management document for the removal of the protective mesh (20870M1).

The Minister's Condition of Approval relevant to the protection of heritage is:

> *E10 The Proponent must not destroy, modify or otherwise physically affect any Heritage item not identified in documents referred to in Condition A1 (which refers to the project EIS and PIR).*

The current proposal for temporary stormwater lines to be attached to the High Street wall is outside the scope of works covered by the project EIS and PIR. This SoHI has been prepared to address the potential heritage impact of the proposal.

This SoHI was written by Mike Hincks, AMBS Senior Historical Heritage Consultant, with advice from Jennie Lindbergh, AMBS Director Historic Heritage.

Proposal

The proposal is to temporarily divert stormwater lines that run between High Street and Hickson Road so that the drainage system can continue to function during the demolition of

the Hickson Road bridge. The Hickson Road bridge is a temporary structure that has been in place since 2018, and has allowed traffic to pass over the station box during construction. The stormwater lines that need to be diverted are vertical pipes that run down the face of the High Street wall. The lines have outlets into a large capacity pipe that is suspended beneath the Hickson Road bridge. The functioning of the suspended pipe cannot be maintained during demolition of the bridge.

The stormwater lines have been recessed into the retaining wall and cutting, and have been encased in concrete which has been rendered so that it is flush with the face of the wall. The proposed diversion involves cutting the concrete encasement to expose four of the pipes at four separate locations along the High Street wall. New connections will be added which will channel the stormwater into four PVC pipes that will be suspended along the length of the wall. The pipes are between 200mm and 350mm in diameter. These pipes will reconnect with the subsurface system at the northern end of the Hickson Road bridge.

Once the demolition is complete, and Hickson Road is permanently reinstated, the vertical stormwater lines will be directly reconnected with the large capacity system below ground, and the temporary pipes will be removed. It is expected that the temporary stormwater diversion will need to be in place for six months.

Heritage Context and Significance

The High Street retaining wall and cutting is a large-scale modification that was designed to allow the continuation of Sussex Street north along the steep and rocky shoreline to Miller's Point and Dawes Point. It incorporates both a cutting into sandstone bedrock and a retaining wall above. The wall and cutting together create a vertical face bordering the eastern side of Hickson Road for 300m from the Munn Street overbridge in the north, to the High Street Steps in the south. The wall forms the boundary between Barangaroo and Millers Point in the Sydney City Local Government Area (LGA).

The wall is a contributory element of the *Millers Point & Dawes Point Village Precinct* (SHR 01682). The Statement of Significance for the item makes particular reference to the setting and layout of the precinct, and the wall forms a distinctive landscape element in that setting. The Statement of Significance notes that the modifications and changes that have taken place in response to the engineering and building challenges on the peninsula have both capitalised on, and conflicted with its original form, which give it its unique character and are evidence of its development as a maritime cultural landscape:

> *The natural rocky terrain, despite much alteration, remains the dominant physical element in this significant urban cultural landscape in which land and water, nature and culture are intimately connected historically, socially, visually and functionally.*
>
> *…The postcolonial phase is well represented by the early 20th century public housing built for waterside workers and their families, the technologically innovative warehousing, the landmark Harbour Bridge approaches on the heights, the parklands marking the edges of the precinct, and the connections to working on the wharves and docklands still evident in the street patterns, the mixing of houses, shops and pubs, and social and family histories of the local residents.*
>
> *Millers Point & Dawes Point Village Precinct has evolved in response to both the physical characteristics of its peninsular location, and to the broader historical patterns and processes that have shaped the development of New South Wales*

since the 1780s… The whole place remains a living cultural landscape greatly valued by both its local residents and the people of New South Wales. (HO)

In February 2017, GML Heritage prepared a Heritage Assessment of the High Street wall. The report details the contributory value of the wall to the significance of the *Millers Point & Dawes Point Village Precinct.* The supporting Statement of Significance for the wall is:

> *The Hickson Road Retaining Wall is a significant, contributory built element within the Millers Point and Dawes Point Village Precinct and the Millers Point Conservation Area, an intact residential and maritime precinct of outstanding state significance. The retaining wall is a dominant and relatively intact component of the extensive alterations to the natural topography of Millers Point designed to facilitate the management of cargo into and out of the new two-level finger wharves. The wall incorporated steps at its northern and southern ends to provide improved access to the wharves for stevedores and wharf workers who resided in Millers Point.*
>
> *It provides a dramatic street edge to the eastern side of Hickson Road. The wall has landmark quality and displays an interface of fabrics, comprising the excavated rock face, cement render and masonry construction at the northern end of the wall. While there are varying degrees of erosion and deterioration to the stone/render, as well as intrusive fixtures, signage and penetrations, the retaining wall continues to define the edge of Millers Point and makes a positive contribution to the unique landscape character of Hickson Road.*
>
> *The Hickson Road Retaining Wall holds social significance as it forms part of the 'Hungry Mile', a historic stretch of Sydney's waterfront where men and women would walk from wharf to wharf in search of employment during the Great Depression of the 1930s* (2017:22-23)

Historical Context

A detailed history of the High Street wall and the surrounding area has been prepared by AMBS for the project in *High Street Cutting, Millers Point Statement of Heritage Impact* (AMBS Ecology & Heritage, 2017) and by GML in *Hickson Road Retaining Wall Heritage Significance Assessment* (GML Heritage, 2017). Comprehensive histories of the development of the Barangaroo station site and the local area including the High Street wall have also been prepared for the Barangaroo TSE works Archaeological Method Statement (Casey & Lowe, 2017) and the Barangaroo COP works Archaeological Method Statement (AMBS Ecology & Heritage, 2021).

These histories have been used to create and support the assessments and statements of significance which are referred to in this document and should be consulted if further background information is required. The below is a brief summary which contextualises the construction of the wall and its continued relevance to the local environment.

From the early nineteenth century, Millers Point was extensively quarried to supply the construction of housing and public infrastructure, such that the area around Kent and Windmill Streets was known as The Quarries. The quarry was worked by convicts who gradually formed the small local streets and modified the natural topography to form the escarpment which ran along Kent Street. The main access to the quarries and the few houses

in the area was a rough path along the Darling Harbour foreshore to the northern extremity of the Point and the three windmills.

As the shoreline around the town became increasingly developed, waterfront space was at a premium, and new wharfs and shipbuilding enterprises were forced to utilise the more difficult to access and less desirable parts of the harbour. As industry and trade intensified at the northern end of the eastern shore of Darling Harbour, pressures on the limited available access between - and to - the waterfront lots increased.

A new direct access was proposed from 1897 to connect the Maritime Services Board at West Circular Quay to the west side of the peninsular along Darling Harbour through Walsh Bay and Pyrmont to terminate at Harris Street. It was not until the establishment of the Sydney Harbour Trust that the proposal could be realised, and in 1909, work began on constructing Hickson Road. Between Munn Street and the present day location of the building at 30 Hickson Road, the process entailed cutting back the cliff face and constructing the retaining wall supporting High Street. The reinforced concrete bridges over Munn, Windmill and Argyle Streets were completed between 1910 and 1914.

The section along Hickson Road that is defined by the High Street wall is today representative of the depression-era district known as the 'Hungry Mile.' The name was given to the mile of wharves between Darling Harbour and Millers Point by the maritime workers who walked in the hope of casual low-paid work each day from the early twentieth century into the 1940s.

Analysis of the Proposed Works

Description of the works

The proposed works involve the temporary relocation of a stormwater line, which is currently suspended from the deck of the temporary bridge supporting Hickson Rd. The stormwater pipe is to be relocated to the side of the Hickson Road wall using existing rock anchor brackets, and connecting it to the existing downpipes which are located behind the wall encased in concrete. The stormwater line will be connected into an existing pit (SWP-4) and discharged through the existing stormwater drainage line to the north of the Hickson Road bridge.

The diverted stormwater line will be removed from the High Street wall prior to completion of the project, and the apertures in the High Street wall will be made good with like-for-like material.

Reason for the new works

The existing pipe that is suspended beneath the Hickson Road bridge has broken on three occasions due to failures at the joint connections and the increased volumes created by recent heavy downpours. The ruptures have caused flooding of the station box. If the suspended stormwater line were to remain active during the demolition, there would be considerable risk of increased damage to the connections, and further flooding.

The existing service cannot be protected in such a way that the Hickson Rd bridge can be safely demolished without damaging the stormwater pipe. The constraints at the site are such that it would not be possible to provide feasible safe access into the work area to rectify any damage that may be caused if the existing pipe failed during demolition.

This proposal allows for a temporary stormwater to be installed and left in situ until the permanent stormwater has been completed without having to break the line and create

multiple stages of temporary connections, which would also increase the risk of flooding in a heavy weather event.

Figure 1: Location of the High Street wall, downpipes (SBR) and length of the diversion.

Area to be affected

The diversion will run along 171m of the 300m-long wall and will involve attaching four PVC pipes. The pipes are between 200mm and 350mm in diameter. Each pipe will connect to a separate downpipe (Table 1).

Table 1: Length of diversion

Downpipe No.	Length of diversion	Location
SBR 3.2	171m	100m north of High Street Steps
SBR 3.3	127m	144m north of High Street Steps
SBR 3.4	110m	161m north of High Street Steps
SBR 3.5	47m	223m north of High Street Steps

Figure 2: Illustration of the diversion.

Figure 3: Location of downpipe SBR 3.2.

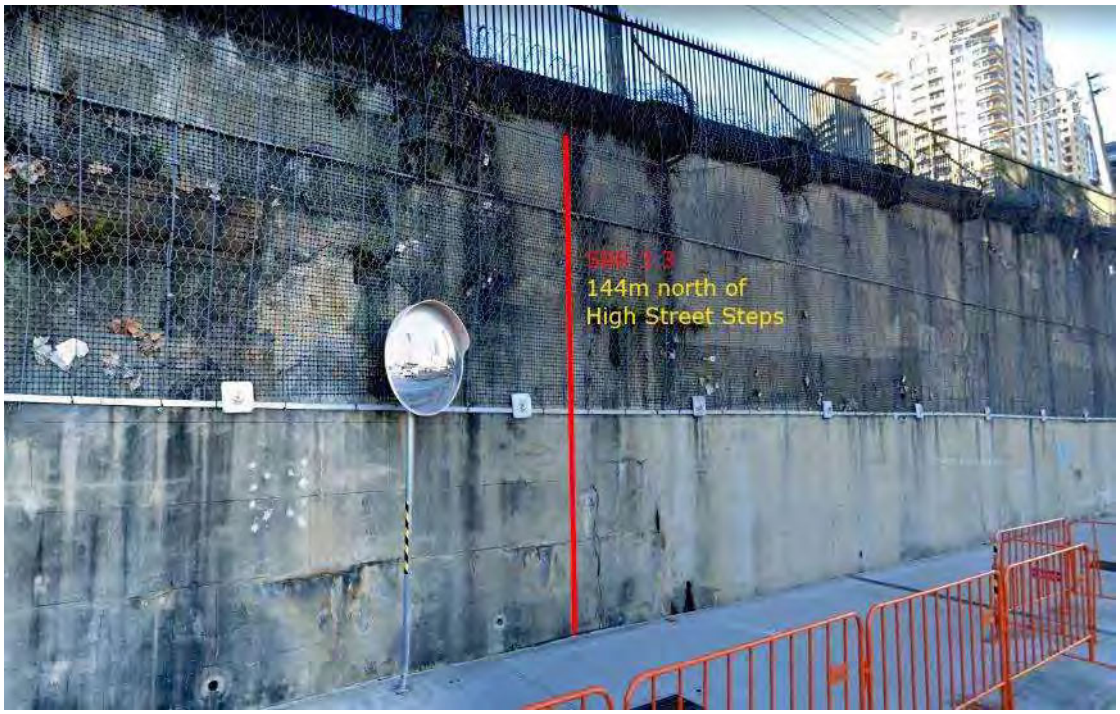


Figure 4: Location of downpipe SBR 3.3.

Figure 5: location of downpipe SBR 3.4.

Figure 6: Location of downpipe SBR 3.5.

Connection to the existing downpipes

The concrete covering the downpipes will be cut in an area of 400mm x 400mm to expose the existing pipe and allow a new connection to be made. The cutting methodology will utilise a stitch core method to ensure that only the concrete within the recess created for the downpipe is cut and that the cut does not extend into the adjacent sandstone. A stitch core

method involves drilling multiple holes which are overlapped to form a continuous cut. Typically, this method of core drilling replaces conventional concrete sawing when the overcutting of corners cannot be made either for structural or aesthetic reasons. The drilling of core holes in the corners of the concrete section to be removed means that a saw blade does not have to be passed beyond the margin of the corner. The method also makes a cleaner, more precise cut because there is no overcutting involved. Four holes in total will be cut in the location of four different downpipes along the length of the High Street wall.

Attaching the new pipes to the High Street wall

The 400mm x 400mm apertures will allow the connection of an L-shaped joint to each of the downpipes. The L-shaped joint will connect into a PVC pipe attached to the face of the wall by wire hung from the existing mesh anchors. The wire will have a safe working load of 2000kg and will utilise the existing rock bolts located at 3m intervals along the length of the diversion.

Removing the temporary stormwater diversion

The downpipe connections will be reinstated below ground and the apertures repaired with cement render to match the existing. The PVC pipes will be removed from the face of the wall. Full photo-documentation of the wall will be undertaken prior to installation of the diversion to ensure that the new render will replicate as best as possible the appearance of the wall before the works.

Physical Analysis of the Wall

The downpipes appear to have been installed when the retaining wall was constructed, as they have been covered with the same render to produce a uniform finish. The render has been scored to replicate large masonry blocks, and the scoring has been applied over the covered downpipes. At the location of SBR 3.2, the render has cracked around the downpipe, and the location of the service is visible at the surface. At the location of SBR 3.3, the location of the downpipe is not clearly visible at the surface, but the render is in poor condition, and is showing signs of water damage beneath the surface. Some render has come away from the underlying concrete.

At the location of SBR 3.4, the render is in extremely poor condition and is being undermined by water penetrating the concrete behind, and by vegetation growing in the increasingly cracked surface. At the location of SBR 3.5, the concrete encasing the downpipe has not been rendered in the same fashion, and the service cut is exposed in the sandstone bedrock of the cutting.

The concrete retaining wall is showing signs of water damage in many places in the form of staining and cracking of the render. Where patches have fallen off, the fabric of the structure of the wall is exposed. The original render has a high shell content, it is however also very strong indicating a mix of shell lime with Portland cement, unlike areas of modern patch repairs which appears to be a Portland cement without the inclusion of shell lime. The original render was applied in up to three layers, with each layer scored to provide purchase for the next layer. In addition, there at least some sections of concrete with a dense gravel aggregate.

There are also generations of attached services, including a series of relatively modern street lights, bolted to the face of the wall, and exposed gaps have been colonised by ferns and grasses.

Figure 7: Cracking at the location of SBR 3.2.

Figure 8: Cracks in the render at the location of SBR 3.3 (prior to the installation of the protective mesh).

Figure 9: Cracking and intrusive vegetation at the location of SBR 3.4.

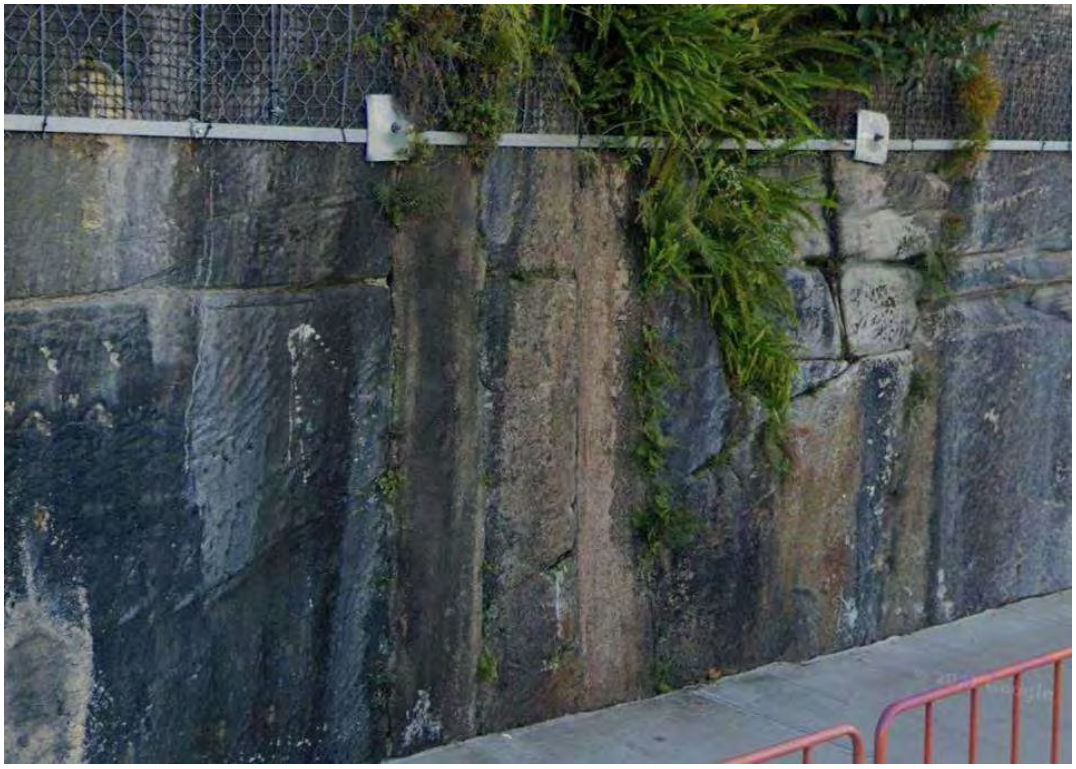


Figure 10: Concrete within the service cut in the sandstone at the location of SBR 3.5.

Figure 11: A section of the cutting and wall. The render is scored to replicate masonry blocks and is aligned along the line of the natural bedrock, above which the underlying sandstone blocks have been exposed.

Figure 12: A patch of modern cement render surrounded by the original render. The white flecks are shell fragments.

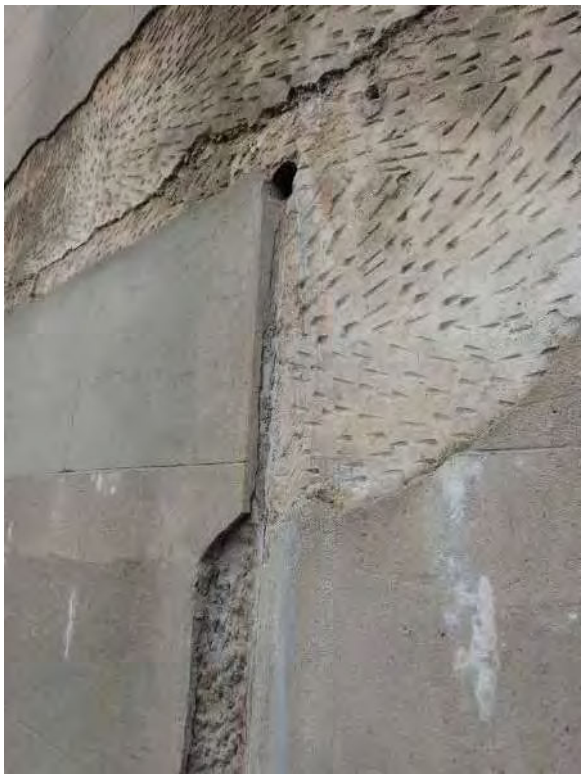


Figure 13: Exposed patches of render indicate that at least some sections have three layers of render and the lower layers are pecked to create a rough surface for the next layer.

Figure 14: A collection of existing services attached to the wall.

Assessment of Heritage Impact

The proposed diversion of the stormwater along the High Street retaining wall and cutting has the potential to affect the State heritage significance of the *Millers Point & Dawes Point Village Precinct*. The High Street Retaining Wall has been identified as having historic, aesthetic and social significance, and should also be considered to have technical significance. The proposed temporary diversion represents a change to the High Street cutting and retaining wall, the impact of which is assessed below.

The following aspects of the proposal respect the heritage significance of the item or conservation area for the following reasons:

The proposal is to install temporary pipes along 171m of the wall in order to maintain active drainage of High Street during the demolition of the Hickson Road bridge. The provision of adequate, uninterrupted drainage to the higher ground is essential for the long-term preservation of the High Street wall, which is already showing signs of damage from groundwater penetrating the rock and concrete behind. The temporary diversion would ensure the maintenance of this service and avoid contingency works due to flooding of the station box during demolition of the bridge, which would involve unplanned works in the vicinity of the wall.

The methodology has been designed to avoid impacts to the wall by suspending the temporary lines from existing rock bolts that have been installed to hold the protective mesh in place. New penetrations have been limited to four 400mm x 400mm apertures in the concrete covering the downpipes, and will not damage either the structural concrete of the wall, or the sandstone of the cutting. This methodology respects the heritage significance of the wall. The apertures will be repaired with like material to minimise the visual effect on the retaining wall.

Overall, the proposal to maintain continuous active drainage of the high ground above and behind the wall, and the avoidance of unplanned contingency works due to flooding in the vicinity of the wall maintains the heritage significance of the contributory heritage items in the vicinity, and of the *Millers Point & Dawes Point Village Precinct* in general.

The following aspects of the proposal could detrimentally impact on heritage significance. The reasons are explained as well as the measures to be taken to minimise impacts:

The temporary addition of four PVC pipes to the face of the wall will have an adverse effect on the aesthetic values of the wall. The assessment of significance for the wall recognises that:

> *The wall is aesthetically significant and exhibits landmark quality with its dominant, fortress-like scale and gradual dipping in response to the V-shaped original topography of what became High Street. It also displays an interesting interface of fabrics, comprising the excavated rock face, cement render and masonry construction at the northern end of the wall.*

The penetrations in the concrete surrounding the downpipes have been minimised to 400mmx 400mm and will have a minor or negligible impact on the wall, which will not affect the significant fabric of the structural concrete or sandstone, but may remove some damaged render which is in need of repair. However, these impacts will not affect the landmark aesthetic of the wall or reduce its readability and significance in the landscape.

Penetrations into the concrete encasing the services shall be limited to the smallest area possible, and those areas made good in a manner in keeping with the heritage significance of the wall.

The large pipes would disrupt the flat face of the wall, and the appearance of a hard edge to Hickson Road and the Miller's Point precinct in general, which the wall represents. The pipes would hide the interface of fabrics and rock face, and obfuscate the exposed construction techniques which are visible in the face of the wall.

However, the visual impacts should be considered in the context of the current Hickson Road environment. Approved construction works, including the demolition of the temporary bridge over Hickson Road immediately in front of the wall, will be taking place for the duration of the temporary stormwater diversion. Views to and from the item during this time will be obscured and limited by the lack of public access, and the movement, use and installation of plant and construction infrastructure that will be required to undertake the works. In this context, the new works are unlikely to significantly alter the existing approved visual impact. As such there will be a minor temporary impact on the aesthetic significance of the High Street wall as an integral element of the *Millers Point & Dawes Point Village Precinct*.

Statement of Heritage Impact

The High Street cutting and retaining wall is a contributory element of the state heritage significant *Millers Point & Dawes Point Village Precinct*. The cutting and retaining wall is a prominent landmark defining the separation of wharfage from the residential areas of Millers Point. The cutting and retaining wall has particular social significance as part of the 'Hungry Mile', the name given to the mile of wharves between Darling Harbour and Millers Point by the maritime workers who walked in the hope of casual low-paid work each day from the nineteenth century into the 1940s. As such, protection of the heritage significance of the High Street cutting and retaining wall as an element of the *Millers Point & Dawes Point Village Precinct* has been an important consideration in the design of the temporary stormwater diversion.

The temporary pipes would be in place only during the demolition of the Hickson Road bridge and the works to reinstate Hickson Road. These works will severely limit access and views to and from the item, minimising the visual impact that the installation of the pipes will create. The design which allows the pipes to be suspended from existing rock bolts means that the temporary impacts of the additional pipes are reversible. There is some potential for damage to the render of the retaining wall while cutting into the non-structural concrete surrounding the downpipes, which would be avoided by ensuring that the original fabric is protected against inadvertent damage wherever possible. The render in the locations of the penetrations is badly damaged and in need of repair. Any damaged render that is removed would be made good to match the surrounding colour and texture. Where significant damage exists, or there are intrusive discolourations, a selected section/component of original work will be nominated by the heritage consultant, in consultation with the contractor, as a suitable sample for matching. There will not be an impact on the historic, aesthetic or social significance of the High Street cutting and retaining wall in the long-term. There will be a minor short-term impact on the heritage significance of the *Millers Point & Dawes Point Village Precinct*, in its entirety.

The proposal to install a temporary stormwater diversion during the demolition of the Hickson Road bridge avoids unplanned contingency works in the vicinity of the wall, should the existing pipe fail again during demolition. The proposal will have a negligible effect on the heritage significance of the High Street cutting and retaining wall and no long-term effect on the state heritage significance of the *Millers Point & Dawes Point Village Precinct* in its entirety.

Mitigation

Article 3 of the Burra Charter recommends a conservation approach based on a respect for the existing fabric, use, associations and meanings. It requires a cautious approach of changing as much as necessary but as little as possible. Repairing any damaged render ensures that the least possible damage is done to the retaining wall, which is in accordance with Burra Charter principles. The repair material will be as near to the surrounding fabric in composition as possible to minimise an adverse effect on the aesthetic significance and to avoid damage to the original render.

The following recommendations are aimed at ensuring that heritage values are protected:

Recommendation 1

> *A photographic recording of the affected areas should be made prior to and on completion of works to ensure that there is a record of the changes to the face of the wall. The recording should be in accordance with the Heritage Council guideline publication* Photographic Recording of Heritage Items Using Film or Digital Capture *(revised 2006).*

The significance of the High Street cutting and retaining wall as a contributory item of the state heritage *Millers Point & Dawes Point Village Precinct* should be understood by all on-site staff and construction team to ensure that no inadvertent damage is done to the wall.

Recommendation 2

> *Prior to works commencing, all on-site staff should be briefed on the heritage requirements of the High Street Cutting and retaining wall, its heritage significance and the value of its fabric.*

There is potential for damage to the wall during the process of installing the temporary lines, and during the cutting of the concrete surrounding the downpipes. Care should be taken during the concrete cutting to avoid damage to the surrounding fabric .

Recommendation 3

> *The original fabric of the cement render has a high lime content. Any new render should be matched in the patches to ensure that the existing render does not crack or collapse due to the difference in hardness. Any inadvertent damage should be made good.*

Repairs should be made in accordance with the *Hickson Road Retaining Wall Barangaroo Conservation Policy and Guidelines* (GML Heritage 2021):

> *New render repairs are to involve only necessary patching which match in mix/composition, colour, grain and texture (note: the render has visible shell aggregate in the mix). Patch the wall with a matching render in colour and texture. All new render is to respect/recreate the scored ashlar pattern which imitates large blockwork units. A specification should be prepared for all future render repairs. This would involve, in the*

first instance, render sample analysis (to determine materials composition/mix), sourcing of matching materials (including visible shell aggregate) and application methodology.

A heritage architect should specify the mortar mix used in any repairs.

Statutory Obligations

The construction of the new Barangaroo Station is part of the Sydney Metro City & Southwest Project which has been approved as Critical State Significant Infrastructure. However, the current proposal for temporary stormwater lines to be attached to the High Street wall is outside the scope of works covered by the project EIS and PIR.

The Hickson Road Retaining Wall is within the SHR-listed *Millers Point and Dawes Point Village Precinct* (SHR 01682). As such, the provisions of the Heritage Act apply in regard to heritage impacts on the SHR item.

Standard exemptions under Section 57 (1) of the Heritage Act for works requiring Heritage Council of NSW approval may apply to works which are minor in nature and will have a minimal impact on the significance of the place.

Effective 1 December 2020, the Special Minister of State has granted new exemptions from subsection 57(1) of the Heritage Act. Standard exemptions do not permit the removal of any significant fabric. Significant fabric means all the physical material of the place/item, including elements, fixtures, landscape features, contents, relics and objects which contribute to the item's heritage significance. Standard exemptions also do not permit the removal of relics or Aboriginal objects.

These standard exemptions are available to the owner of a listed item or item subject to an Interim Heritage Order, or any person with the consent in writing of that owner, or if the item is situated on Crown Land, as defined in the Crown Land Management Act 2016, the lawful occupier.

The standard exemptions are self-assessed and involve the following process and responsibilities:

- It is the responsibility of a proponent to ensure that the proposed activities/works fall within the standard exemptions.
- The proponent is responsible for ensuring that any activities/works undertaken by them meet all relevant standards and have all necessary approvals.
- Proponents must keep records of any activities/works for auditing and compliance purposes by the Heritage Council. Where advice of a suitably qualified and experienced professional has been sought, a record of that advice must be kept. Records must be kept in a current readable electronic file or hard copy for a reasonable time.

The proposed works to the Hickson Road Retaining Wall are exempt from the need for approval under Section 60 of the Heritage Act as they satisfy Standard Exemption 5: Repair or Replacement of Non-Significant Services.

The proposed works will not impact the significant fabric of the High Street wall. Penetrations will be limited to the concrete encasement of existing services in areas where the render has been significantly damaged or is non-existent and does not contribute to the heritage values of the item. Impacts to significant views and landscapes are temporary and negligible in the context of approved works currently taking place along Hickson Road.
The temporary services will utilise existing hardware to attach to the High Street wall. The temporary pipes will be largely obscured by approved construction works along Hickson Road which will negate any visual impact.

All replacement services are temporary. There will be no permanent or long-term surface-mounted services. Existing service routes will be reinstated following the temporary works. Repairs to the penetrations will match the existing render in accordance with the *Hickson Road Retaining Wall Barangaroo Conservation Policy and Guidelines* (GML 2021).

The proposed works are minor in nature and will have a negligible impact on the significance of the *Millers Point and Dawes Point Village Precinct* (SHR 01682).

References

AMBS Ecology & Heritage (2017) *High Street Cutting, Millers Point Statement of Heritage Impact.* Consultancy report to John Holland CPB Ghella Joint Venture.

AMBS Ecology & Heritage (2018) *High Street Wall Rockfall Protective Mesh, Memo.* Prepared for John Holland CPB Ghella Joint Venture.

AMBS Ecology & Heritage (2017) *High Street Cutting, Millers Point Statement of Heritage Impact*, Report to John Holland CPB Ghella Joint Venture.

AMBS Ecology & Heritage (2021) *Barangaroo Metro Station Construct Only Package (COP) Historical Archaeological Method Statement*, Report to BESIX Watpac May 2021.

Casey & Lowe (2017) *Barangaroo Station Hickson Road, Barangaroo Sydney Metro Project Archaeological Method Statement*, Report to AMBS on behalf of John Holland CPB Ghella JV.

GML Heritage (2017) *Sydney Metro City & Southwest Technical Services: Hickson Road Retaining Wall Heritage Significance Assessment Technical Report* Report prepared for AECOM Australia and Parsons Brinckerhoff Australia on behalf of Transport for NSW Sydney Metro City & Southwest.

GML Heritage (2021) *Hickson Road Retaining Wall Barangaroo: Conservation Policy and Guidelines*, Report prepared for Sydney Metro April 2021.

Appendix G
Sandstone Block Removal Methodology

721 – Barangaroo Metro Station

21/09/2022

Ref: Removal of Sandstone Blocks in Zone 5 (Nawi Cove) – Construction Methodology

CONDENSED WATER – SANDSTONE BLOCK & STREET FURNITURE REMOVAL

1. OVERVIEW

The installation of the new condensed water line within zone 5 involves deep trenching and sheet piling within along Nawi Cove by the Cutaway. To commence these works, all sandstone blocks in the alignment of the sheet piles will need to be removed to prevent any damage that may occur.

Figure 1: Snip from Nearmaps showing alignment of trench (purple)

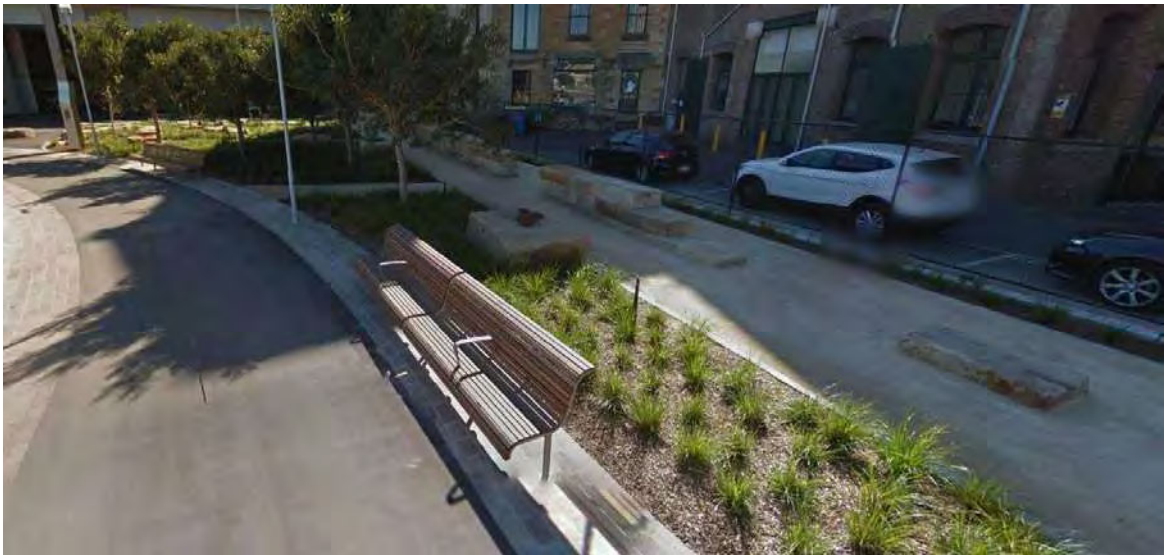


Figure 2 – Street view of sandstone blocks to be removed

2. METHODOLOGY

Sandstone Blocks

The sandstone blocks in Nawi Cove are placed in a distinct pattern consisting of a tiered block wall and scattered blocks in the garden beds. Ward will undertake the following steps during the removal of these blocks to ensure that the area is returned to its current state post completion of the condensed water line:

1. A dilapidation report of sandstone blocks in their existing position.
2. The position of each block arrangement will be surveyed and recorded on the asset register with ID numbers corresponding to the dilapidation report (see *Figure 3)*

WARD

Asset Register

Date Recorded	Description	ID Number	Easting	Northing	Comments
22/08/2022	Sandstone Block	1			NE Corner
22/08/2022	Sandstone Block	2			NW Corner

Figure 3: Sample of Asset Register

3. The base of each block is to be exposed using a 5T/14T Excavator. Note: in some instances, there are blocks with concrete footings (see *Figure 4*). In this case, once exposed, the footing will be removed using hand tools.

Figure 4: Concrete footing beneath sandstone blocks

4. Once loose, each block is to be:

a. Lifted out of position using a forklift or posi track with a fork attachment, where a carpet mat is firstly slid under the block and the forklift lifts the block from under the carpet; and/or

b. Lifted out of position using a 5T or 14T Excavator (depending on block size), using slings or a rubber padded grab attachment (see *Figure 5*); then

transferred onto a pallet and photographed with its identification card (ID number)

Figure 5: Rubber padded grab attachment

5. Each block will be wrapped for protection. The ID number of the stone will be encased under the wrap.
6. Each pallet will then be transferred onto a flatbed truck. It will then be transferred on the flatbed truck to secure location on-site.
7. At that secure location, each pallet will be lifted from the truck using forklift or posi track with a forklift attachment and placed in the storage location. Once placed, another photograph will be taken in its storage location with the ID number visible.
8. The process will be followed in reverse to transport the blocks back to Barangaroo and replace them in their original position. This includes survey set out of block location confirming they are returned to their original location.

Safe Health Environment Work Method Statement

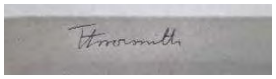
SMCSWSBR-WCE-SBR-CE-SWMS-000006 – Barangaroo Metro Station – Lifting

SHEWMS Details					
Company Name:	**Ward Civil and Environmental Engineering**	ABN/ACN:	65 098 942 459	Date:	23/08/2022
Project Name:	Barangaroo Metro Station	**Project No.:**	721		
Workplace Address:	Hickson Road	**Project Manager:**	Michael Wright		
Client:	Watpac	**Supervisor:**	Shane Morrissey		
SHEWMS Name:	Lifting	SHEWMS No.:	721-06		
Version:	D	Review Date:	23/02/2022 or post incident		
Consultation Method and Review Period:	Prepared by means of site meeting/toolbox. SHEWMS to be reviewed 6 monthly and/or following an incident	**Other requirements:**	Task observation to be completed to confirm activities are carried out as per SHEWMS		
Plant/Equipment used	Mobile Crane /Excavator Chains, Slings, hooks, shackles, Kibble	Hazardous Substances/Chemicals Used	Diesel Grease		Engine Oil Hydraulic Oil
Competency, Licences and/or qualification required:	VOC for Excavators/Dogman, high risk licence for crane operators	Reference Material (Code of Practice, Legislation, Standards etc.):	Work Health and Safety Act 2011 Work Health and Safety Regulations 2017 How to manage work health and safety risks – Code of Practice 2011 Construction work – Code of Practice 2013 AS3775.2: 2014 Chain slings for lifting purposes		

SHEWMS Approval					
SHEWMS Prepared by:	Colm Drumgoole	Signature		Date:	23/08/2022
SHEWMS Prepared in Consultation with:	Shane Morrissey	Signature		Date:	23/08/2022

Safe Health Environment Work Method Statement

SMCSWSBR-WCE-SBR-CE-SWMS-000006 – Barangaroo Metro Station – Lifting

SHEWMS Prepared in Consultation with:	Todd Arrowsmith (HSR Rep)	Signature		Date:	23/08/2022
SHEWMS Approver (Project Manager):	Michael Wright	Signature		Date:	23/08/2022

Permits Required									
☐	Confined Space Entry Permit	☐	Permit to Disturb and Excavate	☐	Lock out Tag Out Permit	☐	Working at Heights Permit	☐	Hot Work Permit
☒	Lifting Permit	☐	Access Permit	☐	Other	☐		☐	

High Risk Construction Work Indicate (☒) high risk construction work associated with the Activity/Task									
☐	A risk of **falling** more than 2 meters	☒	Work on, in or adjacent to a **traffic**	☐	In or near a **confined space**	☐	Temporary support for **structural alteration**	☐	Work involving **tilt up/pre-cast concrete**
☐	Work that involves a risk of **drowning**	☒	Working around powered **mobile plant**	☐	Work on, in or adjacent to a **railway**	☐	Work on or near **pressurised gas** mains & piping	☐	Work in **flammable/contaminated atmosphere**
☐	Removal/disturbance of **asbestos**	☒	On or near **electrical** installation/ service	☐	**Diving** work	☐	Work in **artificial temperature extremes**	☒	**Trenches/Shafts** deeper than 1.5 metres
☐	Work on a **telecommunication tower**	☐	**Demolition** of load-bearing structure	☐	Work that involves **explosives**	☐	Working on **chemical or fuel lines**	☐	Other:

Personal Protective Equipment												
MANDATORY							TASK SPECIFIC					
Long sleeves	Long pants	Safety Footwear	High Vis' Clothing	Hard Hat	Safety Eyewear	Gloves	Hearing	Dust Mask	Respirator	Face Shield	Other	Other
☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☐	☐

Risk Control of Hierarchy		
BEST ⇕ WORST	1	Elimination: e.g. remove risk of electrocution by using compressed air driven tools.
	2	Substitution: e.g. Use a safer Chemical.
	3	Isolation / Separation: e.g., energy isolation
	4	Engineering Controls: e.g. Guards on power tools, effective barriers & edge protection, enclose noisy machinery, use machines to lift heavy loads.
	5	Administrative Controls: e.g. Training in lifting techniques
	6	Personal Protective Equipment: PPE

Risk Matrix	Consequence				
Likelihood	**Insignificant**	**Minor**	**Moderate**	**Major**	**Catastrophic**
Almost Certain	Low (7)	High (16)	Extreme (20)	Extreme (22)	Extreme (25)
Likely	Low (6)	Medium (12)	High (17)	Extreme (21)	Extreme (24)
Possible	Low (5)	Low (8)	Medium (13)	High (18)	Extreme (23)
Unlikely	Very Low (2)	Very Low (4)	Low (10)	Medium (14)	High (19)
Rare	Very Low (1)	Very Low (3)	Low (9)	Low (11)	Medium (15)

Residual Risk	Actions Required
Extreme (20-25)	Task cannot start. Permission from CEO in writing is required to proceed if risk cannot be lowered to an acceptable level (i.e. 15 or lower).
High (16-19)	Task cannot start. Permission from Senior Management in writing is required to proceed if risk cannot be lowered to an acceptable level (i.e. 15 or lower)
Medium (12-15)	Task can commence with a combination of Risk Control Levels 1-4 (High level controls) and 5-6 (Low level controls).
Low (5-11)	Task can commence under the following actions: a) Implement the risk control solutions as documented. b) Monitor and review effectiveness of risk control solutions as scheduled.
Very Low (1-4)	Task can commence under the following actions: a) Implement the risk control solutions as documented. b) Monitor and review effectiveness of risk control solutions as scheduled.

Descriptor	Example Detail Description – Health and Safety	Example Detail Description - Environment
Insignificant	No Injuries or health issues	Marginal environmental impact (contained on site) which can be resolved by day to day operational procedures
Minor	Minimal impact on health, First Aid Treatment	Environmental impact is minor, on site release and is reversible, immediately contained, remediation is achieved with application of internal resources, not reportable
Moderate	Medical Treatment, Potential LTI	Temporary environmental impact, off site release, contained with outside assistance, unauthorised damage or harm to native vegetation, threatened species, endangered populations or critical habitat, duty to notify regulator
Major	Extensive Injuries, Single Permanent disability or long term illness or disease	Substantial environmental impact with off-site release, rectification is difficult, unauthorised damage or destruction to any state or locally significant relic or heritage item, emission of excessive levels of dust or an offensive odour or noise that may affect neighbours
Catastrophic	Fatality(ies) or Total Permanent Disability(ies)	Highly significant environmental impact, reportable to regulator release off site with detrimental effect to surrounding environment & community, requires major clean up, fines may apply along with director liability, loss of social license

Rare	The event may occur in exceptional circumstances	0-5%	Has occurred or can reasonably be considered to occur only a few times in 100 projects
Unlikely	The event could occur at some time	5% - 35%	Has occurred 2 or 3 times over the last 10 projects
Possible	The event should occur at some time	35% - 65%	Has occurred in this organisation more than 3 times in the last 10 projects or is considered to have a reasonable likelihood of occurring in the next few projects
Likely	The event will probably occur in most circumstances	65% - 95%	Has occurred more than 7 times in this organisation over the last 10 projects or circumstances have it such that it is likely to happen in the next few projects
Almost Certain	The event is expected to occur in most circumstances	95-100%	Has occurred 9 or 10 times in the last 10 projects in this organisation or circumstances are in train that will almost certainly cause it to happen

SAFETY								
#	Work Activity (Chronological Order)	Hazards (What can hurt you)	Untreated Risk Assessment			Controls (Controls required to eliminate or minimize the potential for injury of harm based upon the hierarchy of control)	Residual Risk Rating	Control Owner
			L	C	Rating			
1	Excavator on site	▪ Worker and Excavator collision ▪ Damage to Mobile Plant or other assets ▪ Equipment failure/breakdown	Possible	Catastrophic	Extreme	▪ Plant induction including risk assessments, inspection checklists, service records, logbooks and OEM manuals for all new equipment arriving to site ▪ Daily Plant Prestart to be carried out ▪ Ensure Plant Risk Assessment is signed by Operator. ▪ Verify Excavator has been serviced and maintenance carried out as per manufacturers recommendations. ▪ Operator to have current VOC ▪ ROPs, FOPs and TOPs to be fitted to plant where there is a risk of falling objects, rollover or tip-over	Medium	Supervisor/ Operator
2	Establish exclusion zones	▪ Pedestrians and other site personnel not aware of lifting operation and enter the exclusion zone area	Possible	Catastrophic	Extreme	▪ Install physical markers (flagging, concrete barriers, water filled barriers) delineating crane work area & planned travel path ▪ Warning signage to be installed ▪ Ensure there are alternative access points for other crews working in the area if possible. Physical barriers to be installed separating pedestrians and mobile plant. ▪ Spotter to be in place for all lifts	Medium	Supervisor & Crew
3	HRCW- Working around powered **mobile plant** Slinging loads	▪ Lifting Equipment Failure. ▪ Unstable loads from incorrect rigging techniques, loads falling from height.	Possible	Catastrophic	Extreme	▪ Only certified lifting gear is to be used that has an adequate lifting capacity for the lift. ▪ Ensure excavator/crane is working within the safe working load capacity ▪ Ensure load being lifted has evenly distributed weight across slings/chains & weight does not exceed lifting capacity. ▪ Hands, feet and fingers to be clear of pinch points ▪ Lifting methodologies to be discussed with crew for scope of works and agreed upon prior to any work starting, approved lifting permit in place ▪ No dogman required if the following occurs	Medium	Dogman Operator Dogman Dogman Dogman/ Supervisor Dogman

SAFETY								
#	Work Activity (Chronological Order)	Hazards (What can hurt you)	Untreated Risk Assessment			Controls (Controls required to eliminate or minimize the potential for injury of harm based upon the hierarchy of control)	Residual Risk Rating	Control Owner
			L	C	Rating			
						▪ If There are predetermined and certified lifting points on the load ▪ The weight of the load – or load within a weight range- has been pre-determined ▪ The lifting gear has been tested and tagged and within inspection periods ▪ The load is always in view of the plant operator ▪ Qualified Dogger/Rigger to carry out a thorough check of lifting gear before lifting ▪ Exclusion Zones installed prior to lift ▪ Defective lifting gear to be locked and tagged out ▪ Ensure right lifting equipment is available for the task and used as per manufacturer instructions ▪ Ensure approved lifting permit is completed prior to lift.		Supervisor Dogman Supervisor/ Dogman Supervisor Supervisor
		▪ Ground failure	Unlikely	Catastrophic	High	▪ Visual inspection of ground conditions to be completed for routine lifts ▪ Geotechnical advice to obtained for non-routine lifts	Medium	Supervisor or Geotechnical Engineer
4	HRCW- Working around powered **mobile plant** Transport & Slew load into position.	▪ Falling Loads, Load ▪ Crane collision with obstacles & other plant or persons.	Unlikely	Catastrophic	High	▪ Establish exclusion zone around load movement area. ▪ Ensure load being lifted and moved has been correctly dogged prior to lifting. ▪ Excavator /crane operator to verify load weight in relation to the plant capacity before moving load. ▪ Tag lines to be used to control the load always ▪ Lift loads with caution and keep load as close to the ground as possible.	Low	Operator/Dogman Dogman Operator Dogman Operator

SAFETY								
#	Work Activity (Chronological Order)	Hazards (What can hurt you)	Untreated Risk Assessment			Controls (Controls required to eliminate or minimize the potential for injury of harm based upon the hierarchy of control)	Residual Risk Rating	Control Owner
			L	C	Rating			
						▪ Ensure constant communication between operator and rigger always. ▪ NO PERSON TO BE UNDER A SUSPENDED LOAD AT ANY TIME FOR ANY REASON ▪ Excavator to be fitted with Anti burst valves ▪ All crane and hoisting equipment to be in accordance with lift plans		Operator/Dogman All Supervisor Operator/Dogman
		▪ Contact with overhead powerlines	Possible	Catastrophic	Extreme	▪ Tiger tails and flagging to be installed for overhead powerlines ▪ Danger signage, voltage and height of powerlines identified ▪ VOC Spotter to be used when near lifting near overhead powerlines ▪ Ward working near overhead powerlines permit to be in place ▪ Hazard to be identified and discussed during daily pre-start	Medium	Supervisor
5	Emergency response	▪ Emergency, fire explosion, etc. ▪ Injury to personnel ▪ Property damage	Unlikely	Major	High	▪ Stop operation and follow Ward Emergency Procedure. ▪ Isolate equipment (if safe to do so) ▪ Remove or isolate any potential Hazards (only if safe to do so) ▪ Attempt to control emergency (if safe to do so)	Low	Supervisor/Work crew
6	HRCW- Working around powered **mobile plant** Positioning, Landing and Releasing Load	▪ Load Moving or slipping. ▪ Injury to personnel	Possible	Catastrophic	Extreme	▪ Ensure constant positive communication between operator and dogman always. ▪ Dogman to stand clear of load crush points always, using a tag line to control the load. ▪ Load landing area must be able to support the load weight. ▪ All personnel to use correct lifting techniques for placement of dunnage and packing away lifting equipment. ▪ Ensure that the load is made secure and supported so that it cannot move or slip before the full weight is removed from crane.	Medium	Operator/Dogman Dogman Operator Dogman Dogman/Supervisor

SAFETY								
#	Work Activity (Chronological Order)	Hazards (What can hurt you)	Untreated Risk Assessment			Controls (Controls required to eliminate or minimize the potential for injury of harm based upon the hierarchy of control)	Residual Risk Rating	Control Owner
			L	C	Rating			
7	HRCW- Work on, in or adjacent to a **traffic** Working near live traffic	▪ Collision other plant ▪ Injury from live traffic	Likely	Catastrophic	Extreme	▪ Approved Traffic Management Plan (TMP) and Traffic Control Plan (TCP) required for works adjacent to live traffic ▪ Traffic to be controlled by licenced traffic controllers ▪ Warnings signs to be in place as per TCP when working near live traffic ▪ Hard barriers to be installed to provide exclusion zone when working near live traffic ▪ Communication via 2-way radio between vehicles on site and Stage 1 C logistics team	Medium	Supervisor Supervisor Supervisor TC Crew/Supervisor Supervisor Work Crew
8	House Keeping	▪ Slip's, Trips & Falls	Likely	Moderate	High	▪ Ensure pathway free of any material, obstacles before start of lift	Low	Operator/Dog man
9	HRCW- Working around powered **mobile plant** Lifting steel road plates and positioning onto roadway.	▪ Lifting Equipment Failure. ▪ Equipment failure	Likely	Catastrophic	High	▪ Advise all staff including Traffic Controllers of exclusion zone – be aware pinch points crush zone ▪ Ensure all lifting equipment is tested & tagged & checked prior to use. ▪ Check lifting point on road plate prior to moving. ▪ Ensure "Ranger" lifting device is installed correctly by competent person ▪ Set up exclusion zone around work area. ▪ Only operator and spotter to be in immediate area of lift ▪ Keep plate at minimum distance from the ground (close to the ground as possible)	Medium	Supervisor Operator/Leading hand

SAFETY								
#	Work Activity (Chronological Order)	Hazards (What can hurt you)	Untreated Risk Assessment			Controls (Controls required to eliminate or minimize the potential for injury of harm based upon the hierarchy of control)	Residual Risk Rating	Control Owner
			L	C	Rating			
						▪ Once road plate has been removed and placed away from excavation – check again the integrity of the lifting point prior to re-use.		
10	HRCW- Working around powered **mobile plant** Lifting shoring / trench box	▪ Anchors detaching ▪ Load dropping	Unlikely	Catastrophic	High	▪ Chains to be secured and even for each of the two lifting points ▪ Load to be lifted slowly and to the side, do not swing ▪ No persons to be within 5m of lift	Medium	Supervisor Operator/Leading hand
11	HRCW- Working around powered **mobile plant** Lifting Kibble while pouring concrete	▪ Lifting Equipment Failure ▪ Load Dropping ▪ Swinging load ▪ Handling concrete	Likely	Catastrophic	High	▪ Check lifting equipment has been tested and tagged ▪ Load to be lifted slowly and to the side, do not swing ▪ No person under kibble at any time ▪ The Kibble is to be fitted securely to the lifting apparatus according to the safe lifting ability/limits of the excavator ▪ Weight of kibble and concrete to considered for Safe lifting limits of Excavator or lifting apparatus. ▪ Kibble operator to gradually release concrete preventing skin contact ▪ Operator aware of sudden release of load make cause crane boom to whip upwards	Medium	Supervisor Operator Spotter
12	HRCW- Working around powered **mobile plant** Lifting Bulka and Washout Bags	▪ Bulka Bag Failure ▪ Load Dropping ▪ Injury to personnel	Likely	Major	High	▪ Ensure Bulka bags inspected to be single or multi trip bags ▪ Single trip bags can only be filled and discharged once, whilst multi-trip bags can be filled and discharged several times. ▪ Inspect bag to ensure it has not been used and refilled if single trip.	Medium	Leading Hand Operator Supervisor

ENVIRONMENTAL								
#	Aspect	Impact	Untreated Risk Assessment			Controls (Controls required to eliminate or minimize the potential for injury of harm based upon the hierarchy of control)	Residual Risk Rating	Control Owner
			L	C	Rating			
1	Maintenance & refuelling of plant Storage & discharge of hazardous substances	▪ Impacts to land and surface water ▪ Uncontrolled spills of materials ▪ Storage of incompatible materials	Possible	Moderate	Medium	▪ Spill kit to be maintained on site at all times ▪ Storage of materials to be in a suitable containment system with bunding (110%) ▪ Maintain an SDS register on site and review material compatibility before storing.	Low	Supervisor
2	Soil erosion & water management	▪ Soil erosion and sedimentation ▪ Pollution of water ▪ Pollution to land	Almost Certain	Catastrophic	Extreme	▪ Site to comply to project specific requirements (REF, EIS) ▪ Site to maintain and implement an Erosion and sediment control plan in compliance with the Blue Book Vol.II ▪ All discharge and reuse activities to be undertaken in compliance with the relevant discharge and reuse form/ process.	Medium	Supervisor/ PE/SPE/PM
3	Disturbance to flora & fauna	▪ Spread of noxious weeds ▪ Damage to native flora and/or fauna habitat ▪ Clearing outside of boundary ▪ Impact to protected/treat	Possible	Moderate	Medium	▪ Site to comply to project specific requirements (REF, EIS) ▪ Site to implement exclusion zones around protected flora and site boundaries. ▪ Noxious weeds to be segregated when cleared and disposed of separate from clean vegetation. Weeds are not to be mulched with clean vegetation and/or reused on site.	Low	Supervisor
4	Noise emissions/vibration	▪ Nuisance ▪ Dust ▪ Discharges of excessive noise	Possible	Minor	Low	▪ Site to comply to project specific requirements (REF, EIS) ▪ All plant and equipment to be maintained in a proper and efficient manner.	Insignificant	Supervisor
5	Atmospheric emissions	▪ Dust ▪ Discharges to air of pollutants ▪ Discharges to air of odour	Possible	Major	High	▪ Site to comply to project specific requirements (REF, EIS) ▪ Site to maintain appropriate dust control measures (e.g. Wetting down, compaction) ▪ All plant and equipment to be maintained in a proper and efficient manner. ▪	Low	Supervisor

ENVIRONMENTAL								
#	Aspect	Impact	Untreated Risk Assessment			Controls (Controls required to eliminate or minimize the potential for injury of harm based upon the hierarchy of control)	Residual Risk Rating	Control Owner
			L	C	Rating			
6	Vibration	▪ Damage to structures (built and natural) ▪ Impact to human comfort levels	Unlikely	Major	Medium	▪ Site to comply to project specific requirements (REF, EIS) ▪ Conduct vibration monitoring where required ▪ Document dilapidation assessments prior to works commencing.	Low	Supervisor/ PE/SPE/PM
7	Community	▪ Community complaints ▪ Loss of reputation	Possible	Minor	Low	▪ Site to comply to project specific requirements (REF, EIS) ▪ Maintain site community register ▪ Respond to complaints and escalate to PM/ Environmental coordinator	Low	Supervisor/ PE/SPE/PM
8	Solid & liquid waste	▪ Soil/ water pollution	Possible	Catastrophic	Extreme	▪ Site to comply to project specific requirements (REF, EIS) ▪ All waste to be classified before transport and issued to waste facility ▪ All material accepted to site to be accompanied by a waste/material classification ▪ All material brought into site and sent out of site to be maintained on a waste register. ▪ All material brought into site to be visually inspected to ensure it aligns with the material classification documentation.	Medium	SE/PE/SPE/ PM

CONSULTATION AND REVIEW SIGN OFF

I confirm by my signature below that I have attended a briefing on the requirements of this SHEWMS, understand its requirement and agree to perform the associated tasks with the controls outlined in place. If there is a non-compliance with the SHEWMS, work will immediately cease and will not resume until the SHEWMS is complied with and work can be undertaken safely.

	Name	Company	Signature	Date
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Appendix H
Gas Line Diversion SOHI

MEMO

DATE: 2 March 2023 **AMBS Ref**: 20870M7

TO: [redacted]Senior Project Engineer, Watpac Besix Group

FROM: [redacted] Senior Historical Heritage Consultant, AMBS

SUBJECT: Statement of Heritage Impact: Installation of temporary gas pipe, Hickson Road Retaining Wall and Cutting, Barangaroo

The Sydney Metro & City Southwest project was approved by the Minster for Planning on 9 January 2017 as Critical State Significant Infrastructure. AMBS Ecology & Heritage (AMBS) was responsible for managing all heritage aspects of the Sydney Metro City & Southwest Chatswood to Sydenham Metro project TSE works, and production of the overarching Construction Heritage Management Plan for the project.

The construction of the new Barangaroo Station for the project involved substantial excavations for the station box in Hickson Road, adjacent to the Hickson Road Retaining Wall. The Barangaroo Station site is within the *Millers Point & Dawes Point Village Precinct*, which is Item 01682 on the State Heritage Register (SHR). The Precinct has identified historical, associative, aesthetic, and social significance, research potential, rarity and representativeness. The Hickson Road cutting and retaining wall is a contributory element to item 01682 and shares its State significant heritage values.

In 2017 AMBS prepared the *Statement of Heritage Impact* (SoHI) for the protective measures; rock anchoring and protective mesh, used to protect the wall during construction of the station box under Hickson Road. Additionally, a memo prepared by AMBS in April 2018 outlined specific details regarding the method of fixing the rockfall protective mesh as well as recommendations surrounding its future removal. In 2021 AMBS prepared a management document for the removal of the protective mesh (20870M1). In 2022 AMBS prepared a SoHI for the temporary diversion of stormwater lines along the wall (20870M5) and a methodology review for the removal of the rockfall mesh (20870M6).

The Minister's Condition of Approval relevant to the protection of heritage generally is:

> *E10 The Proponent must not destroy, modify or otherwise physically affect any Heritage item not identified in documents referred to in Condition A1 (which refers to the project EIS and PIR).*

The current proposal for a temporary gas line to be attached to the Hickson Road cutting and retaining wall is outside the scope of works covered by the project EIS and PIR. This SoHI has been prepared to address the potential heritage impact of the proposal.

This SoHI was written by Mike Hincks, AMBS Senior Historical Heritage Consultant, with advice from Jennie Lindbergh, AMBS Director Historic Heritage, who also reviewed this report.

Proposal

The proposal is to temporarily divert an existing gas line that is currently fixed to the acoustic shed. The acoustic shed is a temporary structure erected by the project on Hickson Road between the Munn Street and Windmill Street bridges. The gas line will need to be temporarily diverted so that the acoustic shed can be dismantled and Hickson Road can be reinstated.

The gas line is a 100mm diameter copper Type B pipe. The proposed diversion requires a vertical pipe to run between the footpath and an existing connection in the concrete section of the wall, located at approximately 11m above Hickson Road. The pipe would be an external fitting, attached to the face of the sandstone cutting with dual-anchored brackets at approximately 1m intervals.

Once the dismantling of the acoustic shed is complete, and Hickson Road is permanently reinstated, the temporary gas line will be removed from the face of the wall. It is expected that the temporary gas diversion will need to be in place for six months.

Heritage Context and Significance

The High Street retaining wall and cutting is a large-scale modification that was designed to allow the continuation of Sussex Street north along the steep and rocky shoreline to Miller's Point and Dawes Point. It incorporates both a cutting into sandstone bedrock and a retaining wall above. The wall and cutting together create a vertical face bordering the eastern side of Hickson Road for 300m from the Munn Street overbridge in the north, to the High Street Steps in the south. The wall and cutting continue to the north, partially interrupted by the Munn Street and Windmill Street bridges. In this area, a 29m-long section of cut sandstone displaying clear bedding planes and fissures is the dominant form.

The wall is a contributory element of the *Millers Point & Dawes Point Village Precinct* (SHR 01682). The Statement of Significance for the item makes particular reference to the setting and layout of the precinct, and the wall forms a distinctive landscape element in that setting. The Statement of Significance notes that the modifications and changes that have taken place in response to the engineering and building challenges on the peninsula have both capitalised on, and conflicted with its original form, which give it its unique character and are evidence of its development as a maritime cultural landscape:

> *The natural rocky terrain, despite much alteration, remains the dominant physical element in this significant urban cultural landscape in which land and water, nature and culture are intimately connected historically, socially, visually and functionally.*
>
> *…The postcolonial phase is well represented by the early 20th century public housing built for waterside workers and their families, the technologically innovative warehousing, the landmark Harbour Bridge approaches on the heights, the parklands marking the edges of the precinct, and the connections to working on the wharves and docklands still evident in the street patterns, the mixing of houses, shops and pubs, and social and family histories of the local residents.*
>
> *Millers Point & Dawes Point Village Precinct has evolved in response to both the physical characteristics of its peninsular location, and to the broader historical patterns and processes that have shaped the development of New South Wales since the 1780s… The whole place remains a living cultural landscape greatly valued by both its local residents and the people of New South Wales. (HNSW)*

In February 2017, GML Heritage prepared a Heritage Assessment of the High Street wall. The report details the contributory value of the wall to the significance of the *Millers Point & Dawes Point Village Precinct.* The supporting Statement of Significance for the wall is:

> *The Hickson Road Retaining Wall is a significant, contributory built element within the Millers Point and Dawes Point Village Precinct and the Millers Point Conservation Area, an intact residential and maritime precinct of outstanding state significance. The retaining wall is a dominant and relatively intact component of the extensive alterations to the natural topography of Millers Point designed to facilitate the management of cargo into and out of the new two-level finger wharves. The wall incorporated steps at its northern and southern ends to provide improved access to the wharves for stevedores and wharf workers who resided in Millers Point.*
>
> *It provides a dramatic street edge to the eastern side of Hickson Road. The wall has landmark quality and displays an interface of fabrics, comprising the excavated rock face, cement render and masonry construction at the northern end of the wall. While there are varying degrees of erosion and deterioration to the stone/render, as well as intrusive fixtures, signage and penetrations, the retaining wall continues to define the edge of Millers Point and makes a positive contribution to the unique landscape character of Hickson Road.*
>
> *The Hickson Road Retaining Wall holds social significance as it forms part of the 'Hungry Mile', a historic stretch of Sydney's waterfront where men and women would walk from wharf to wharf in search of employment during the Great Depression of the 1930s* (2017:22-23)

Historical Context

A detailed history of the High Street wall and the surrounding area has been prepared by AMBS for the project in *High Street Cutting, Millers Point Statement of Heritage Impact* (AMBS Ecology & Heritage, 2017) and by GML in *Hickson Road Retaining Wall Heritage Significance Assessment* (GML Heritage, 2017). Comprehensive histories of the development of the Barangaroo station site and the local area including the High Street wall have also been prepared for the Barangaroo TSE works Archaeological Method Statement (Casey & Lowe, 2017) and the Barangaroo COP works Archaeological Method Statement (AMBS Ecology & Heritage, 2021).

These histories have been used to create and support the assessments and statements of significance which are referred to in this document and should be consulted if further background information is required. The below is a brief summary which contextualises the construction of the wall and its continued relevance to the local environment.

From the early nineteenth century, Millers Point was extensively quarried to supply the construction of housing and public infrastructure, such that the area around Kent and Windmill Streets was known as The Quarries. The quarry was worked by convicts who gradually formed the small local streets and modified the natural topography to form the escarpment which ran along Kent Street. The main access to the quarries and the few houses in the area was a rough path along the Darling Harbour foreshore to the northern extremity of the Point and the three windmills.

As the shoreline around the town became increasingly developed, waterfront space was at a premium, and new wharves and shipbuilding enterprises were forced to utilise the more difficult to access and less desirable parts of the harbour. As industry and trade intensified at the northern end of the eastern shore of Darling Harbour, pressures on the limited available access between - and to - the waterfront lots increased.

A new direct access was proposed from 1897 to connect the Maritime Services Board at West Circular Quay to the west side of the peninsular along Darling Harbour through Walsh Bay and Pyrmont to terminate at Harris Street. It was not until the establishment of the Sydney Harbour Trust that the proposal could be realised, and in 1909, work began on constructing Hickson Road. Between Munn Street and the present day location of the building at 30 Hickson Road, the process entailed cutting back the cliff face and constructing the retaining wall supporting High Street. The reinforced concrete bridges over Munn, Windmill and Argyle Streets were completed between 1910 and 1914.

The section along Hickson Road that is defined by the High Street wall is today representative of the depression-era district known as the 'Hungry Mile.' The name was given to the mile of wharves between Darling Harbour and Millers Point by the maritime workers who walked in the hope of casual low-paid work each day from the early twentieth century into the 1940s.

Analysis of the Proposed Works

Description of the works

The works will temporarily divert an existing gas line. The gas line is a 100mm diameter copper Type B pipe. The proposed diversion requires a vertical pipe to run between the footpath and an existing connection in the concrete section of the Hickson Road wall, located approximately 11m above Hickson Road. The pipe would be an external fitting, attached to the face of the sandstone cutting with dual-anchored brackets at approximately 1m intervals.

Reason for the new works

The existing gas line is attached to a temporary structure (an acoustic shed that was erected during the tunnelling stage of the project). The acoustic shed needs to be dismantled. The gas line has to be temporarily diverted from the structure to the wall before it can be permanently relocated once the reinstatement of Hickson Road between Munn Street and Windmill Street is complete. It is expected that the temporary gas diversion will need to be in place for six months.

Figure 1: Location of the proposed works, acoustic shed and Hickson Road cutting and wall.

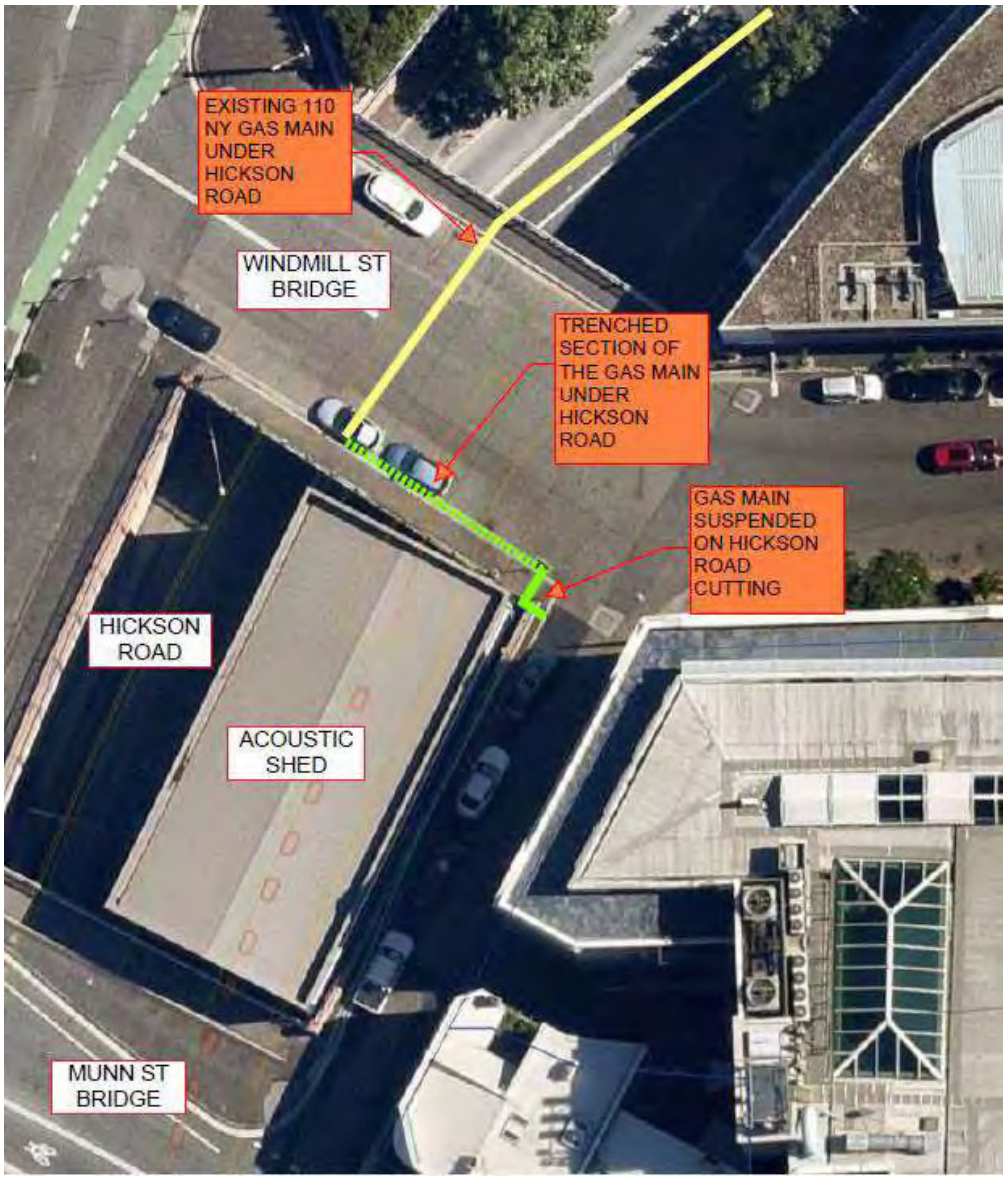

Figure 2: Detail of proposed works.

Area to be affected

The diversion will be attached to the face of the wall and cutting, partially beneath and immediately adjacent to the Windmill Street bridge, on the southern side.

The form of the wall in this location is largely cut sandstone bedrock, which rises up to 11m above the surface of Hickson Road between the two bridges. A concrete retaining wall up to 5m high has been constructed above the sandstone to support Windmill Street above.

The cut sandstone is characterised by deeply weathered bedding planes and vertical fissures. At the midpoint between the two bridges, the intersection of these perpendicular fractures has caused large pieces of sandstone to come away from the rock, either during the cutting process or in the subsequent years. The fracturing of stone at the centre of this section, as well as the strong horizontal lines created by the weathering bedding planes, creates the defining character of this section of the wall. The proposed gas diversion is located at the

northern periphery of this section, where the bedding planes are interrupted by the arch and span of the Windmill Street bridge.

Figure 3: Illustration of the diversion.

Figure 4: Proposed location of the gas diversion shown on a Google Street View capture taken in October 2014, before the acoustic shed was constructed. The Windmill Street bridge is at the left.

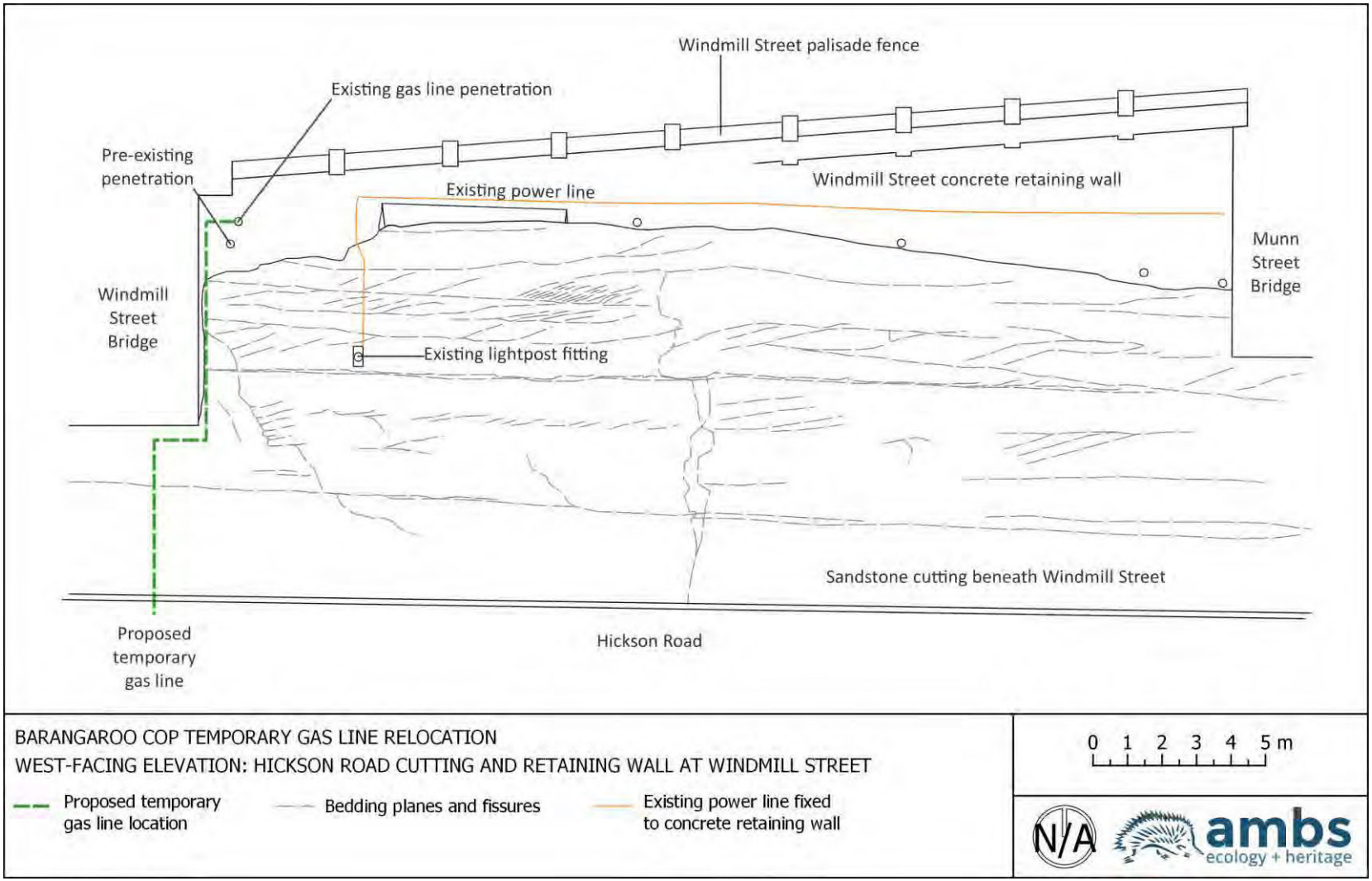

Figure 5: Elevation drawing of the wall between the Munn and Windmill Street bridges showing the fractures which characterise this part of the wall.

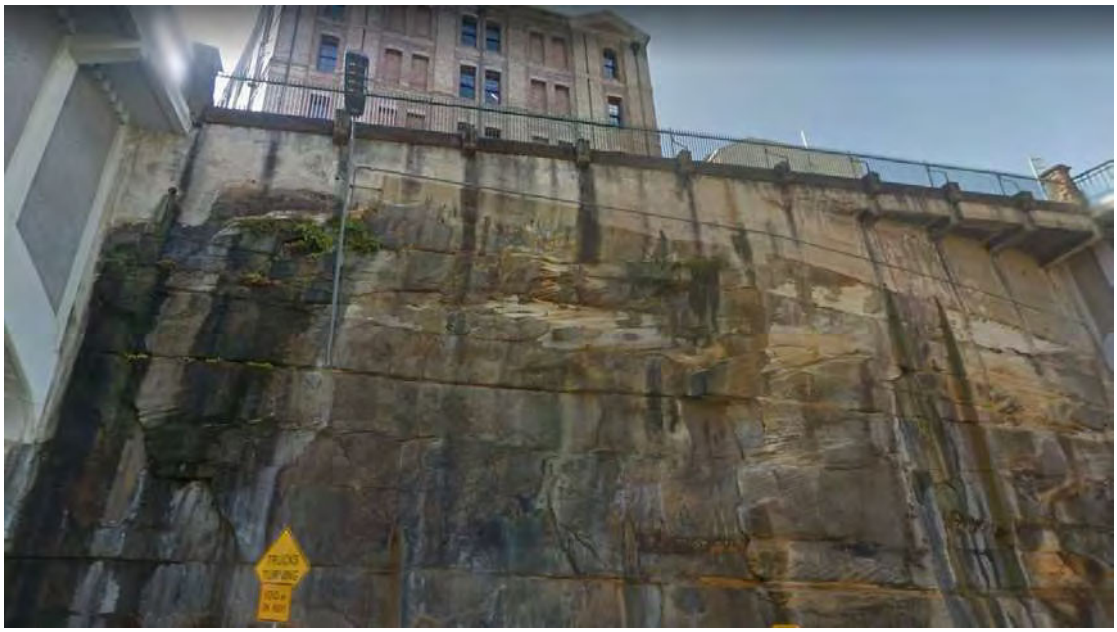

Figure 6: Google Street View capture of the affected section of the cutting taken October 2014, prior to the construction of the acoustic shed. The Windmill Street bridge is at the left.

Attaching the gas pipe to the Hickson Road wall and cutting

The pipe will be attached to the wall using 13 cantilevered two-piece channel clips (Figures 7-10). Each channel is 500mm long and will be secured to the wall with two 16mm anchors with 140mm embedment, using RE 500 epoxy. The RE 500 chemical anchor is appropriate for use in concrete and sandstone, in wet and dry conditions.

Locations for anchors will be selected that avoid natural or cut features in the sandstone surface. Anchors will be placed in flat sections of rock, uninterrupted by bedding planes or vertical fractures.

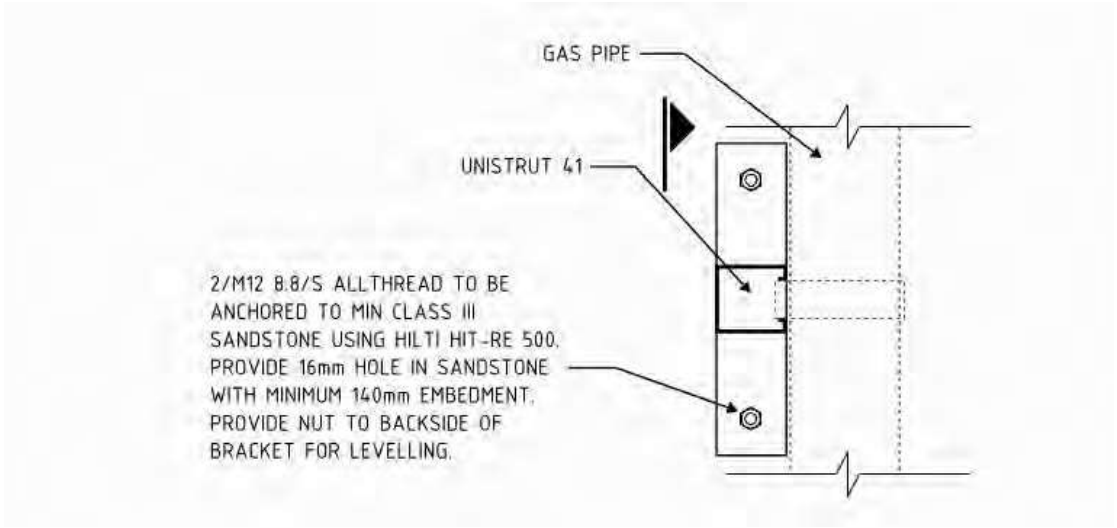

Figure 7: Type 1 bracket, vertical section, front view.

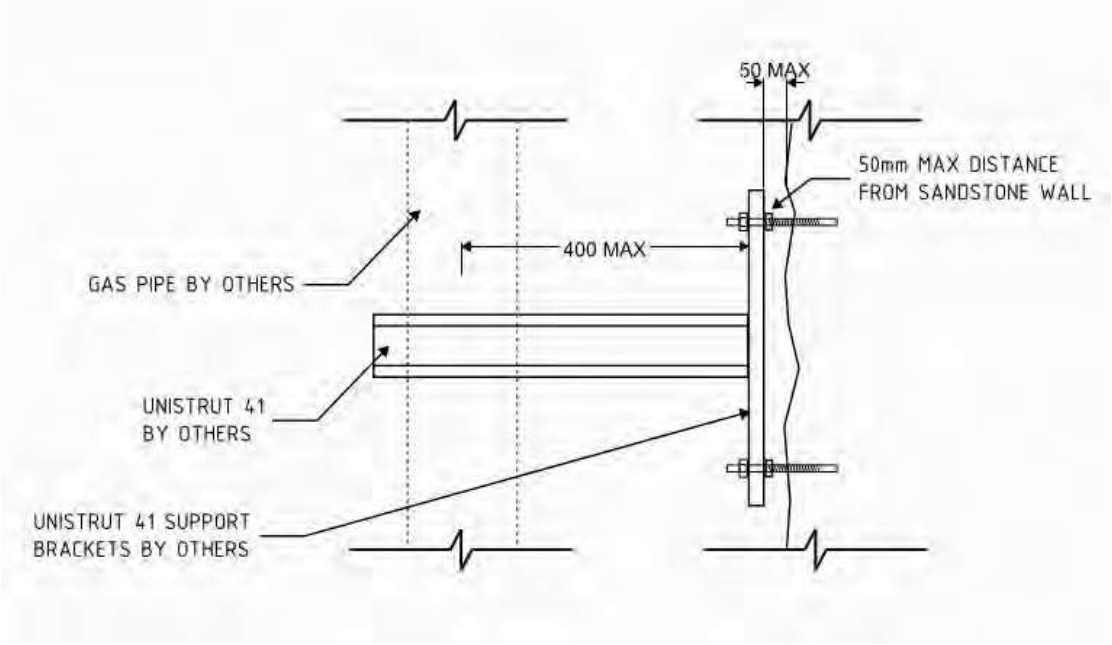

Figure 8: Type 1 bracket, vertical section, side view.

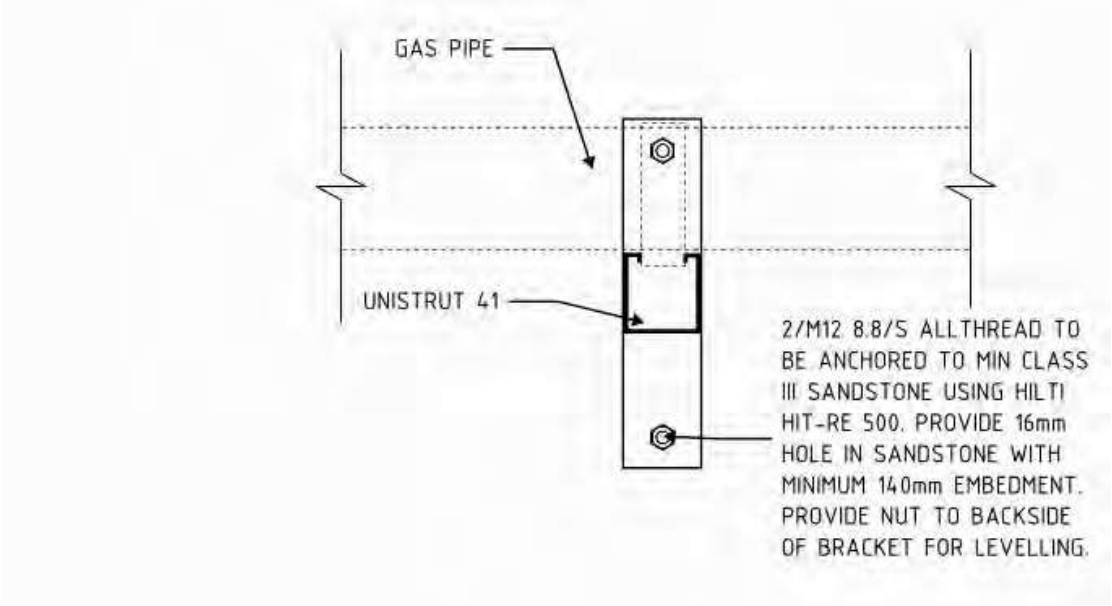

Figure 9: Type 2 bracket, horizontal section, front view.

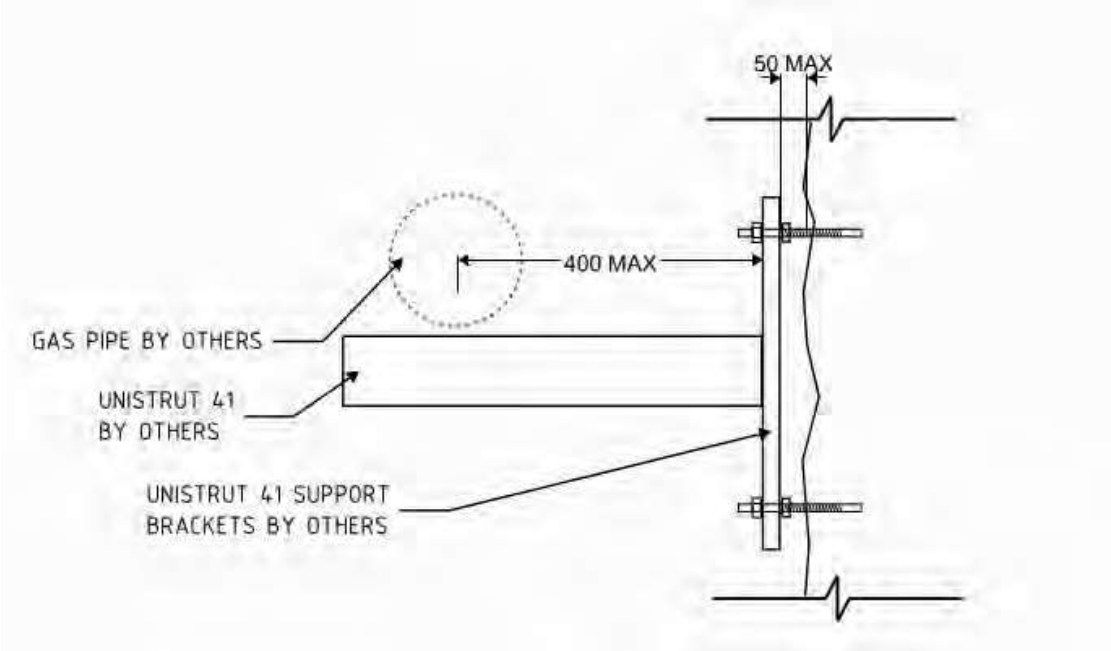

Figure 10: Type 2 bracket, horizontal section, side view.

Removing the temporary gas diversion

A stonemason will be engaged to conduct the bolt removal and undertake repairs to the wall. The chemically anchored bolt will be partially removed from the wall by coring around the anchor and removing a small amount of stone or concrete to allow each bolt and anchor to be cut back behind the face of the wall. The core will be sunk into the wall to an approximate depth of 100mm behind the existing wall line, and then the fabric around the anchor will be chiselled back to a depth of approximately 60mm.

The additional fabric removal will be required so that the bolt does not remain exposed to the elements once the bracket has been removed. Continued exposure will cause the bolt to corrode over time and expand and cause hairline fracturing in the surrounding fabric, and possible exfoliation of the sandstone.

The hole will then be cleaned out using compressed air to remove all debris from the hole. Renderoc HB40 will be used to fill the hole to a depth up to 40mm. On completion of the curing of the HB40, the area of the hole will be patched.

For areas of cement render, the hole will be patched with a render matching the existing colour and texture of the render on the wall. The outside perimeter of the patch will be dove-tailed to assist in keying in the new render patch and the wall will be primed to allow maximum adhesion.

Mortar repairs to the sandstone are to be executed using NHL-based custom repair mortar equal to Lithomex Natural Hydraulic Lime repair mortar or Westox Plastalite Hydraulic Limestone Repair Mortar. The stonemason will blend the sands on site as required to achieve a good colour match for the parent stone using inorganic pigments where necessary to achieve a good colour match to the sandstone. No cements will be used on any part of the sandstone wall.

The repairs will be misted down with clean water during the day to prevent shrinkage with the sun, wind, and other elements on the wall and cutting.

Assessment of Heritage Impact

The proposed diversion of the gas line has the potential to affect the State heritage significance of the *Millers Point & Dawes Point Village Precinct*. The High Street Retaining Wall has been identified as having historic, aesthetic and social significance, and should also be considered to have technical significance. The proposed temporary diversion represents a change to the High Street cutting and retaining wall, the impact of which is assessed below.

In 2021 GML Heritage prepared a conservation policy and guidelines document for the Hickson Road Retaining Wall (GML Heritage, 2021). The aims of the report were to address the management of physical and visual impacts to the wall and provide guidance on the management of works more generally within the heritage setting (2021, p. 1).

The document identifies key features of the wall that have a High significance value and are affected by the proposed methodology:

- The sandstone cliff face, incorporating the line dividing the sandstone from the rendered wall, the natural bedding planes of the rock, and the vertical fissures within the sandstone.
- The rendered concrete wall, consisting of concrete poured in situ, in discrete layers, the original render finish, areas of missing render exposing the concrete below, and areas of repaired render.

Conservation policies relating to the sandstone cliff face that are relevant to the current works (GML Heritage, 2021, pp. 14-15) include the following responsibilities, addressed in the table below:

Responsibility	Compliance
Minimise new fixings into the wall. If fixings are used physical fixings are preferred over chemical anchors which could be difficult to remove and repair in the future without undue damage. Do not use fixing methods that will adversely impact the structure and fabric of the wall.	The fixings will be minimised by using the most direct route possible for the gas line. Chemical anchors will be used in order to minimise stress on the weaker points in the fractured sandstone. Expansion type anchors impart stress directly into the base material and require a greater distance from fracture edges. Chemical anchors can be placed closer to edges with less risk and the load is applied to the length of the embedment rather than being concentrated at limited points. Repairs will be by a heritage stonemason.
Fixing to the wall for new services, such as lighting, security or other structures, should be managed to minimise impacts on significance, particularly in association with the temporary works for the new Barangaroo Metro Station.	The proposed diversion is located at the northern periphery of this section of the wall, where the Windmill Street bridge already interrupts the continuity of the cutting. The location of anchors will avoid bedding planes, tool marks and other fractures.
When choosing fixing locations, use existing/earlier fixing points wherever	Fixings will be minimised. There are no existing fixings that can be utilised in this location.

Responsibility	Compliance
possible in preference to creating new ones.	
When fixing to significant fabric, choose a location that will be easy to repair and disguise should the fixing be removed at a later date. Do not fix in locations that will place significant fabric at risk of fracture, damage or failure.	Locations for anchors will be selected that avoid natural or cut features in the sandstone surface. Anchors will be placed in flat sections of rock, uninterrupted by bedding planes or vertical fractures.
All fixing methods must be tested first in a discrete, out-of-the-way location to ensure methods will be appropriate and can be removed if required with minimal negative impact. Fixing method and materials used must be chemically and mechanically compatible with both the substrate and the element to be fixed. There must be no risk of accelerated corrosion, staining, damage or other adverse effect.	This method of fixing has been tested and used elsewhere on the wall on a larger scale to attach the rock mesh along the wall to the south.
Exposed services (where essential to the work) must not detract from the quality of the place.	The proposed diversion is located at the northern periphery of this section of the wall, where the Windmill Street bridge already interrupts the continuity of the cutting. The location of anchors will avoid bedding planes, tool marks and other fractures. The visual interruption of the vertical gas line will be temporary, and while in place will be located to avoid clashing with the most prominent features of the cutting, and will not further interrupt the lines of the bedding planes with the exception of those located beneath the Windmill Street bridge.
Fixing methods must be reversible, allowing later removal of the element, repair or refixing without risk of damage to the surrounding or significant material. Retain the evidence of the natural and built features within the rock, including the sandstone bedding planes, vertical fissures and evidence of former structures attached to the vertical surface.	Anchors and bolts will avoid fissures and joints between bedding planes. Anchors and bolts will not be placed in the vicinity of evidence of former structures. The repairs will imitate the qualities of the surrounding rock as best as possible to retain the natural appearance of the sandstone areas of the wall. The stonemasons will blend the sands on site as required to achieve a good colour match for the parent stone using inorganic pigments where necessary to achieve a good colour match to the sandstone. Repairs to the sandstone will be limited to a small area around each 16mm anchor.

Responsibility	Compliance
Maintain the original line defining the top of the natural sandstone cliff edge and the concrete wall.	
Avoid 'creep' of the render zone over the original sandstone surface. Original sandstone should be retained in preference to new render repairs over the sandstone surfaces as a remedy for irregular stone or 'faults'. New areas of render should only be undertaken after careful consideration of other options for surface stabilisation, and approved by a heritage consultant.	All patching will match the surrounding fabric. No cements will be used on any part of the sandstone wall.
Do not render or paint or apply coatings (including sealants) over the sandstone surface.	Mortar repairs to the sandstone will be executed using non-reactive products. Repairs will be limited to a small area of around the 16mm anchors/bolts only. No coatings or sealants will be painted over the sandstone.

Conservation policies relating to the cement-rendered concrete wall that are relevant to the current works (GML Heritage, 2021, p. 15) include the following responsibilities addressed in the table below:

Responsibility	Compliance
Retain the original cement render finish where possible.	Anchor points will be minimised to 4 locations on the concrete section of the wall. The repair methodology is to remove only what is necessary to patch the anchor/bolt locations.
Do not paint or apply coatings (including sealants) over rendered surface unless this follows specialist materials conservation advice.	No coatings or sealants will be applied over the rendered surface.
New render repairs are to involve only necessary patching which match in mix/composition, colour, grain, and texture (note: the render has visible shell aggregate in the mix). Patch the wall with a matching render in colour and texture. All new render is to respect/recreate the scored ashlar pattern which imitates large blockwork units. A specification should be prepared for all future render repairs. This would involve, in the first instance, render sample analysis (to determine materials composition/mix), sourcing of matching materials (including	The area of the repair after the anchors are removed will be patched with a cement render matching the existing colour and texture of the render on the wall. Shell aggregate will be added to the mix to match the existing render where appropriate. The outside perimeter of the patch will be dove-tailed to assist in keying in the new render patch and the wall will be primed to allow maximum adhesion. A record of the mix used will be documented for future repairs.

visible shell aggregate) and application methodology.	

The guidelines for works to heritage fabric (p. 19) include the following general principles:

- Conserve and re-use all sound original/early fabric where possible.
- Ensure that whenever early fabric is dismantled for repair, the work is done in such a way as to retain as much of the original fabric as possible.
- Ensure significant early fabric is protected from ongoing deterioration by undertaking appropriate repairs using specified and/or otherwise approved methods and materials.
- Ensure that whenever fabric is removed it is done carefully, so as to retain maximum original fabric.
- Ensure that all new work to replace damaged and/or missing components and/or fabric matches the significant early materials and detail identified on site. Prior to commencement, a selected section/component of original work will be nominated by the heritage consultant, in consultation with the contractor, as a suitable sample for matching.
- Conserve the cement-rendered concrete retaining wall – this may involve removing drummy render sections and redoing past patching that has poor render matching.

The proposed methodology for repairing the wall after the temporary gas line is removed complies with the recommendations set out in the 2021 Conservation Policy and Guidelines.

The following aspects of the proposal respect the heritage significance of the item or conservation area for the following reasons:
The proposed diversion is located at the northern periphery of this section of the wall, where the Windmill Street bridge already interrupts the continuity of the cutting. The location of anchors will avoid bedding planes, tool marks and other fractures. The visual interruption of the vertical gas line will be temporary, and while in place will be located to avoid clashing with the most prominent features of the cutting, and will not further interrupt the lines of the bedding planes with the exception of those located beneath the Windmill Street bridge. The proposed diversion respects the significance of the item by avoiding and minimising visual and physical impacts wherever possible.

The following aspects of the proposal could detrimentally impact on heritage significance. The reasons are explained as well as the measures to be taken to minimise impacts:
The temporary attachment of the gas line to the face of the wall will have an adverse effect on the aesthetic values of the wall. The assessment of significance for the wall recognises that:

> *The wall is aesthetically significant and exhibits landmark quality with its dominant, fortress-like scale and gradual dipping in response to the V-shaped original topography of what became High Street. It also displays an interesting interface of fabrics, comprising the excavated rock face, cement render and masonry construction at the northern end of the wall.*

The 16mm diameter penetrations in the concrete and the cutting will have an overall minor impact on the significant fabric of the item. Penetrations into the significant fabric will be limited to the smallest area possible, at a peripheral location in this section of the wall. The

impact locations will be made good in a manner in keeping with the heritage significance of the wall.

The dominant aesthetic in this section of the wall - which is embodied in the natural and human-made fractures in the 11m-high rock face - operates on a different visual scale to that of the penetrations. As such, the proposed anchor impacts will not affect the landmark aesthetic of the wall or reduce its readability and significance in the landscape.

In addition, all visual impacts should be considered in the context of the current Hickson Road environment. Approved construction works, including the demolition of the temporary acoustic shed over Hickson Road immediately in front of the wall, will be taking place for the duration of the temporary gas diversion. Views to and from the item during this time will be obscured and limited by the lack of public access, and the movement, use and installation of plant and construction infrastructure that will be required to undertake the works. In this context, the new works are unlikely to significantly alter the existing approved visual impact. As such there will be a minor temporary impact on the aesthetic significance of the High Street wall as an integral element of the *Millers Point & Dawes Point Village Precinct*.

Statement of Heritage Impact

The High Street cutting and retaining wall is a contributory element of the state heritage significant *Millers Point & Dawes Point Village Precinct*. The cutting and retaining wall is a prominent landmark defining the separation of wharfage from the residential areas of Millers Point. The cutting and retaining wall has particular social significance as part of the 'Hungry Mile', the name given to the mile of wharves between Darling Harbour and Millers Point by the maritime workers who walked in the hope of casual low-paid work each day from the nineteenth century into the 1940s. As such, protection of the heritage significance of the High Street cutting and retaining wall as an element of the *Millers Point & Dawes Point Village Precinct* has been an important consideration in the design of the temporary gas diversion.

The temporary pipe would be in place only during the demolition of the acoustic shed and the works to reinstate Hickson Road. These works will severely limit access and views to and from the item, minimising the visual impact that the installation of the pipe will create.

There will be non-reversible impacts to significant fabric that will be minor in nature considering the relative scale of the rock face and wall. All impacts will be mitigated by make good works that will replicate the removed material. The impacts will be limited to a narrow section of the wall adjacent to the Windmill Street bridge, which itself interrupts the continuity of the wall and cutting.

There will be a minor physical impact to the significant fabric, but a negligible, if any, impact to the heritage significance of the High Street Wall. There will have a negligible short-term visual impact on the heritage significance of the *Millers Point & Dawes Point Village Precinct*, in its entirety.

Mitigation

Article 3 of the Burra Charter recommends a conservation approach based on a respect for the existing fabric, use, associations and meanings. It requires a cautious approach of changing as much as necessary but as little as possible. The repair material used to patch the anchor locations will be as near to the surrounding fabric in composition as possible to minimise an adverse effect on the aesthetic significance of the item.

The following recommendations are aimed at ensuring that heritage values are protected:

Recommendation 1

> *A photographic recording of the affected areas should be made prior to and on completion of works to ensure that there is a record of the changes to the face of the wall. The recording should be in accordance with the Heritage Council guideline publication* Photographic Recording of Heritage Items Using Film or Digital Capture *(revised 2006).*

The significance of the High Street cutting and retaining wall as a contributory item of the state heritage *Millers Point & Dawes Point Village Precinct* should be understood by all on-site staff and construction team to ensure that no inadvertent damage is done to the wall.

Recommendation 2

> *Prior to works commencing, all on-site staff should be briefed on the heritage requirements of the High Street Cutting and retaining wall, its heritage significance and the value of its fabric.*

There is potential for damage to the wall during the process of installing the temporary gas line, and during the dismantling of the acoustic shed. Care should be taken during all works in the vicinity of the wall and cutting.

Recommendation 3

A heritage architect should specify the mortar mix used in any repairs.

The temporary services will utilise existing hardware to attach to the High Street wall. The temporary pipes will be largely obscured by approved construction works along Hickson Road which will negate any visual impact.

All replacement services are temporary. There will be no permanent or long-term surface-mounted services. Existing service routes will be reinstated following the temporary works. Repairs to the penetrations will match the existing render in accordance with the *Hickson Road Retaining Wall Barangaroo Conservation Policy and Guidelines* (GML 2021).

The proposed works are minor in nature and will have a negligible impact on the significance of the *Millers Point and Dawes Point Village Precinct* (SHR 01682).

References

AMBS Ecology & Heritage (2017) *High Street Cutting, Millers Point Statement of Heritage Impact.* Consultancy report to John Holland CPB Ghella Joint Venture.

AMBS Ecology & Heritage (2018) *High Street Wall Rockfall Protective Mesh, Memo.* Prepared for John Holland CPB Ghella Joint Venture.

AMBS Ecology & Heritage (2017) *High Street Cutting, Millers Point Statement of Heritage Impact*, Report to John Holland CPB Ghella Joint Venture.

AMBS Ecology & Heritage (2021) *Barangaroo Metro Station Construct Only Package (COP) Historical Archaeological Method Statement*, Report to BESIX Watpac May 2021.

Casey & Lowe (2017) *Barangaroo Station Hickson Road, Barangaroo Sydney Metro Project Archaeological Method Statement*, Report to AMBS on behalf of John Holland CPB Ghella JV.

GML Heritage (2017) *Sydney Metro City & Southwest Technical Services: Hickson Road Retaining Wall Heritage Significance Assessment Technical Report* Report prepared for AECOM Australia and Parsons Brinckerhoff Australia on behalf of Transport for NSW Sydney Metro City & Southwest.

GML Heritage (2021) *Hickson Road Retaining Wall Barangaroo: Conservation Policy and Guidelines*, Report prepared for Sydney Metro April 2021.

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[redacted]

1 February 2024

Director Environment, Sustainability and Planning
Sydney Metro
Transport for NSW
PO Box K659
HAYMARKET NSW 1240

Ref: 170108(p) CHMP Rev04

Dear [redacted]

RE: Approval of Minor Amendments – Construction Heritage Management Plan (CHMP) Rev04, Sydney Metro City & Southwest – Barangaroo Station

Thank you for providing the following document for Environmental Representative (ER) review and approval of minor amendments as required by Condition of Approval A24 (j) of the Sydney Metro City & Southwest project (CSSI – 15_7400, 9 January 2017):

- Construction Heritage Management Plan – Barangaroo Station (SMCSWSBR-BWC-SBR-HE-PLN-000010 Revision 04, dated 11 January 2024) (the CHMP)

The CHMP was originally developed to address Condition C3 of the project approval. Amendments to the above Plan were for the purpose of a periodic update as required by the Construction Environmental Management Framework (CEMF). The amendments are considered to be 'minor' according to Condition of Approval A24 (j). The amendments do not trigger any additional CoAs or REMMs and are consistent with the planning approval. No additional significant risks have been identified as a result of the changes.

As an approved ER for the Sydney Metro City & Southwest project, I have reviewed and provided comment on this document and accordingly approve the amendment of the Plan for implementation.

Yours sincerely

[redacted]

Jo Heltborg
Environmental Representative – Sydney Metro – City and Southwest