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Harbourside Shopping Centre
Darling Harbour

Maritime Archaeology Assessment

Darling Harbour
Sydney
NSW

July 2022

Harbourside Shopping Centre
Darling Harbour
Maritime Archaeology Assessment

Prepared for:

Mirvac Retail Sub SPV Pty Ltd

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Cosmos Archaeology Job Number J22/02

Cover Image: Darling Harbour panorama depicting the relatively undeveloped western shoreline, featuring Newstead House and associated waterfront infrastructure, ca. 1865. Source: State Library of New South Wales DL PX 162: FL1082513 / FL1082525.

Revision	Description	Date	Originator	Reviewer	Approver
VO	Draft Maritime Archaeology Assessment	30/06/2022	TC, JM	CC	CC
V1	Addition of Atlas Engineering, client comments and report finalised.	07/07/2022	JM	CC	CC
V1.1	Further client comments addressed	12/07/2022	JM, CC	CC	CC

EXECUTIVE SUMMARY

Following consent being granted for the Concept Proposal and Stage 1 demolition works, Mirvac Retail Sub SPV Pty Ltd (Mirvac) is now pursuing the next stage of planning approvals for the detailed design, construction, and operation of the redevelopment of the Harbourside Shopping Centre at Darling Harbour.

This report is part of the first detailed SSDA application for bulk excavation works and construction of retaining structures. It more broadly forms part of the Harbourside Shopping Centre redevelopment that will deliver a world-class mixed-use retail, commercial and lifestyle precinct and contribute to the ongoing renewal and revitalisation of Darling Harbour.

In response to the Future Environmental Assessment Requirements, Condition C28(d) of Development Consent SSD 7874 stipulates that a qualified maritime archaeologist must be engaged to prepare a maritime archaeological assessment Cosmos Archaeology (CA) has been contracted by Mirvac to produce this document.

A desktop review of historical sources, databases and maps found that the western shoreline of Darling Harbour, including the study area, remained relatively undeveloped throughout the early to mid-19th century. The estate of Captain George Bunn was the first property to be developed in the area and included possible maritime infrastructure such as a jetty and warehouse on the shoreline. The area remained relatively underdeveloped except for a brief period between 1878 and 1882, when the Atlas Engineering Works undertook shipbuilding activities within the study area. In the 1880s the land was transformed into the Darling Harbour Railway Goods Yard and remained a key transportation hub for nearly a century.

Potential historic sites within the study area include wharves and related material and seawalls, in and under reclamation fill. A map with likelihood ratings of archaeological potential is provided in Figure 38 which shows the western half of the study area is predominantly of moderate to high archaeological potential.

The archaeological remains of the former maritime infrastructure such as wharves, jetties, slipways, moorings within the study area are assessed to be of ***Local significance*** under this criterion.

It is understood that bulk excavation will be undertaken as part of the construction of a multi-level basement carpark and that the basement construction will require excavation to depths of approximately 16 m below the existing ground surface

The impact assessment found that potential impacts on remains of wharves, seawalls and related material (c.1840 to 1970) could be satisfactorily mitigated by archaeological excavation in areas of high maritime archaeological potential and establishing archaeological monitoring protocols during the construction phase of the project.

From the findings of this MAA, the following recommendations are made:

1. *Archaeological excavation of the potential maritime infrastructure associated with Newstead House during the construction phase when the basement footprint would be gradually dewatered.*
2. *Archaeological sampling across the former seabed focusing on the vicinity of the potential maritime infrastructure associated with Newstead House. Around 24 sqm (7.5% of former seabed within the basement footprint) to be excavated manually and/or mechanically when the former seabed is exposed.*
3. *Maritime archaeological monitoring during bulk excavation.*
4. *Preparation of an Archaeological Research Design and Excavation Methodology (ARD) for archaeological works during bulk excavation. The ARD should include:*
    - *Further details on the proposed works*
    - *Research questions based on a comparative analysis of archaeological resources recorded at similar sites.*
    - *Details of the excavation and recording methods*

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Abbreviations

The following abbreviations are used throughout this report:

ADAS	Australian Diver Accreditation Scheme	MASoHI	Maritime Archaeological Statement of Heritage Impact
AHIMS	Aboriginal Heritage Information Management System	NPW Act	National Parks and Wildlife Act 1974
ARD	Archaeological Research Design	NSW	New South Wales
CBD	Central Business District	OH&S	Occupational Health and Safety
EP&A Act	Environmental Planning and Assessment Act 1979	PAD	Potential Archaeological Deposit (type of Aboriginal site feature on AHIMS)
GFA	Gross Floor Area	REP	Regional Environmental Plan
HAA	Historical Archaeological Assessment	Proponent	DPT Operator Pty Ltd and DPPT Operator Pty Ltd
HC	Heritage Council (NSW)	SEPP	State Environment Planning Policy
ICC	International Convention Centre	SHR	State Heritage Register (NSW)
LEP	Local Environment Plan	SICEEP	Sydney International Convention, Exhibition and Entertainment Precinct
LGA	Local Government Area	SREP	Sydney Regional Environmental Plan (Sydney Harbour Catchments 2005)
MAA	Maritime Archaeological Assessment	SSD	State Significant Development
MAMP	Maritime Archaeological Management Plan	SSDA	State Significant Development Application

1 INTRODUCTION

This report supports a State Significant Development Application (SSDA 38881729) submitted to the Minister for Planning pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Following consent being granted for the Concept Proposal and Stage 1 demolition works, Mirvac Retail Sub SPV Pty Ltd (Mirvac) is now pursuing the next stage of planning approvals for the detailed design, construction, and operation of the redevelopment of the Harbourside Shopping Centre at Darling Harbour. Mirvac has divided these detailed design works across three related, but separate, SSDAs to ensure the efficient staged delivery of this large-scale project.

This report is part of the first detailed SSDA application for bulk excavation works and construction of retaining structures. It more broadly forms part of the Harbourside Shopping Centre redevelopment that will deliver a world-class mixed-use retail, commercial and lifestyle precinct and contribute to the ongoing renewal and revitalisation of Darling Harbour.

In response to the Future Environmental Assessment Requirements, Condition C28(d) of Development Consent SSD 7874 stipulates that a qualified maritime archaeologist must be engaged to prepare a maritime archaeological assessment (Table 1). Cosmos Archaeology (CA) has been contracted by Mirvac to produce this document.

The Maritime Archaeological Assessment (MAA) draws on information from the Historical Impact Assessment (HIA), Historical Archaeological Assessment (HAA) and the Archaeological Research Design for the test excavation (ARD) developed by Curio Projects (Curio).[1] This MAA also draws on information collated by CA during similar projects conducted in Cockle Bay / Darling Harbour in 2017 and 2021, combined with a re-examination of geotechnical data obtained from the site.

This assessment will be used to inform the testing and detailed design of the Stage 2 SSDA.

Table 1: Archaeological Requirements under Development Consent SSD 7874.

Future Environmental Assessment Requirements		
Item	**Description of Requirement**	**Section Reference**
Archaeology (C28)	Future Development Application(s) shall be informed by Historical, Maritime and Aboriginal Archaeology testing and demonstrate how the results of such testing have been used to minimise impacts to State Significant archaeological resources. The results of the archaeological testing must be documented in a report which outlines opportunities for conservation in situ as a preference, development and interpretation. The testing is to be undertaken in accordance with the following: (d) The Applicant shall engage a suitably qualified and experienced maritime archaeologist, with understanding of the	This report addresses the maritime archaeology assessment required to fulfill C28(d) for the future development application. Geotechnical data from the site is re-examined in **Section 3.4**. As the proposed works will remain within reclamation and not extend beyond the current seawall a remote sensing and/or a diver survey of the survey would not have contributed any additional information on to the potential impacts to the cultural heritage values of the maritime archaeological resource within the study area. A maritime archaeological dive survey was conducted in 2015 in

[1] **Curio Projects 2016** *Harbourside Shopping Centre, Darling Harbour Historical Archaeological Assessment.* Unpublished report prepared for Mirvac Pty Ltd, **Curio Projects 2016** *Harbourside Shopping Centre Historical Impact Statement* Unpublished report prepared for Mirvac Pty Ltd, and **Curio Projects 2021** *Harbourside Darling Harbour Archaeological Research Design* Unpublished report prepared for Mirvac Pty Ltd.

	effects of dredging and reclamation processes on former submerged maritime infrastructure sites, to prepare a maritime archaeological assessment for the project within 6 months of the date of consent. The assessment shall be used to inform the testing and detailed design of the Stage 2 SSDA and should include the following: i) remote sensing and/or diver surveys of the seabed under any piled areas that currently form waterfront or paved areas of the proposed development. ii) any geotechnical and borelog information should be considered in this assessment and the maritime assessment should be used to better inform the testing program.	the western side of Darling Harbour and a detailed account of the conduct and findings is presented in **Section 3.5**.

1.1 Background

Mirvac is pursuing the staged redevelopment of the Harbourside Shopping Centre, with the first key planning approval secured on 25 June 2021 (SSD 7874) establishing the relevant planning parameters, including building envelopes, maximum GFA limits, Design Guidelines and Design Excellence Strategy, and car parking rates to guide the future detailed design, construction, and operation of Harbourside under subsequent SSD applications. SSD 7874 also granted consent to the demolition of the existing shopping centre and associated structures to ground floor slab level.

To enable the efficient delivery of the project, Mirvac has divided the detailed design and construction works across separate SSDAs, comprising:

- SSDA 1: Bulk excavation works and construction of retaining structures.
- SSDA 2: Detailed design, construction, and operation of the new podium and tower building.
- SSDA 3: Construction and use of the public domain, and Guardian Square, including construction and use of the Murray Street and Bunn Street bridges.

This report forms part of the first detailed design application for bulk excavation works and construction of retaining structures (SSDA 1).

1.2 Overview of Proposed Development

This report forms part of the first detailed design SSDA for Harbourside (SSDA 38881729), and seeks consent for the following works:

- Bulk earthworks to enable the construction of the redeveloped Harbourside Shopping Centre building, including demolition of the ground level slab; and
- Construction of retaining structures for the excavated site.

1.3 Site Description

The Harbourside redevelopment site is located within the Darling Harbour Precinct inside the City of Sydney Local Government Area (LGA), at the south-western edge of the Sydney CBD. The precinct remains as Sydney's premier tourist and entertainment destination and accommodates varied recreation, tourism, entertainment, retail, residential apartments, and business land uses.

Specifically, the site occupies an area of approximately 2.05 hectares within the northwestern portion of Darling Harbour, in between Cockle Bay and the Pyrmont Peninsula. It is irregularly shaped and existing site improvements include the 2-3 storey Harbourside Shopping Centre – noting approval has already been granted for stage 1 demolition works. Indicative site boundaries are shown in Figure 1.

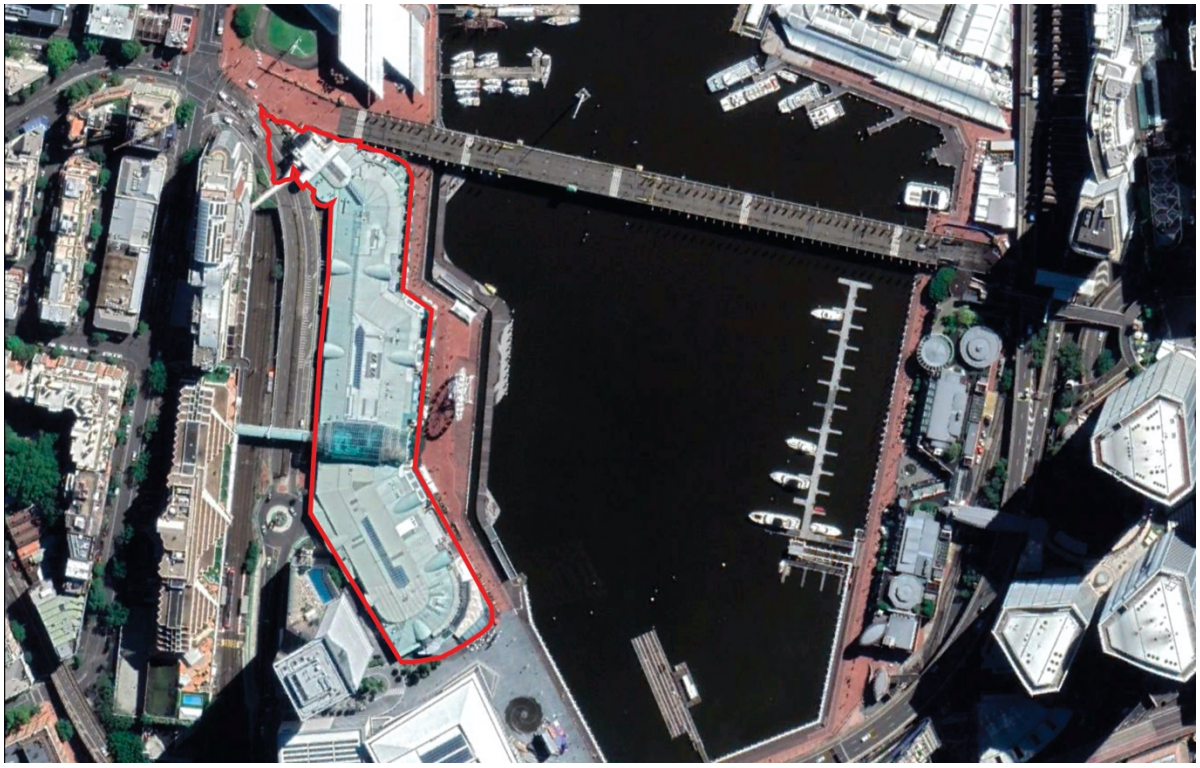

Figure 1: Study area in Darling Harbour, footprint of Harbourside Development outlined in red.

1.4 Objective

The objective of this MAA is to assess the maritime archaeological potential on and under the former seabed within the study area, provide mitigation advice to avoid or minimise impacts to the cultural significance of any identified maritime archaeological resource/s and to inform an archaeological testing program.

The maritime archaeological resource in this context refers to archaeological remains (deposits and structures) on and under the former seabed, landward of the existing seawall, which is now under reclamation. This includes the basal remains of maritime infrastructure, such as seawalls, piles, slipways, which would have been on and under the seabed.

The scope of this proposal does not cover:

- Underwater Aboriginal heritage
- Historical (or terrestrial) archaeology

The site's historical archaeological potential has been assessed in a separate historical archaeological assessment conducted by Curio in 2016.[2] It primarily focuses on the site's terrestrial archaeological potential extending to the shoreline, post 1788.

[2] **Curio Projects Pty Ltd 2016**, Harbourside Shopping Centre, Darling Harbour Historical Archaeological Assessment, report prepared for Mirvac Projects Pty Ltd.

1.5 Approach to the study

This report expands on the 2016 historical archaeology assessment by assessing the maritime archaeological potential of the Harbourside site. This objective is addressed using the following process:

Section 2	**Statutory Requirements** have been reviewed from a maritime archaeological perspective.
Section 3	**Historical Background** has been drawn from historical research and previous CA studies within the Darling Harbour area, with a focus on identifying maritime archaeological resources. This is supported by historical phasing as developed by Curio.
Section 4	**Previous Maritime Archaeological Inspection** reviews the findings of the 2015 dive inspection undertaken adjacent to the study area.
Section 5	**Known and Potential Sites** have been reviewed taking into consideration the findings of the recent geotechnical and underwater pre disturbance surveys.
Section 6	**Assessment of Significance** has been reviewed taking into consideration the findings of Sections 3 to 5.
Section 7	**Impact Assessment** examines the available construction designs relevant to the maritime archaeological resource on the site.
Section 8	**Recommendations**.

2 STATUTORY CONTEXT

2.1 Cultural Heritage Statutory Protection – Introduction

NSW Legislation

Cultural heritage in New South Wales (NSW) is protected and managed under a hierarchy of legislation. The following section provides a brief summary of the relevant statutory regulations relating to the current project area.

2.1.1 NSW *Heritage Act 1977* (amended 1999)

The NSW *Heritage Act 1977* is the primary piece of State legislation affording protection to all items of non-indigenous environmental heritage (natural and cultural) in NSW. Under the Act, "items of environmental heritage" include places, buildings, works, relics, moveable objects and precincts identified as significant based on historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic values. Items of heritage identified as having State significance are listed on the NSW State Heritage Register (SHR) and are afforded automatic protection against any activities that may damage the item or affect its heritage significance under the Act.

Under Section 89J(c) of the *Environmental Planning and Assessment Act 1979* (EP&A Act), a developer would not be required to apply for approvals or excavation permits under the Heritage Act for State Significant Development. However, under Schedule 2, Part 2(4) of the Environmental Planning and Assessment Regulation 2000 the Director General is required to:

> *Consult with the relevant public authorities and have regard to the need for the requirements to assess any key issues raised by those public authorities.*

Under Section 146 of the Heritage Act, the discovery of a relic also requires that:

> *A person who is aware or believes that he or she has discovered or located a relic (in any circumstances, and whether or not the person has been issued with a permit) must: (a) within a reasonable time after he or she first becomes aware or believes that he or she has discovered or located that relic, notify the Heritage Council of the location of the relic, unless he or she believes on reasonable grounds that the Heritage Council is aware of the location of the relic, and (b) within the period required by the Heritage Council, furnish the Heritage Council with such information concerning the relic as the Heritage Council may reasonably require.*

Relic provision and protection

In addition to buildings and items listed on the State Heritage Register, various cultural heritage sites, items and archaeological features and deposits are afforded automatic statutory protection by the relics provisions of the NSW *Heritage Act 1977*. The Act defines 'relics' as any item 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.

Sections 139 to 145 of the Act prevent the disturbance or excavation of any land if there is a reasonable cause to suspect that a relic will be discovered, exposed, moved, damaged or destroyed, unless an excavation permit has been issued by the Heritage Council of NSW. The type of permit that is required depends on whether the relic or relics have been listed on the State Heritage Register.

Excavation permits are issued by the Heritage Council of NSW, or its delegate, under Section 140 of the Heritage Act for relics outside an SHR curtilage or under Section 60 for

significant archaeology within SHR curtilages. An application for an excavation permit must be supported by an Archaeological Research Design and Archaeological Assessment prepared in accordance with the NSW Heritage Division archaeological guidelines.

However, the *Environmental Planning and Assessment Act 1979* (Below) states that approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977* does not apply to the carrying out of a State significant development that has been granted development consent (Section 89J 1c).

Government Gazette # 59 – Planning and Heritage came into force on 1st March 2022 and outlined changes to the exceptions provisions in subsections 139(1) and (2) of the Act.

The following disturbance or excavation of land does not require an excavation permit, provided that it falls within one or more of the exceptions described at clauses 2(a) to (f) below:

a. Any disturbance or excavation of land that has limited archaeological research potential, as demonstrated by a heritage management document, such as an Archaeological Assessment, completed within the last five years.

b. Any disturbance or excavation of land that constitutes minor works involving limited impact to relics of local heritage significance, in accordance with '*Relics of local heritage significance: a guide for minor works with limited impact*', published by Heritage NSW.[3]

c. Any disturbance or excavation of land that constitutes minor works involving limited impact to relics of local heritage significance as demonstrated by a heritage management document, such as an Archaeological Assessment, completed within the last five years.

d. Any disturbance or excavation of land for archaeological test excavation of relics of local heritage significance completed in accordance with the guideline '*Relics of local heritage significance: a guide for archaeological test excavation*'.[4]

e. Any disturbance or excavation of land for archaeological monitoring of relics of local heritage significance completed in accordance with the guideline '*Relics of local heritage significance: a guide for archaeological monitoring*' published by Heritage NSW.[5]

f. Any disturbance or excavation of land:

    i. for the purpose of exposing underground utility services infrastructure which occurs within an existing service trench and will not affect any other relics;

    ii. to carry out inspections or emergency maintenance or repair on underground utility services with due care taken to avoid effects on any other relics;

    iii. to maintain, repair, or replace underground utility services to buildings which will not affect any other relics;

    iv. to maintain or repair the foundations of an existing building which will not affect any associated relics; or

    v. to expose survey marks for use in conducting a land survey.

Exceptions do not apply to relics of State heritage significance or to a relic subject to an interim heritage order or a listing on the State Heritage Register. Under the general

[3] **Heritage NSW 2022,** Relics of local heritage significance: a guide for minor works with limited impacts 2022.1 Information sheet. State of NSW, Department of Premier and Cabinet.
[4] **Heritage NSW 2022,** Relics of local heritage significance: a guide for archaeological test excavation 2022.2 Information sheet. State of NSW, Department of Premier and Cabinet.
[5] **Heritage NSW 2022,** Relics of local heritage significance: a guide for archaeological monitoring 2022.3 Information sheet. State of NSW, Department of Premier and Cabinet.

conditions, exceptions are now self-assessed by the proponent and no longer require an application to the Heritage Council.[6]

Anything done under these exceptions must be carried out by people with knowledge, skills and experience appropriate to the work. Some exceptions require suitably qualified and experienced professional advice/ work as set out in the guidelines '*Relics of local heritage significance: a guide for archaeological test excavation*' published by Heritage NSW and '*Relics of local heritage significance: a guide for archaeological monitoring*' published by Heritage NSW.

Discovery of Relics

Section 146 of the Act requires that anyone who is aware or believes that they have discovered or located a relic (regardless of whether a permit has been issued) must notify the Heritage Council of its location.

A person who is aware or believes they have discovered or located a relic, in any circumstances (including where works are carried out in reliance on an exception under section 139(4)), must notify the Heritage Council in accordance with section 146 of the *Heritage Act 1977*. Depending on the nature of the discovery, additional assessment and approval under the Heritage Act 1977 may be required prior to the recommencement of excavation in the affected area(s).

2.1.2 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) established the framework for cultural heritage values to be formally assessed in the land use planning and development consent process. The *Act* requires that environmental impacts are considered prior to land development; this includes impacts to cultural heritage items and places as well as archaeological sites and deposits. The *Act* also requires that Local Government agencies prepare planning instruments (such as Local Environmental Plans, Development Control Plans) in accordance with the *Act* to provide guidance on the level of environmental assessment required.

The EP&A Act is the main act regulating land use planning and development in NSW. Part 5.1 Division 115Y of the Act provides a process for the assessment and approval of State Significant Development (SSD).

Applications made under Part 5.1 of the EP&A Act are subject to environmental assessment requirements, prepared by the Secretary of the Department and the Environment. Under Schedule 2(3)(4) of the Environmental Planning and Assessment Regulation 2021 the Secretary is required to:

> *Consult relevant public authorities and have regard to the need for the requirements to assess any key issues raised by those public authorities.*

This should include consultation with Heritage Division regarding items, places and archaeological sites that have heritage significance.

[6] **Heritage Council of NSW 2021**, Government Gazette of the State of New South Wales, Number 59 – Planning and Heritage, Friday 18th February 2022.

2.2 Statutory Heritage Register Search

In NSW there are four types of statutory listings for non-indigenous cultural heritage sites, objects and places:

- National Heritage List;
- NSW State Heritage Register;
- *Regional Environmental Plan* (REP);
- *Local Environmental Plan* (LEP); and,
- Section 170 Heritage and Conservation Register;

Heritage register searches were undertaken for the project area with the following results.

2.2.1 National Heritage List

The National Heritage List is a register of natural and cultural places with outstanding heritage significance to the Australian nation. Each entry to the National Heritage List is assessed by the Australian Heritage Council as having exceptional heritage value and is protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The Act requires that approval is obtained from the Australian Government Minister for the Environment Protection, Heritage and the Arts before any action takes place that has, will have, or is likely to have, a significant impact on the national heritage values of a listed place.

There are no sites listed on the National Heritage List located within the study area.

2.2.2 NSW State Heritage Register

The *State Heritage Register* is a statutory list of places and items of State heritage significance made by the Minister for Planning. The Register lists a diverse range of places, including archaeological sites, that are particularly important to the State and which enrich our understanding of the history of NSW.

Places and items listed on the Register are legally protected under the NSW *Heritage Act 1977* and approval is required from the Heritage Council of NSW prior to undertaking work that results in their alteration or modification.

The Pyrmont Bridge is listed on the State Heritage Register as an Item of State Significance (Item Number 01618). The listing includes a heritage curtilage area that extends to either side of the bridge, located to the north of the Harbourside site.

Further south of the site is another State Significant listing, the Darling Harbour Woodward Water Feature (Item Number 01933). This water feature is located on the harbour promenade.

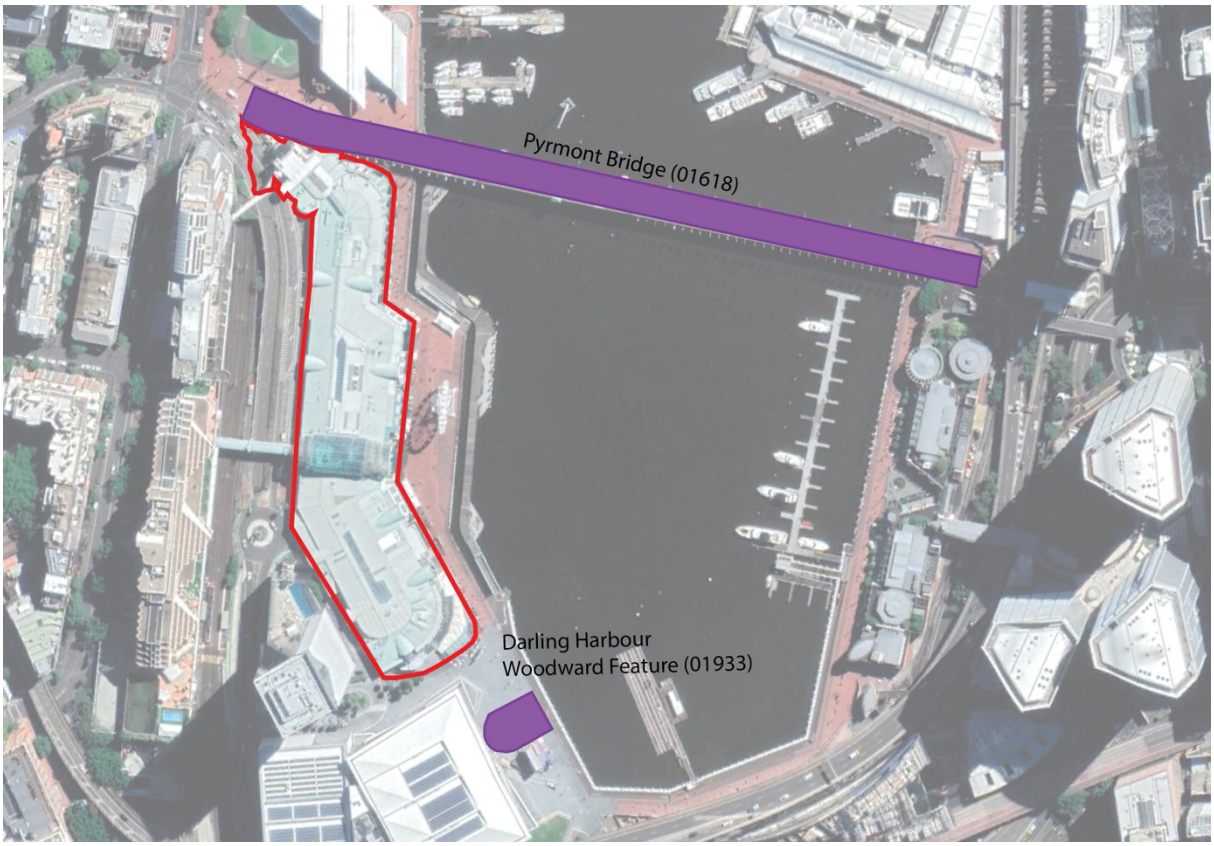

Figure 2: Curtilages of the two State Heritage-listed sites bordering the study area.
Image source: Google Maps.

2.2.3 NSW Historic Shipwreck Register

The NSW Historic Shipwreck Register is a database maintained by the NSW Heritage Division and contains upwards of 1,800 wrecks.[7] This database has been built up around historical accounts of the loss of vessels, mainly through the systematic examination of newspapers from the 1790s to the present day. The database has been augmented by other sources such as archival information from the Australian Hydrographic Office.

The database has been searched to locate any known or potential shipwrecks that have occurred specifically in Darling Harbour / Cockle Bay and greater in Sydney Cove. There are 112 registered vessels that are listed as wrecked in "Sydney Harbour" that have not been located. This description includes vessels that were reported lost within "Sydney Harbour Heads", or general locations such as "just outside Circular Quay" whereby the location may be further afield than the location described.

Refining the search to closer to the study area, there were four shipwrecks that have occurred in Darling Harbour. These were:

> *William Woolley – 201-ton wooden hulled brig that was lost in 1854 when it caught fire and was scuttled while bring timber into Sydney Harbour. The location of the wreck is unknown.*
>
> *Sterling – an iron hulled single screw steamer lost in 1919 when it collided with another vessel at Federal Wharf. The vessel was later refloated and removed from the site.*
>
> *Orphan Girl – a woodern hulled lighter that collided with another vessel in 1880. The vessel was travelling from Pennant Hills to Darling Harbour. The vessel was wrecked and its location is unknown.*

[7] **NSW Heritage Office 2007** 'Maritime Heritage Online', NSW, available http://www.environment.nsw.gov.au/maritimeheritage/index.htm

Omeo – 16-ton wooden screw steamer harbour tug. The vessel's boiler expolded while it was at Bathurst Street Wharf.

It is unlikely that there are remains associated with the shipwreck of *Sterling* to be present within the project area, as the actual collision occurred at Federal Wharf, and the vessel was subsequently refloated.

The vessels *William Woolley* and *Orphan Girl* have Darling Harbour included in their shipwreck register listings as this was their destination. It is possible that both of these wrecks are within the greater Darling Harbour area, however, they are unlikely to be within the study area of the report.

The vessel *Omeo* was lost at the Bathurst Street Wharf. These wharves are now covered over by reclamation works and is outside the study area.

2.2.4 Sydney Local Environmental Plan 2012

Identified items of cultural heritage significance within the project area are listed on Schedule 5 of the *Sydney Local Environmental Plan 2012.* Each item listed on Schedule 5 is subject to protection under the planning and development controls of the LEP.

There are no listings on the Sydney LEP within the project study area. There are, however, twelve terrestrial sites of local heritage significance within the general vicinity of the site, which are listed in the HAA by Curio[8]. These sites do not fall within the study area and are not within the scope of a maritime archaeology assessment.

2.2.5 NSW Section 170 Heritage and Conservation Register

All NSW State Government Agencies are required to keep an up-to-date record to assist in total asset management by providing information on their assets which have identified heritage significance. The Register has been prepared in accordance with the NSW Heritage Office guidelines and corresponds with information in the State Heritage Inventory, as managed by the NSW Heritage Office.

Pyrmont Bridge (adjacent to the study area) is listed on the Sydney Harbour Foreshore Authority's Section 170 Heritage and Conservation Register.

The second item listed is the 'Water Cooling System and Manifold' which is part of the operating system of the nearby power station. The item comprises underground conduits, possibly made of sandstone, used for transferring water between Darling Harbour and the Powerhouse for cooling purposes. However, these conduits are within reclamation and are not covered by this maritime study.

2.3 Summary of Statutory Provisions

There are no heritage-listed items, within the scope of this assessment, within the study area. There are two state significant sites listed nearby - Pyrmont Bridge and the Woodward Water Feature and one item on the s170 register – Water cooling system and Manifold. Table 2 below provide a summary of these sites. As these items are outside the study area or the maritime scope, they will not be discussed further.

[8] **Curio Projects 2016** Harbourside Shopping Centre, Darling Harbour Historical Archaeological Assessment. Unpublished report prepared for Mirvac Pty Ltd. pg. 7.

Table 2: Summary of heritage-listed sites in the vicinity of the study area.

Item	**NSW *Heritage Act (1977)***		***Environmental Planning and Assessment Act (1979)***	
	SHR	*S170*	*REP*	*LEP*
Pyrmont Bridge – Sydney, Part of Lot 501, DP 1031387 and part of Lot 1010, DP 1147364	01618	Sydney Harbour Foreshore Authority		
Darling Harbour Woodward Water Feature	01933			
Water Cooling System and Manifole		Place Management NSW		

2.4 Heritage Policies relevant to Maritime Heritage

2.4.1 UNESCO Convention on the Protection of the Underwater Cultural Heritage [9]

The UNESCO *Convention on the Protection of the Underwater Cultural Heritage*, adopted in 2001, sets out the basic principles for the protection of underwater cultural heritage, provides a detailed cooperation system and provides widely recognised practical rules for the treatment and research of underwater cultural heritage. The main principles relevant to this study are:

- Obligation to preserve underwater cultural heritage
- *In situ* preservation as first option
- No commercial exploitation
- Training and information sharing.

2.4.2 The Burra Charter [10]

The Burra Charter 2013 provides a best practice standard for managing cultural heritage places in Australia. The Burra Charter was first adopted in 1979 and is periodically updated to reflect developing understanding of the theory and practice of cultural heritage management. The current version was adopted in 2013.

The Charter can be applied to all types of places of cultural significance including natural, Indigenous, and historic places with cultural values. The Burra Charter advocates a cautious approach to change: do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained. The Charter includes 12 conservation principles which are further developed in the processes and practice sections of the Charter.

[9] **UNESCO 2001,** *Convention on the Protection of the Underwater Cultural Heritage,* available at http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/2001-convention/, accessed 28 May 2021.
[10] **Australia ICOMOS 2013** *The Burra Charter*, available at https://australia.icomos.org/publications/charters/, accessed 28 May 2021.

2.4.3 Guidelines for the Management of Australia's Shipwrecks [11]

The *Guidelines for the Management of Australia's Shipwrecks* was produced as a combined publication by the Australian Institute for Maritime Archaeology Inc. (now the Australasian Institute for Maritime Archaeology) and the Australian Cultural Development Office (now the Australian Government Department of the Environment and Energy) in 1994.

The guidelines comprise principles and practices that have been adopted by Australia's professional maritime archaeologists and serve as useful modules for other groups. The document includes a Statement of Principles governing the broad approach to be taken when dealing with historic shipwreck sites and related archaeological collections.

2.4.4 A Guide to the Heritage System [12]

The *Heritage Information Series: A guide to the Heritage System* published by the NSW Heritage Department in 2005 is an updated version of the *NSW Heritage Manual*, published in 1996 by the NSW Heritage Office and Department of Urban Affairs & Planning. This document is a comprehensive set of guidelines explaining all aspects of the NSW heritage management system. When the manual was first published in 1996, it served as the primary reference for heritage management in NSW. The regular updates have kept the information regarding the NSW Heritage system up to date in line with legislation changes.

Part of the NSW Heritage Manual is a chapter on assessing heritage significance which outlines the Heritage Council of NSW criteria for assessing heritage significance.[13]

2.4.5 Thematic study of NSW Shipwrecks (2020) [14]

Heritage NSW recently completed a thematic study of NSW shipwrecks and a review of the NSW Maritime Heritage Database. This strategic project was undertaken to provide a clearer understanding of the range and significance of shipwreck site types in NSW and guidelines for management of data on the Maritime Heritage Database. It also identified sites for potential State Heritage Register listing in the future.

The aim of the thematic study of shipwrecks in New South Wales is to identify key historical themes associated with maritime shipping activities that form the basis to identify the heritage item types associated with each theme. These have been developed to identify gaps in the database, to support the assessment of heritage significance of database items and to support the identification of items for potential listing on the SHR.

Because no shipwrecks have been confirmed within the study area, the thematic criteria have not been applied. In the event of a shipwreck being discovered during the works, its heritage significance will be assessed according to the criteria of the thematic study.

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[11] Australian Institute for Maritime Archaeology. Special Projects Advisory Committee & Australian Cultural Development Office & Australian Institute for Maritime Archaeology 1994, *Guidelines for the management of Australia's shipwrecks*, Australian Institute for Maritime Archaeology and the Australian Cultural Development Office, Canberra.

[12] **NSW Heritage Office 2005** *Heritage Information Series: A Guide to the Heritage System,* available at https://nswheritage.files.wordpress.com/2015/07/infoheritagesystem.pdf, accessed 28 May 2021.

[13] **NSW Heritage Office 2001,** *Assessing Heritage Significance*, available at https://www.heritage.nsw.gov.au/assets/Uploads/a-z-publications/a-c/Assessing-Heritage-Significance.pdf, accessed 23 July 2021.

[14] **Comber Consultants August 2020,** *Thematic Study: New South Wales Shipwrecks*, Report to Heritage NSW, Department of the Premier and Cabinet.

3 HISTORICAL BACKGROUND

The following historical summary focuses on the maritime history of the Darling Harbour area and has been designed to complement the historical sections of the 2016 HAA and 2021 ARD, produced by Curio. This section of the report uses the same historical phasing employed by Curio, to ensure cohesion between the three documents.

This maritime historical summary, unless otherwise referenced, is drawn from a previous study on the Cockle Bay area conducted by CA. A 2015 study in particular assessed the maritime infrastructure within Cockle Bay as part of the development of Darling Harbour.[15]

This section presents a summary of the development of maritime industry and infrastructure on the western side of Cockle Bay. It also includes identification of historic maritime infrastructure likely to have been situated within the study area based on numerous archival charts and plans.

3.1 Historical Summary

3.1.1 Phase 1: European Settlement (1788 – 1870)

Following the arrival of the First Fleet in 1788, the NSW colony was initially centred around Sydney Cove, with all shipping activity conducted from landings within the cove itself. Settlement was largely dictated by topography and the availability of fresh water, and land and along Darling Harbour and Cockle Bay – both originally known as "Long Cove" – saw little occupation for the following two decades due to the rugged terrain separating the area from Sydney Cove.

The primary use of the Long Cove shoreline during this period was the gathering of shellfish for sources of both food and lime; hence the general adoption of the name "Cockle Bay" in 1804. By 1807, the emerging township of Sydney was spreading down the ridge south-west of Sydney Cove, and the potential of Cockle Bay to accommodate the increasing overflow of shipping was beginning to be realised.[16]

In 1811, Governor Macquarie ordered the construction of the first wharf on the eastern side of Cockle Bay; Market Wharf, established to receive produce from outlying settlements and serve the Sydney marketplace. Over the next 20 years, maritime activity on the eastern shore of Cockle Bay increased, while the western shore remained largely undeveloped. In 1826, Governor Darling renamed Cockle Bay "Darling Harbour" in honour of himself.[17]

Documented land usage on the western side of Darling Harbour (the current study area) didn't commence until the 1830s. This began with the construction of a sandstone homestead at the waterfront property of Sydney merchant Captain George Bunn (Figure 3),[18] known as Newstead House, or Bunn's House. Captain George Bunn was a master mariner and successful merchant, who would have been a well-known member of Sydney society. He was the principal of the merchant firm *Buckle, Buckle, Bagster and Buchanan* as well as

[15] **Cosmos Archaeology Pty Ltd, October 2015**, *Cockle Bay Maritime Archaeology Statement of Heritage Impact Update Final*, report prepared for the Sydney Harbour Foreshore Authority.
[16] **Ashton, P. & D. Waterson 2000** *Sydney takes shape. A history in maps*. Hema Maps, NSW.; **Birch, A & D.S Macmillan 1962** *The Sydney Scene, 1788-1960.* Melbourne University Press, Vic.; **Johnson, W. A. & R. Parris 2008** *A History of Sydney's Darling Harbour.* Sydney Harbour Foreshore Authority, Sydney, NSW. & **Proudfoot, P. R. 1983** "Wharves and Warehousing in Central Sydney, 1790-1890." *The Great Circle.* Vol. 5., No. 2.
[17] Ashton, P. & D. Waterson 2000 *;* Birch, A & D.S Macmillan 1962; Flannery, T. (ed.) 2000 *The Birth of Sydney.* Text Publishing, Melbourne, Victoria.; Johnson, W. A. & R. Parris 2008; Proudfoot, P. R. 1983 & Walsh, H. D. (27th June 1916) "Shipping Facilities in Sydney Harbour." *Daily Commercial News and Shipping List.*
[18] **Anon (21st July 1837**) "Shipping in Darling Harbour." *The Sydney Monitor.*; **Anon (24th October 1839)** "Darling Harbour." *The Sydney Monitor.;* **Ashton, P. & D. Waterson 2000***;* **Johnson, W. A. & R. Parris 2008**; **Maclehose, J. 1839** *Picture of Sydney; and strangers' guide in New South Wales for 1839.* Self published. & **Proudfoot, P. R. 1983**.

being the chairman of the Bank of Australia and the Sydney agent for the Australian Agricultural Company (AAC).[19]

A newspaper article claims that by September 1833, Captain Bunn had finished constructing his new home and was building other maritime infrastructure at the shoreline of the property:

> *"The garden and walks are laid out with the greatest taste. The wharf and warehouses (the first built on that side of water), immediately underneath, are not quite finished; but when so, will be very extensive and an importance to that part of this spirited harbour…"*[20]

Prior to this, Captain Bunn had been living in George Street near King's Wharf and his property included extensive stores and a wharf [21], used for his merchant dealings. It seems likely that the infrastructure being built at Newstead House would be used for the same mercantile purposes. However, less than four months later, Bunn died unexpectedly at Newstead. It is unknown if the wharf and warehouses at Newstead were completed and functioning before his death. While maps from the 1840s show some form of reclamation/slipway adjoining the property (Figure 5 and Figure 6) a photograph from 1875 depicts a jetty and slipway (Figure 4) at the shoreline.

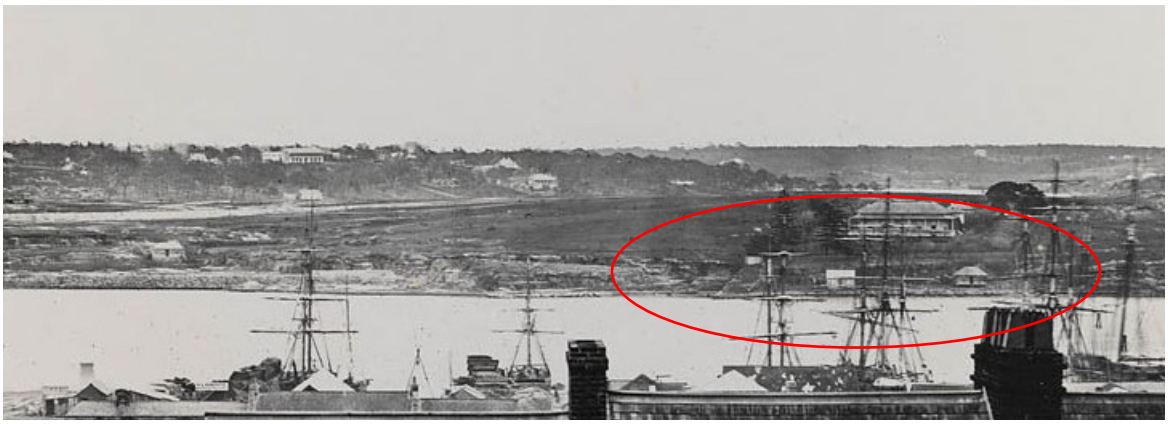


Figure 3: View of Darling Harbour's relatively undeveloped western shoreline ca. 1865. Newstead House and associated waterfront infrastructure circled in red.

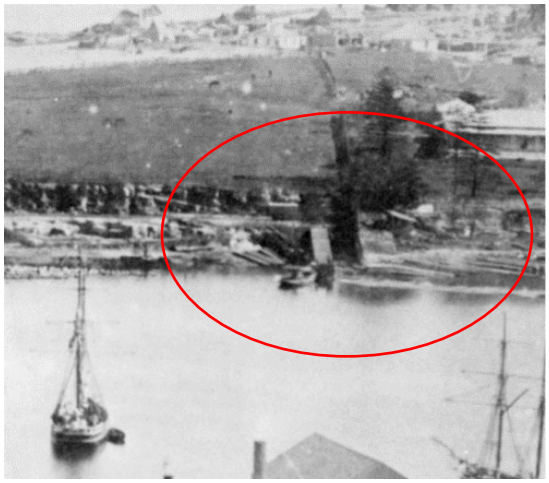


Figure 4: Close-up detail of Newstead House ca. 1875 showing a jetty and slipway, circled in red.

[19] **Clarke, P. 2007** "Anna Maria Bunn and The Guardian", Margin: life & letters in early Australia, 73, Nov., pp. 18-21.
[20] **Anon 1833,** Tasmanian (Hobart Town, Tas: 1827 - 1839), Friday 27 September 1833, p. 7. Accessed May 10th 2022 at http://nla.gov.au/nla.news-article233614033.
[21] **Anon 1831**, Sydney Gazette and New South Wales Advertiser (NSW: 1803 - 1842), Saturday 16 July 1831, p. 3. Accessed May 10th 2022 at http://nla.gov.au/nla.news-article2201559.

Figure 5: Map of Darling Harbour printed in 1843 showing the location of Newstead House. Approximate location of study area in red. [22]

Figure 6: Map of Darling Harbour in 1845, showing the location of Newstead House with a possible slipway on the foreshore. Approximate location of study area in red.[23]

In the 1840s, the eastern shore of Darling Harbour saw rapid development, with large expanses of land reclamation and wharf construction conducted by private shipping companies and professional wharf owners who let the berths and provided storage and handling facilities. Development on the western side of Cockle Bay during the 1840s was limited to the north end of the Pyrmont peninsula, with Captain Bunn's residence remaining the only foreshore occupation to the south.

The discovery of large gold deposits in rural NSW in 1851 and the subsequent gold rushes led to a proliferation of industrial enterprises and warehouse facilities soon sprang up along the eastern shore of Darling Harbour. The wealth generated by the gold rush also reinvigorated the broader economy and provided venture capital for large scale development. Two significant features were completed at Darling Harbour during the mid-late 1850s: the Darling Harbour branch railway line on the western side of the harbour and the Pyrmont Bridge.

The branch railway formed part of the larger Sydney Railway Company project; initiated in 1849 to enable transport of wool and other produce from rural regions to the Sydney wharves for export. Construction of the main line between Sydney and Parramatta – the first railway built in NSW – and the Sydney railway yards commenced in 1850. The single-track branch to Darling Harbour was subsequently constructed along the western shoreline in 1853-1855, involving substantial land reclamation using fill from the excavation of the Sydney yards. Plans to establish a railway goods yard and associated wharfage at Darling Harbour, however, were temporarily shelved as the Sydney Railway Company suffered significant financial difficulty, ultimately being taken over by the NSW Government.

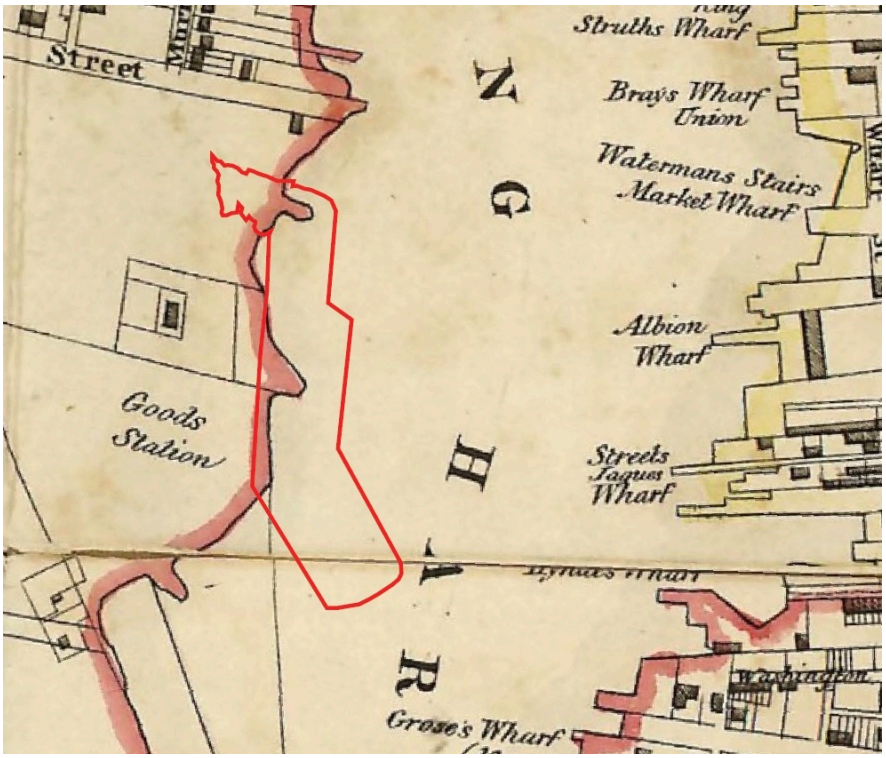


Figure 7: Excerpt from 1854 map highlighting development of the railway on the western shore of Darling Harbour (Cockle Bay).[24] Study area in red.

[22] **Wells, W.H., Carmichael, J. & Tegg, J. 1843.** To the Right Worshipful the Mayor, Aldermen, Councillors & Citizens this Map of the City of Sydney is most respectfully dedicated by their obed.t humble serv.t Will.m Henry Wells, Land Surveyor [cartographic material] / Carmichael Sc. Sydney: James Tegg, Bookseller & Stationer, George Street.
[23] **Shields FW 1845,** *City of Sydney*, available from City of Sydney Archives and History Resources.
[24] **Woolcott and Clarke 1854,** *Map of City of Sydney,* available at City of Sydney Archives https://archives.cityofsydney.nsw.gov.au/nodes/view/1709398

Figure 8: Excerpt from 1857 map of proposed Pyrmont Bridge showing railway terminus on the western side of Cockle Bay.[25] Note the bridge location is incorrect on this map. Approximate study area in red.

3.1.2 Phase 2: Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)

The sustained economic growth of the 1860s and early 1870s led to increased prosperity in the NSW colony, culminating in an era of building boom and substantial port expansion. In 1872, the NSW Legislative Assembly made the decision to redevelop port facilities in Darling Harbour to cater for the overseas cargo trade and improve the railway freight and cargo shipping network.

The shallow head of the harbour, roughly from Campbell Street to Liverpool Street, was reclaimed to provide for the construction of a railway goods yard with extensive sidings. In order to allow larger steam ships to berth at the southern end of Darling Harbour and create a direct link between the new railway yard and shipping, a large cast iron wharf was constructed in the south-western section of the harbour. The Iron Wharf, designed by Edward Moriarty, Engineer-in-Chief of the Public Works Department and completed in 1876, was built on the frontage of further land reclamation, following a curve from Liverpool Street towards the western side of the harbour, terminating at a point opposite Bathurst Street. Additional railway sidings were further constructed along the western side of Darling

[25] **Moriarty, E.O. & Allan & Wigley & Pyrmont Bridge Company 1857,** A plan of part of Sydney and its environs showing the bridges and roads to be constructed by the Pyrmont Bridge Company, [Sydney]

Harbour, terminating in a second railway goods yard on the northern side of Allen Street, completed in 1878.[26]

Throughout the mid to late 1870s, proposals were raised to extend the railway along the eastern side of Darling Harbour towards Circular Quay; however, a combination of political factors and diversity of views on the topic saw the proposals rejected.

The Atlas Engineering Works, which had established a foundry in 1872 on Hay Street building marine engines and large factory machinery, purchased Newstead House adjoining the Pyrmont Bridge in 1878. The purchase consisted of 2 acres of water frontage and had the advantage of the railway sidings running right up to one side.[27] Atlas Engineering was expanding into shipbuilding and the company constructed a boiler making department. Under this boiler shed two iron torpedo boats for the NSW Colonial Navy were constructed and deliver in March 1879: *Acheron* and *Avernus*.[28] The company also built paddle steamers designed for the river trades (***Figure 9*** and Figure 10). At present it is unclear whether these vessels were launched from the slipway in front of Newstead House or the components were assembled somewhere else.

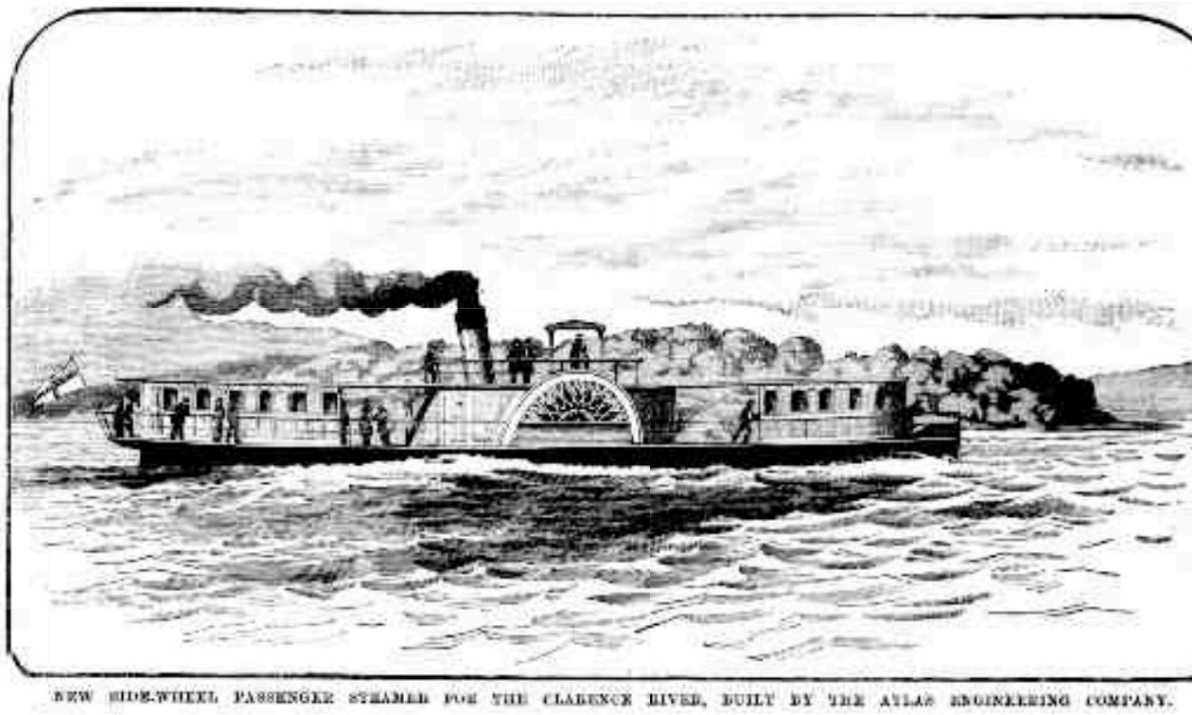
Figure 9: Avernus torpedo boat c. 1890 on Sydney Harbour.[29]

[26] **Anon (26th February 1872)** "Railways and Public Works." *The Sydney Morning Herald.*; **Anon (5th August 1876)** "Darling Harbour and the Railway." *The Sydney Mail and New South Wales Advertiser.*; **Johnson, W. A. & R. Parris 2008; Proudfoot, P. R. 1983; Sydney Harbour Foreshore Authority** S170 Heritage & Conservation Register; "Exhibition Centre Precinct - Archaeological Remains - Iron Wharf." http://www.shfa.nsw.gov.au/sydney-About_us-Our_heritage_role-Heritage_and_Conservation_Register.htm&objectid=174 & **Sydney Harbour Foreshore Authority** S170 Heritage & Conservation Register; "Darling Harbour Rail Corridor." http://www.shfa.nsw.gov.au/sydney-About_us-Our_heritage_role-Heritage_and_Conservation_Register.htm&objectid=173

[27] **Anon 1881** 'DARLING HARBOUR RAILWAY WORKS.', *The Sydney Morning Herald (NSW : 1842 - 1954)*, 7 September, p. 8. , viewed 05 Jul 2022, http://nla.gov.au/nla.news-article13494117

[28] *Op.Cit.,* Sydney Morning Herald 7 September 1881

[29] **Royal Australian Navy, 2021,** *Acheron (NSW Colony)* available at https://www.navy.gov.au/acheron-nsw-colony.



NEW SIDE-WHEEL PASSENGER STEAMER FOR THE CLARENCE RIVER, BUILT BY THE ATLAS ENGINEERING COMPANY.

Figure 10: Paddle steamer built for the Clarence River trade by Atlas Engineering.[30]

The same year the company won the government contract for construction of locomotives and erected a factory to carry out the work. However, in 1881 the Government made the decision to resume the area for the Darling Harbour Railway Works and the Atlas Engineering Works moved to Woolwich.

Land reclamation was undertaken along the western side of Darling harbour to allow the railway goods yards to be improved and railway lines to be expanded and extended further north, terminating just to the south of Pyrmont Bridge. In the north-west section of Darling Harbour, this reclamation extended out to the current boundary of Cockle Bay. Two additional jetties were subsequently constructed on the frontage of this reclamation, serving the extended railway sidings and associated facilities. From this point onwards, Darling Harbour goods yards became the centre of the railway freight network serving much of Sydney's cargo shipping.[31]

By the early to mid-1890s expansion of the railway goods yards on the southern and western shorelines culminated in the extension of the railway lines north to the new Government Wharves on Darling Island in Pyrmont Bay. As part of these works, the ca. 1870s pair of railway wharves were demolished in the late 1880s and a longshore wharf was constructed, extending from the Iron Wharf to the northern side of Pyrmont Bridge; Wharf 49 (see Table 3). A second short section of parallel wharf was further added near the southern end of Wharf 49 in the late 1890s; later known as Wharf 48 (see Table 3). Sometime after 1891, Newstead House was demolished to make way for burgeoning wharf and rail infrastructure.

A final substantial development in the southern end of Darling Harbour commenced in the late 1890s, the construction of a new Pyrmont Bridge. The original bridge had been purchased by the NSW Government in 1884 and inspections soon revealed that many timber elements were badly deteriorating, and the bridge was reaching the end of its operational lifespan. A public competition for a design of a new bridge was announced in

[30] **Anon 1879** 'The Atlas Engineering Works, Darling Harbour, Sydney.', *Australian Town and Country Journal (Sydney, NSW : 1870 - 1919)*, 21 June, p. 24. , viewed 05 Jul 2022, http://nla.gov.au/nla.news-article70939477
[31] **Anon (5th August 1876)** "Darling Harbour and the Railway." *The Sydney Mail and New South Wales Advertiser* **; Anon (12th October 1904)** "Darling Harbour Railway Station, Sydney – Its Enormous Traffic." *Australian Town and Country Journal.*

1891, however, in 1894, it was decided that a design for a higher-level steel bridge with bascule swing span prepared by Percy Allen, NSW Department of Public Works Engineer-in-Chief, would be adopted. Construction commenced in late 1899, with the new bridge erected just to the south of the original and completed in 1902 (Figure 11 and Figure 12).

Figure 11: Pyrmont Bridge just after completion, with remnants of original bridge in foreground, 1902.[32]

Figure 12: North side of Pyrmont Bridge, facing east, 1907.[33]

An outbreak of bubonic plague in Sydney in January 1900, commencing in the waterfront areas and spreading throughout large portions of the city, was the catalyst for the NSW Government to improve building and planning controls, sanitation and general public health issues. In May 1900, the Government commenced the resumption of large tracts of private property and associated wharves along the eastern side of Darling Harbour – areas deemed particularly susceptible to disease and most in need of cleansing and redevelopment – as the first step in the "Darling Harbour Improvement Scheme".

Federal Wharf, and additional wharfage alongside the Jones Bros coal wharf; known as Chapmans Wharf. The establishment of a rat proof sea wall was first conducted along the eastern shore of the harbour, largely completed by 1907; with the southern and western shorelines rat-proofed by 1911.

In 1901, the NSW Parliament formed the first port authority, the Sydney Harbour Trust, to oversee the redevelopment of wharves and adjacent areas. This major port improvement scheme involved extensive demolition of existing maritime infrastructure – particularly clusters of small, private jetties and wharves, construction of larger finger wharves and the establishment of a "rat proof" seawall around the entire length of the Sydney port waterfront.

In the southern end of Darling Harbour, rat proofing and redevelopment of existing wharves was largely carried out between 1903 and 1911 (Figure 13). The advent of World War I brought a halt to much of the work, with further phases of wharf improvement delayed until late 1918. By the early 1910s, goods traffic on the railway branch line to Darling Harbour and adjacent suburban lines had become excessive, with over one thousand wagons using the network every day. The NSW Railway Department proposed to construct additional goods lines to Darling Harbour and substantially extend the Darling Harbour goods yards. In 1917, via extensive conference with the Sydney Harbour Trust Commissioners, a scheme was adopted whereby the southern portion of Darling Harbour from the head to Bathurst Street, would be reclaimed using spoil from the excavation of the Sydney City Railway underground tunnels (a scheme proposed by the NSW Public Works Department in 1915 to improve the passenger railway system), providing land for the expansion of the goods yards.

[32] **Anon, 1902,** "Views of Sydney and N.S.W. No. 46. Pyrmont Bridge." Dixson Library, State Library of New South Wales, Image No. DL PX 146.
[33] **Anon, 1907,** "Pyrmont Bridge." Geoff Ward collection, NSW Transport - Roads and Maritime Services archives, Image No. H032110.

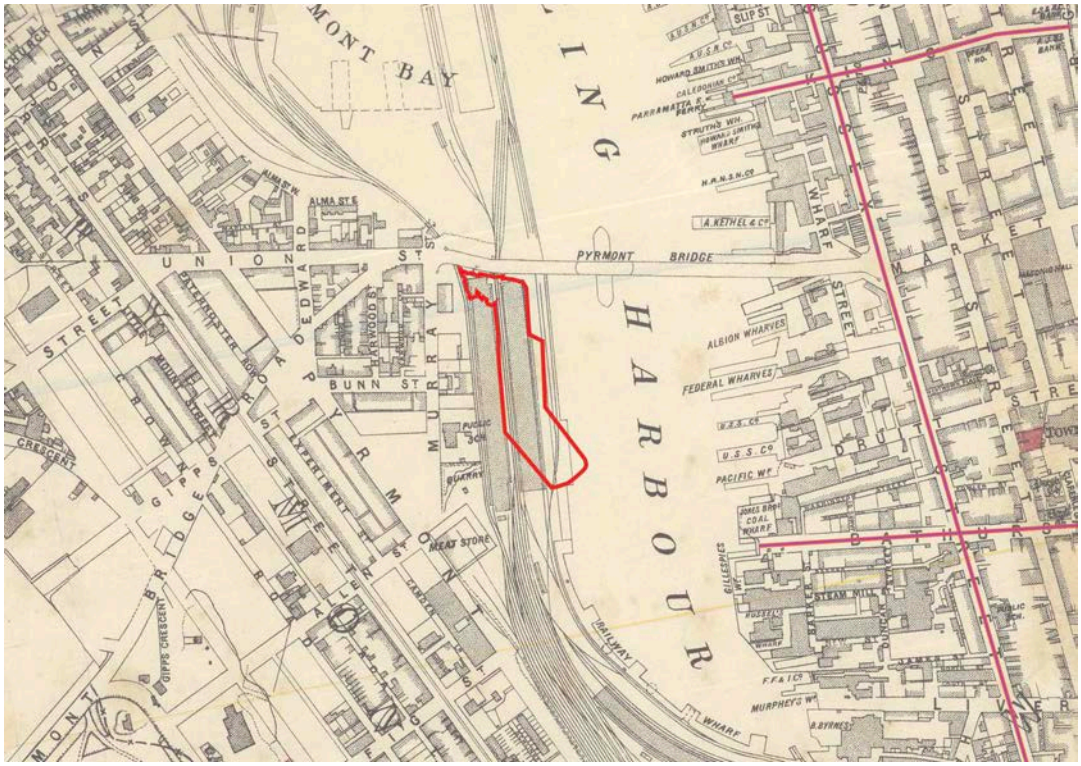


Figure 13: Western side of Darling Harbour in 1903 with the study area shown in red.[34]

Construction of the underground Sydney City Railway scheme finally commenced in 1923, allowing the reclamation of the head of Darling Harbour to be undertaken using the excavated spoil (Figure 14 and Figure 15). These works were completed in 1926 and over the course of the following two years, the Sydney Harbour Trust undertook the final stages of the Darling Harbour port improvement scheme; including the construction of cargo Wharves 37, 38 and 39 along the front of the new reclamation (Figure 16).

Figure 14: 1923 panorama showing commencement of reclamation works at the head of Darling Harbour. The rail yards in the foreground are the approximate location of the southern part of the study area.[35]

[34] **Department of Lands,** *City of Sydney, 1903: Single sheet* (12/01/1903), [A-00880475]. City of Sydney Archives, https://archives.cityofsydney.nsw.gov.au/nodes/view/1709402

[35] **Foster, A. E. 1923,** "Panorama of Darling Harbour and Pyrmont Bridge from Pyrmont, 1923." Box 32, No. 357, Series 06; Sydney views, ca. 1916-1947, State Library of New South Wales.

Figure 15: Continuation of 1923 panorama showing Darling Harbour railway goods yard in foreground, the site of the current study area.[36]

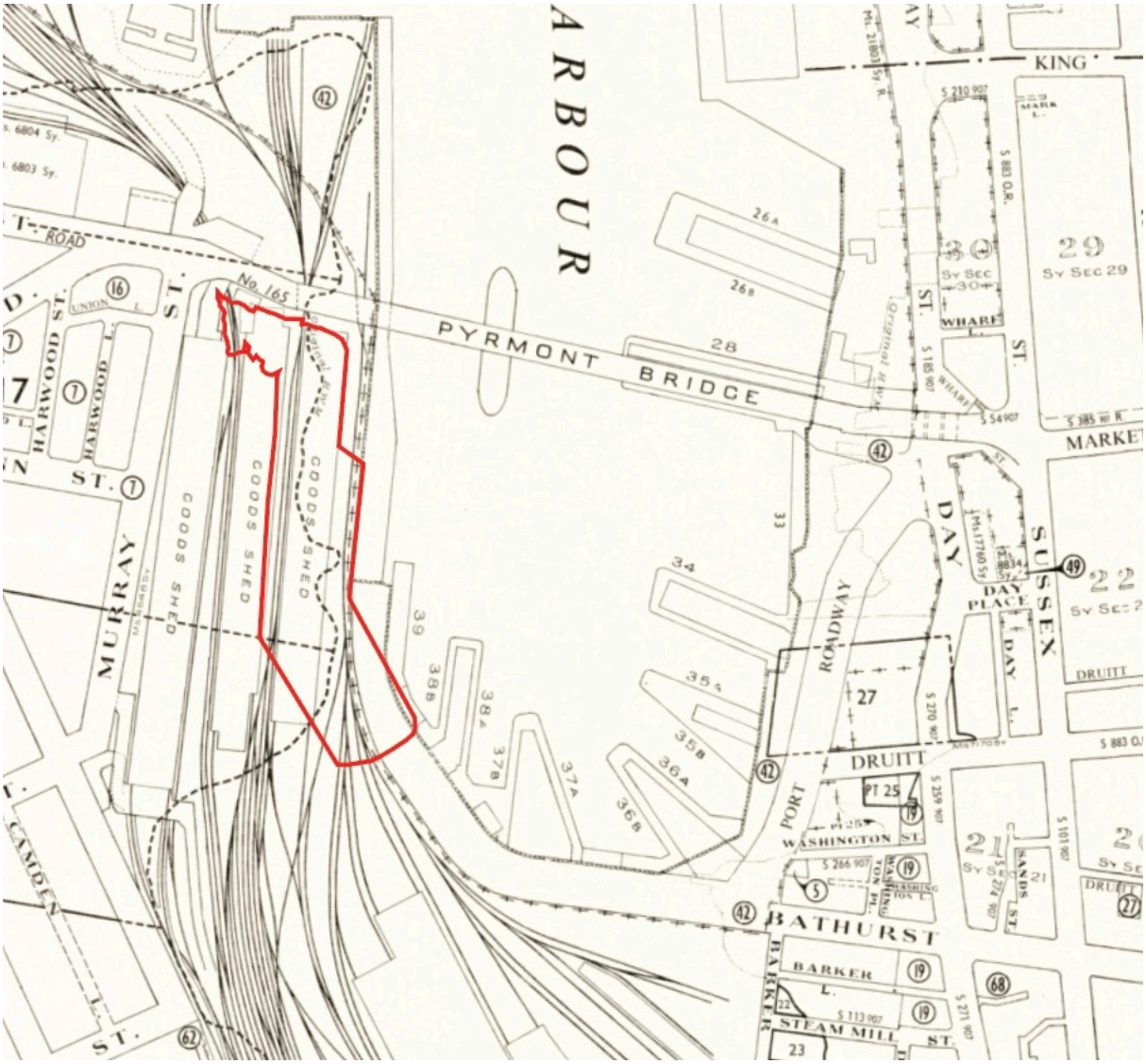


Figure 16: 1970s Parish map showing wharves 37, 38, 39 and railway goods sheds on the western side of Cockle Bay.[37] The dotted line seems to indicate the shoreline in the second half of the 19th century.

[36] *Op. Cit.* Foster, A. E., 1923

[37] **New South Wales. Department of Lands 1970**, *Parish of St. Andrew, County of Cumberland* Dept. of Lands, Sydney viewed 6 May 2022 http://nla.gov.au/nla.obj-570699350

All of the new wharves erected as part of the improvement scheme were owned and administered by the Sydney Harbour Trust and operated as a co-ordinated set of commercial wharves. Much of the surviving wharfage resumed in 1900 had been gradually leased back to the private sector, in many cases the original owners. In 1936, the Maritime Services Board was established to coordinate all port and navigation services for NSW, subsequently taking over administration and control of Darling Harbour. Throughout the following few years, further improvements to the wharfage were undertaken, including the construction of substantial cargo sheds and facilities on Wharves 35-38.

In the years following World War II, Sydney enjoyed an economic boom due to international demand for raw materials such as wool and wheat and the Darling Harbour railway goods yards and large cargo wharves north of the Pyrmont Bridge consequently saw increasing trade. The domestic coastal shipping traffic that occupied the southern end of Darling Harbour, however, began to decrease due to the rise of motor vehicles and road cargo transport networks.

3.1.3 Phase 3: Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)

In the late 1940s to 1950s, the Maritime Services Board commenced an extensive remodelling scheme throughout Sydney Harbour, directed towards the removal of ageing infrastructure, alteration and expansion of wharfage to serve the larger international cargo and container ships, and the overall improvement of cargo handling facilities. The maritime infrastructure at the head of Darling Harbour, however, received little attention as the shallow waters and confined space prevented the establishment of large shipping facilities.

In the late 1950s to early 1960s, the Maritime Services Board embarked on further redevelopment at the southern end of Darling Harbour, including improvement of road access via establishment of the Port Roadway between Market and Bathurst Streets, and an upgrade of wharfage. However, the continued growth of container trade making increasing demands on wharf space and facilities in Sydney ports led to the construction of a custom-built container terminal at Port Botany and the ultimate demise of the commercial shipping and railway freight industry in Darling Harbour (Figure 17).

Figure 17: 1969 aerial photograph looking west across the harbour.[38]

In the early 1970s, the Sydney City Council began considering options for remodelling parts of Darling Harbour for recreational and / or residential purposes. By the early 1980s, both the

[38] **Putnam, C. 1969,** "Darling Harbour, 1969." Contributed by G. Putnam, *Dictionary of Sydney.* http://dictionaryofsydney.org/item/20947

NSW State and Federal Governments began to see wider opportunities to convert much of the southern extent of Darling Harbour to a public recreation precinct, particularly in light of the approaching NSW bicentenary and the opportunity for international exposure during celebrations.

In 1982-1984, a development design plan was prepared by the NSW Department of Planning and Public Works Department, with the major components being a new exhibition centre, convention centre, market building and maritime museum on the western side of Darling Harbour, with landscaped gardens and a harbour promenade on the eastern side. A new government agency, the Darling Harbour Authority, was subsequently formed in 1984 to manage and deliver the redevelopment project. Over the course of the following four years, the Darling Harbour railway goods yards and wharves, and all wharves, warehouses and associated facilities along the southern and eastern shores of Darling Harbour south of Pyrmont Bridge, were demolished to make way for the construction of the proposed new recreational waterfront facilities. The Darling Harbour redevelopment project was completed in 1988 and officially opened during bicentenary celebrations; with the head of the harbour and associated entertainment precinct renamed “Cockle Bay”. The works continued in the 1990s as part of Stage 2 of the Darling Park Development (Figure 18 and Figure 19).

Figure 18: 1984 aerial photograph showing early stages of demolition of railway yards and wharves.[39]

Figure 19: 1988 aerial photograph showing complete Cockle Bay precinct.[40]

3.2 Wharves

A total of three (3) former wharves have been identified that are likely to have been situated within, or very close to, the current Harbourside study area. Figure 20 shows a full overlay of all these structures, as depicted on charts and plans from the 1830s to 1970s, on a current aerial photograph of Darling Harbour. Table 3 below provides a brief summary description of each wharf. It is important to note that plans and charts from this time period are not always accurate so for simplicity the below image indicates each wharf using one line.

[39] **Anon, 1984,** “Darling Harbour.” Sydney Reference Collection, City of Sydney Archives, Image No. 071490.
[40] **Anon, 1988,** “Aerial view of Darling Harbour.” Sydney Reference Collection, City of Sydney Archives, Image No. 031482.

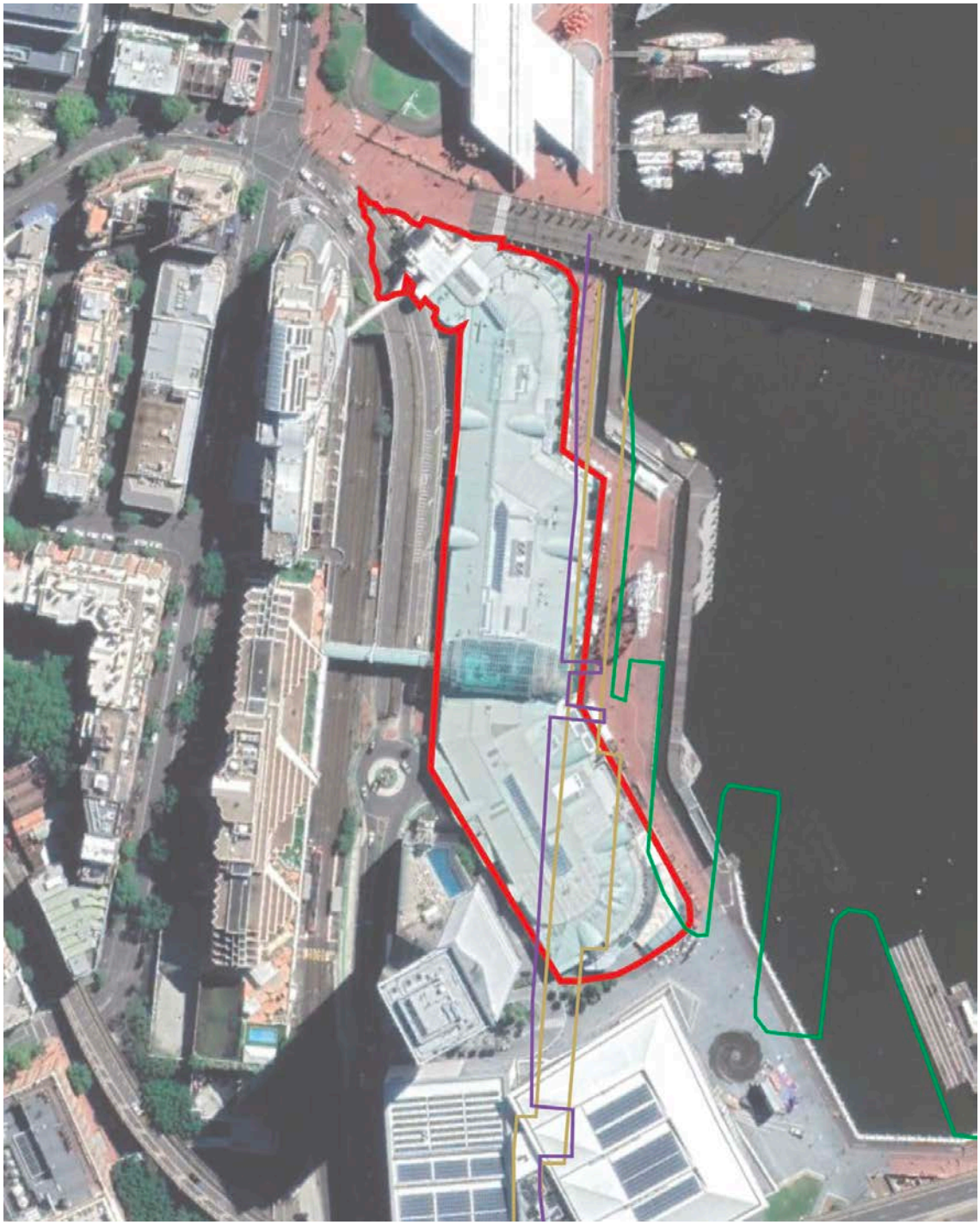
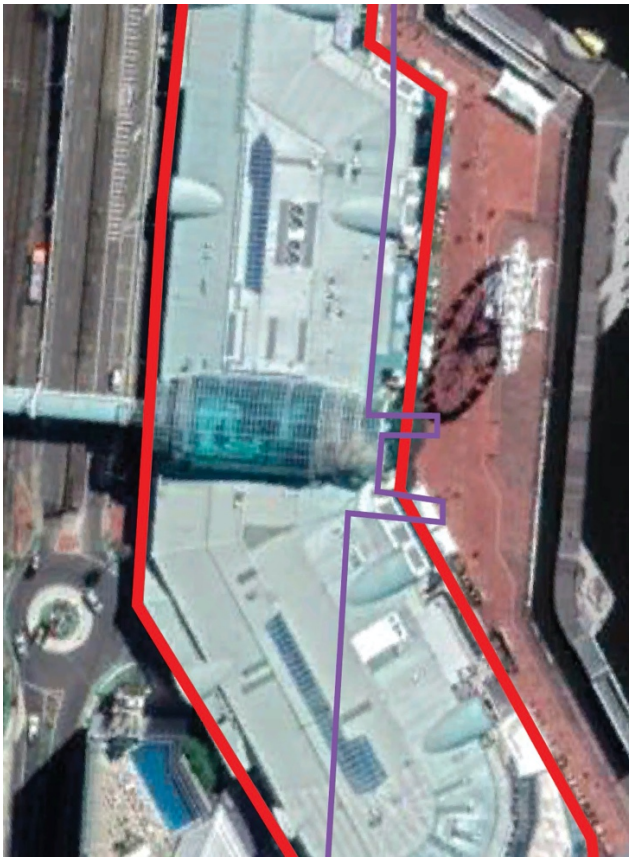
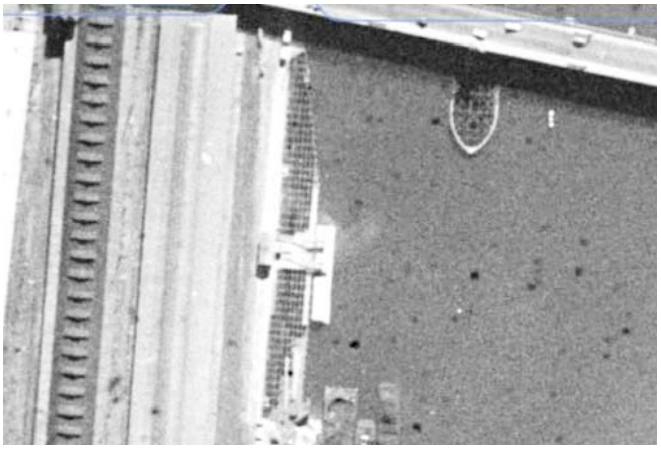


Figure 20: Full overlay of all identified former wharves potentially along the western side of Darling Harbour within the vicinity of the study area. Green line depicts (from right to left) Wharves 37, 38 and 39; gold line depicts Wharf 48 to the south and Wharf 49 to the north and purple line depicts the Railway Wharves. Red outline is study area.

Table 3: Summary description of identified historic wharves potentially along western side of Darling Harbour (described from south to north).

Wharf No.	History and Description	Outline Overlay and Historic Images
Wharf 48 **ca. early 1890s – mid/late 1920s**	Wharf 48 was constructed in the early 1890s as part of the extension of the Darling Harbour railway to the new Government wharves in Pyrmont Bay and the associated expansion of the Darling Harbour railway goods yard. Wharf 48 was an open wharf, built of timber piles and decking, and ran parallel to the shoreline effectively forming an extension of Wharf 49 (see above). Wharf 48 was absorbed into the widening of Wharf 49 in ca. 1908-1911 and subsequently buried in the Railway Departments reclamation of the head of Darling Harbour during the mid to late 1920s. No previous structures have been identified within the footprint of Wharf 48.	 

Wharf No.	History and Description	Outline Overlay and Historic Images
Former Railway Wharves **ca. early/mid 1870s – early 1890s**	The former Railway Wharves were constructed ca. mid 1870s-mid 1880s on the frontage of reclamation associated with the extension of the Darling Harbour Branch Railway to just south of the Pyrmont Bridge and the establishment of adjacent railway goods yards and the construction of the Iron Wharf to the south. The wharves consisted of two parallel jetties, presumably constructed of timber piles and decking. In the early 1890s, these wharves were either demolished for, or incorporated into, the construction of Wharf 49. No previous structures have been identified within the footprint of the former Railway Wharves.	 

Wharf No.	History and Description	Outline Overlay and Historic Images
Wharf 49 **ca. early 1890s – mid 1980s**	Wharf 49 was constructed in the early 1890s as part of the extension of the Darling Harbour railway to the new Government wharves in Pyrmont Bay and the associated expansion of the Darling Harbour railway goods yard. Wharf 49 was a long open wharf, constructed of timber piles and decking, built parallel to the shoreline on the frontage of ca. 1870s reclamation. The wharf was widened with the northern end tapered towards shore in ca. 1908-1911 as part of the Sydney Harbour Trust improvements to Darling Harbour. By the late 1920s, the southern portion of Wharf 49 was buried in the Railway Departments reclamation of the head of Darling Harbour, however, the northern portion remained in operation. Wharf 49 was demolished in the mid 1980s during the redevelopment of Cockle Bay by the Darling Harbour Authority, with the southern portion largely buried in reclamation. Previous structures within the footprint of Wharf 49 include the former Railway Wharves.	 

3.3 Reclamation and Seawalls

During the early years of European colonisation, the head of Darling Harbour extended as far south as Haymarket, reaching almost to Harbour Street and Sussex Street in the east and Pyrmont Street and Murray Street in the west (Figure 21).

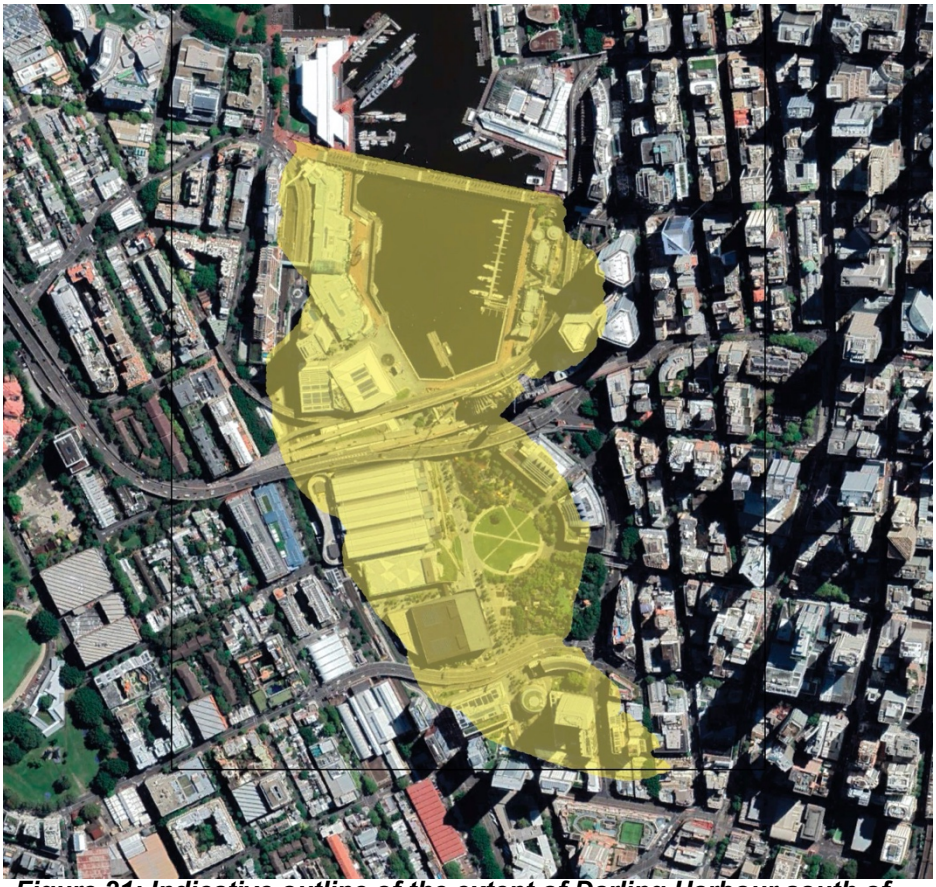


Figure 21: Indicative outline of the extent of Darling Harbour south of the Pyrmont Bridge in the 1820s. Image Source: Google Earth.

Since that time, numerous episodes of land reclamation have occurred; ranging from small reclamations conducted by waterfront residents and leaseholders in an attempt to acquire larger properties and extend shipping facilities into deeper waters, to large-scale reclamation of the head of Darling Harbour undertaken by the NSW Railway Department in the late 1860s-1870s and 1920s.

Figure 22 below depicts the broad phases of land reclamation and construction around Darling Harbour from the 1820s to the 1960s, overlaid on a recent aerial photograph of Cockle Bay.

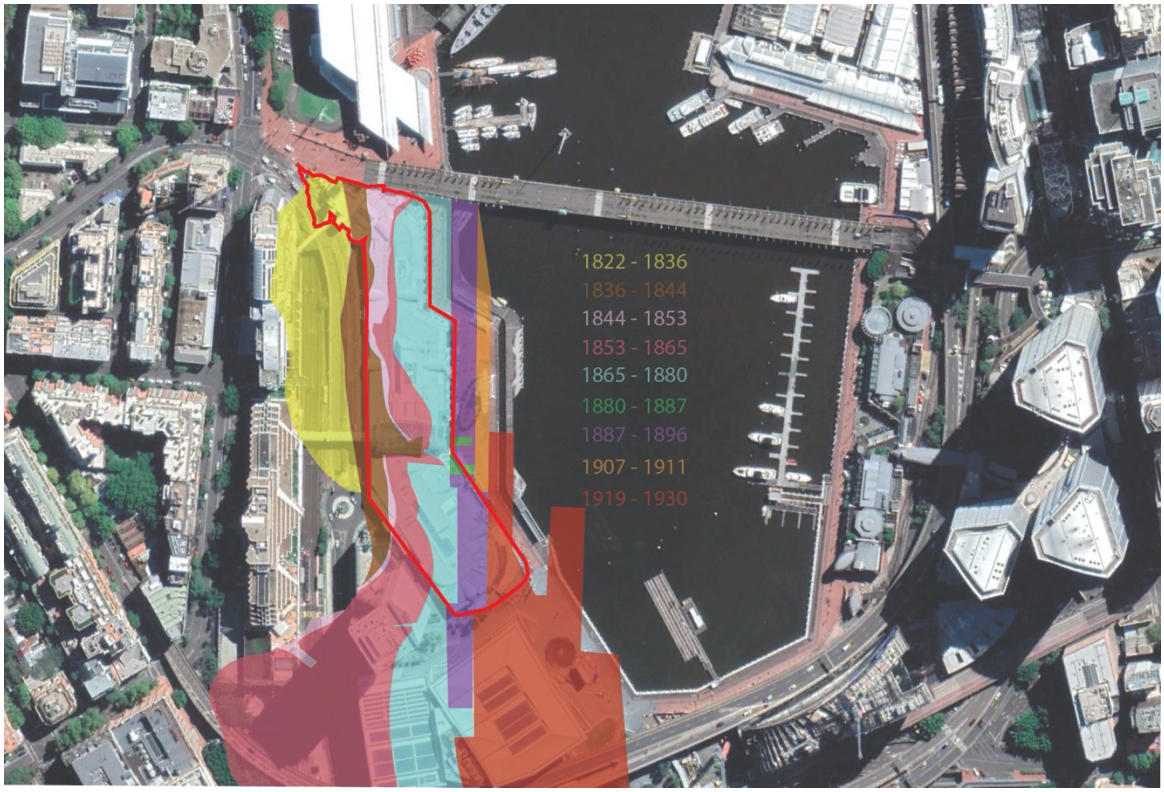


Figure 22: Overlay showing phases of land reclamation the western side of Cockle Bay since the 1820s. Study area shown in red.

Reclamation of Darling Harbour within the vicinity of the current extent of Cockle Bay falls into three main types, with different patterns of development occurring on the east, west and southern sides of the harbour.

The earliest evidence of reclamation is linked to Captain George Bunn's property, with maps from the 1840s indicating some form of reclamation relating to an easement, which runs from Newstead House to the waterfront (Figure 23 and Figure 24). This feature may have taken the form of a slipway or simple haulage track allowing goods to be brought to the property by sea. It is unknown what materials, if any, were used in its construction. Refer to the Curio HAA for more information about structures relating to Newstead House.[41]

[41] **Curio Projects 2016** Harbourside Shopping Centre, Darling Harbour Historical Archaeological Assessment. Unpublished report prepared for Mirvac Pty Ltd.

Figure 23: Bunn's property in 1843.

Figure 24: Bunn's property in 1845. Note some land reclamation is apparent to accommodate the slipway or jetty.

It can be seen that the western shoreline underwent much less reclamation throughout the 1820s to 1850s – indeed, it must be noted that some of the differences in the shoreline during this time are quite likely due to the varying accuracy of early plans of the western side of Darling Harbour. It is clear, however, that large scale reclamation of the western shore was undertaken first in the late 1850s to the early 1860s, and again in the late 1860s to 1870s; both events associated with the development of the Darling Harbour Branch Railway facilities.

The latter reclamation phase brought the western shoreline close to its current limit in the vicinity of Harbourside Steps and directly in line with the current north-western corner of Cockle Bay along the base of Harbourside Jetty. Finally, the southern extent of Cockle Bay was primarily established in the 1920s following large scale reclamation by the NSW Railway Department, with the limit of that reclamation nearing the edge of the wharf lining the south of the bay. A strip of additional reclamation was undertaken during the mid-1980s redevelopment of the bay to allow for the construction of the Western Distributor and the Cockle Bay promenade. It also appears that some dredging may have taken place immediately south of the Pyrmont Bridge which removed previously reclaimed land.

Mapping areas of reclamation based on changes in the shoreline shown on historic plans provides a basic indication of the potential locations of seawalls. However, such features are commonly not specifically marked or identified on historic plans, and it is often difficult to ascertain whether a straight section of shoreline depicts a seawall or the edge of a wharf. Additional information regarding the seawalls close to the current extent of Cockle Bay is not available, however, Sydney Harbour Trust records detail the rat-proofing of Darling Harbour in the 1900s-1920s.

Following the formation of the Sydney Harbour Trust in 1901, a series of maps of the Sydney waterfront outlining the areas vested in the Trust were prepared. These maps were updated every couple of years to depict the improvements effected by the Trust, including alterations, demolitions and construction of wharves, buildings and streets. These maps also detailed the length and locations of “rat-proof retaining walls” erected.

It should be clarified at this point that the erection of “rat-proof retaining walls” by the Trust did not necessarily involve the construction of entirely new seawalls. The “rat-proofing” programme was directed towards ensuring the sides of the harbour were faced with smooth “rat-proof” surfaces, and it seems that in cases where an existing seawall was deemed to be sound – such as cut stone walls built on solid stone ballast foundations – no physical “rat-proofing” was conducted. Seawalls constructed of timber sheet piling filled with rubble and soil, on the other hand, were modified. These types of seawalls, quite common in Darling Harbour during the 19th

century, had proved to be large contributors to the rat problem as the spaces between the piles allowed the fill to settle and wash out, thus creating hollows behind the piles that were perfect for rat warrens. In most cases, the timber sheet piling itself was sound and "rat-proofing" of these walls involved only the installation of Monier concrete plates across the front of the piling, extending to a foot (0.3 m) below low water mark (Figure 25 and Figure 26). It was generally only in locations of new reclamation that actual "rat-proof retaining walls," consisting of Monier concrete trestles faced with Monier concrete plates, were erected (Figure 27 to Figure 29).[42]

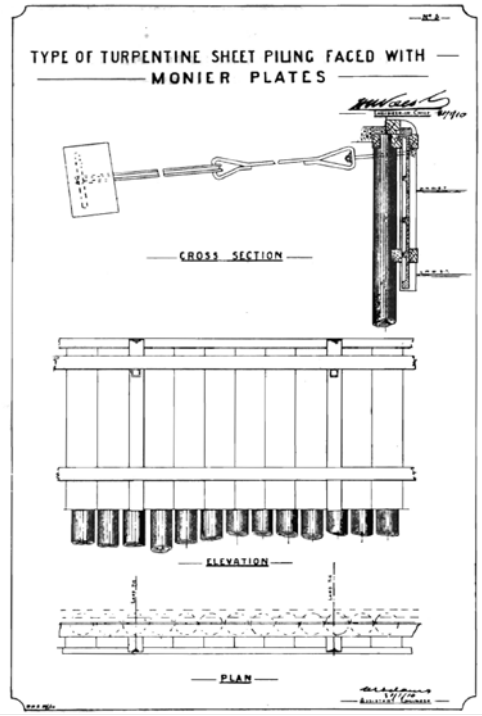


Figure 25: Design of timber sheet piling seawall faced with Monier concrete plates.[43]

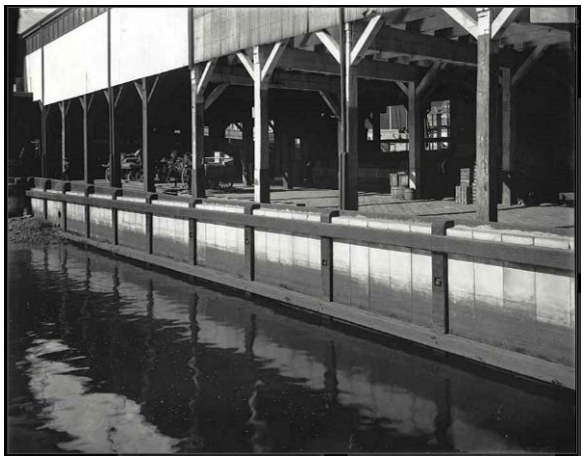
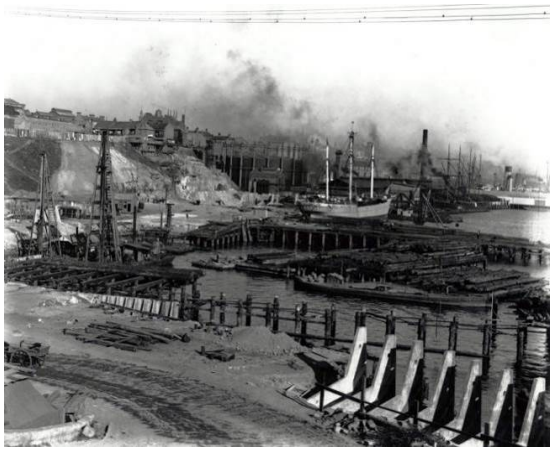
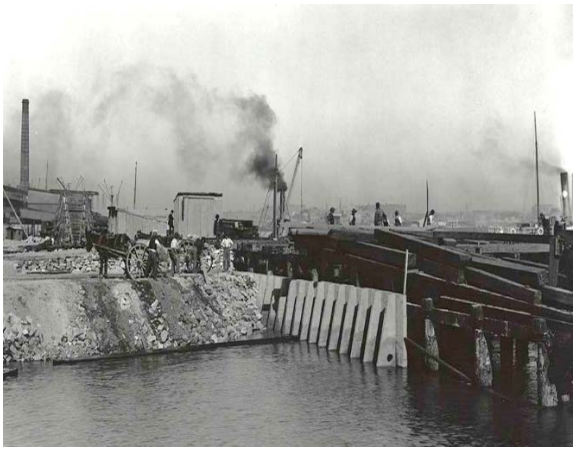


Figure 26: Example of completed Monier faced seawall.[44]





[42] **Walsh, H.D. 1911,** *Notes on Harbour Engineering.* A Paper read before the Sydney University Engineering Society on 8th November 1911.
[43] *Op. Cit.* Walsh, H.D. 1911
[44] **Anon, n.d.,** "View of a rat-proofed wall." NSW State Records, Digital ID: 9856_a017_A017000018.

Figure 27: Example of Monier trestle seawall being constructed, Darling Harbour, 1909. [45]

Figure 28: Example of Monier trestle seawall being constructed, Darling Harbour (n.d.). [46]

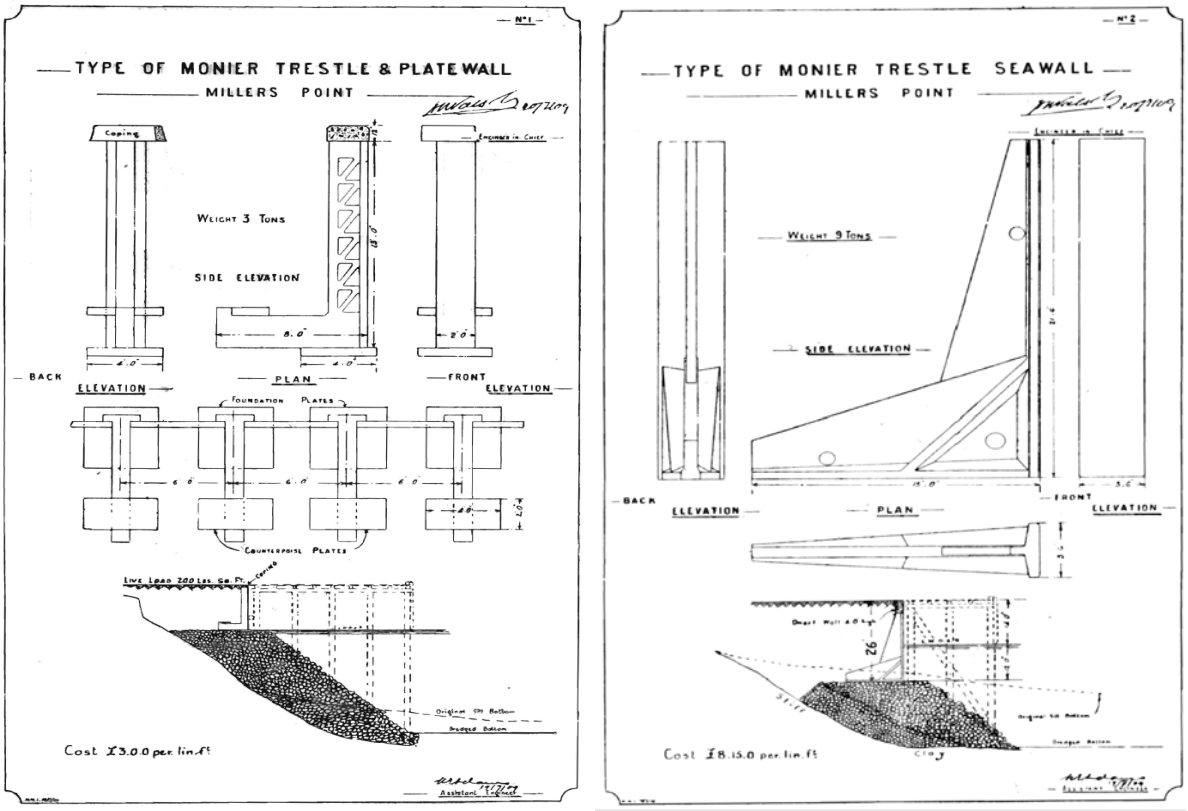


Figure 29: The two standard designs of Monier trestle and plate walls.[47]

That being said, the lines marked on the Sydney Harbour Trust plans depicting the locations of "rat-proof retaining walls" may be taken to indicate existing seawalls that were either determined to be sound or were partially modified, as well as the location of newly constructed walls. Either way, these outlines are very good indicators of the positions of seawalls existing in the 1900s to 1920s. An example of this can be seen in Figure 30, where the stone seawall running along the western side of Cockle Bay is classified as 'rat-proofed' in a 1911 map of the harbour.

Figure 31 provides an overlay of "rat-proofing" conducted by the Trust from ca. 1903-1930, with segments of the lines colour coded according to the general period of "rat-proofing."

[45] **Anon, 1909,** "Darling Harbour, 1909." City of Sydney Archives, Graeme Andrews "Working Harbour" Collection; 79983. MSBK 451.
[46] **Anon, n.d.,** "Construction of a "rat proof" wall at Darling Harbour, NSW." NSW State Records, Digital ID: 9856_a017_A017000009.
[47] *Op Cit.* Walsh, H.D. 1911

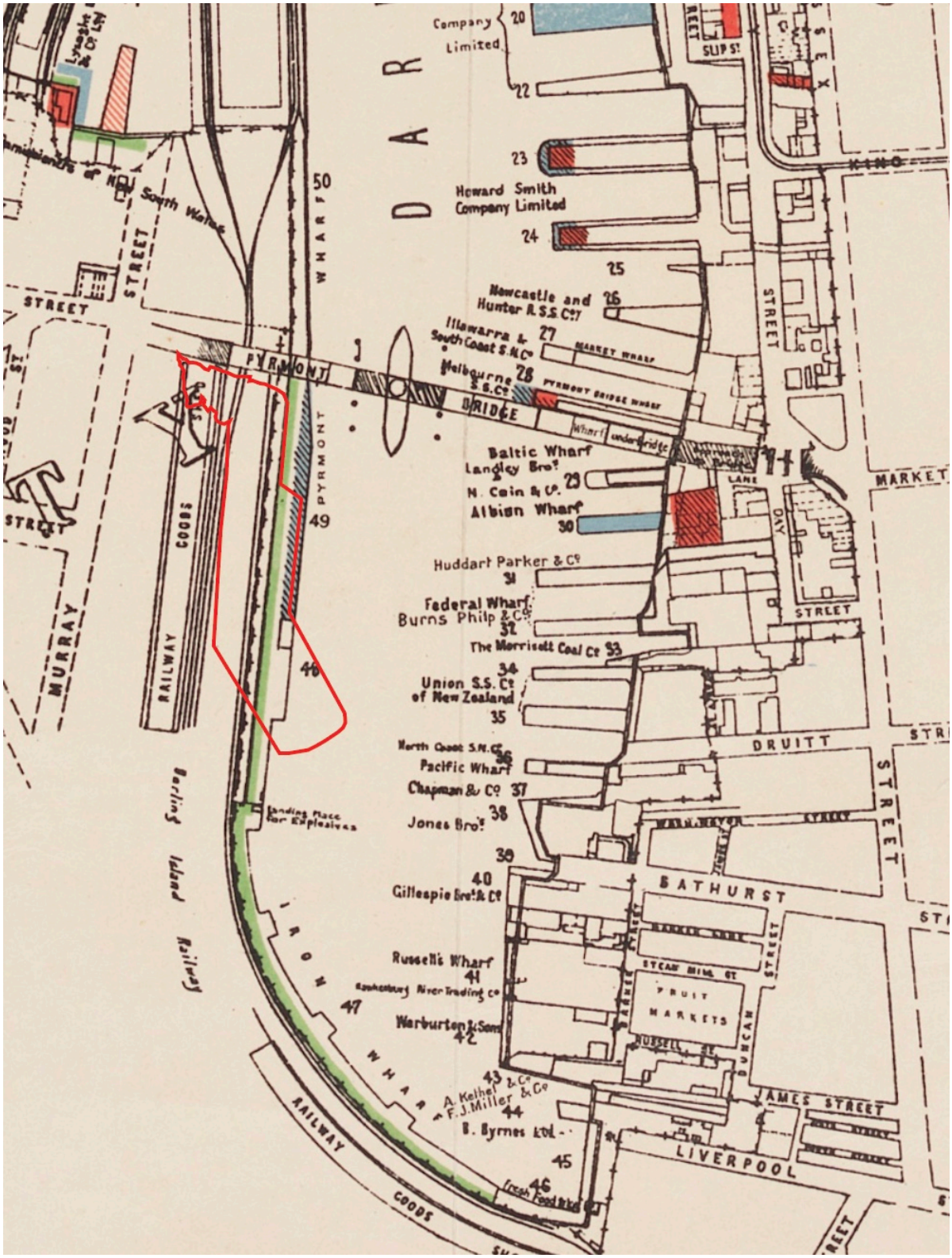


Figure 30: An excerpt from a 1911 Sydney Harbour Trust map, showing the rat-proofed stone seawall on the western side of Cockle Bay, as indicated by the green line.[48]

[48] **Walsh, H.D. 1911** Map of part of the water frontage of the Port of Sydney showing parts of the land wharfage vested in the Sydney Harbour Trust Commissioners. State Library of New South Wales. Available at https://collection.sl.nsw.gov.au/record/74VvROqZ6Q83.

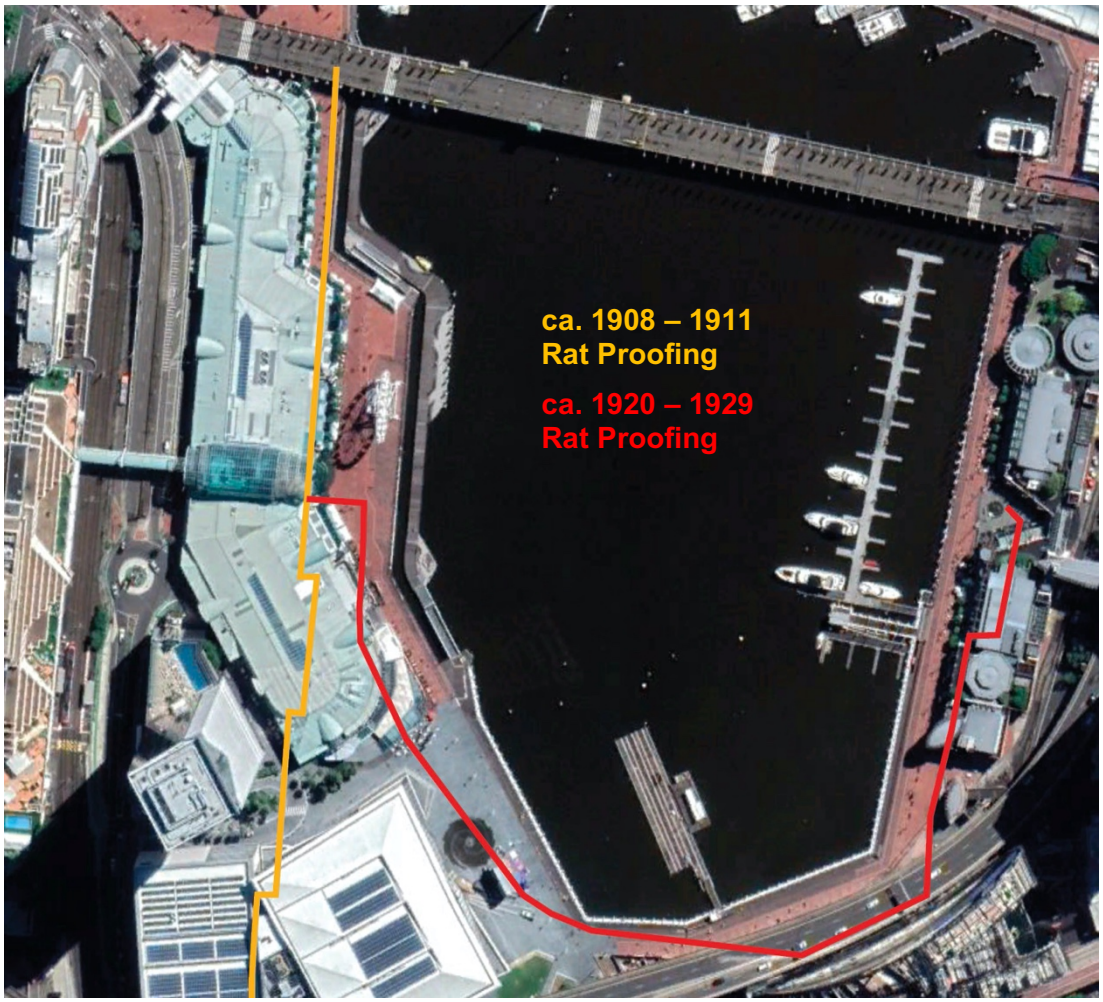


Figure 31: Overlay showing lines of "rat-proof retaining walls" established by the Sydney Harbour Trust in early 20th Century.

The lines marked on the western side of Cockle Bay include a long seawall running almost north-south that was “rat-proofed” in ca. 1908-1911, and a wall curving around the southern extent of Cockle Bay, “rat-proofed” in ca. 1920-1929. The long north-south wall corresponds to the line of reclamation conducted in the late 1860s to early 1870s in association with the extension of the Darling Harbour Branch Railway, the establishment of the adjacent railway goods yard and the construction of the Iron Wharf to the south.

A section of this seawall is actually exposed and operational in the north-western corner of Darling Harbour at the base of Harbourside Jetty, consisting of cut sandstone blocks. A photograph of the Iron Wharf to the south, taken in ca. 1876 just after completion shows the seawall constructed behind the wharf, also consisting of cut sandstone blocks. It seems the extension of the wall further north was conducted as reclamation was completed to allow the extension of the railway to just south of the Pyrmont Bridge and the construction of the railway goods yards in the mid-1870s to early 1880s; and it is reasonable to assume that this length of the wall was also built of cut sandstone blocks.

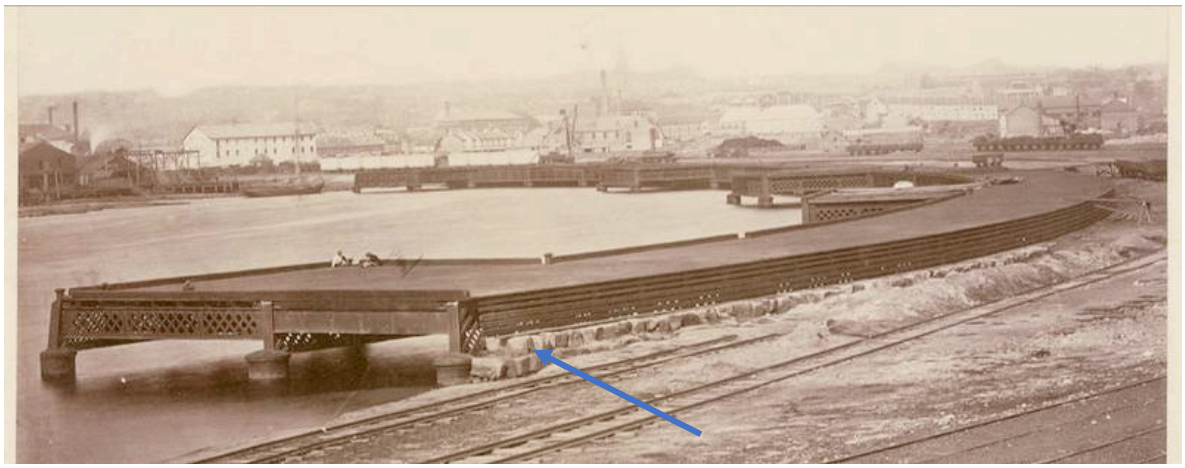


Figure 32: The Iron Wharf, Darling Harbour, ca. 1876, with blue arrow showing sandstone seawall.[49]

The form and fabric of the pre-existing seawalls behind the red line of wall is largely unknown. These walls front various pockets or stages of reclamation from the 1850s -1890s and could range from cut stone seawalls, rubble seawalls, timber piling seawalls, or a combination thereof (Figure 33).

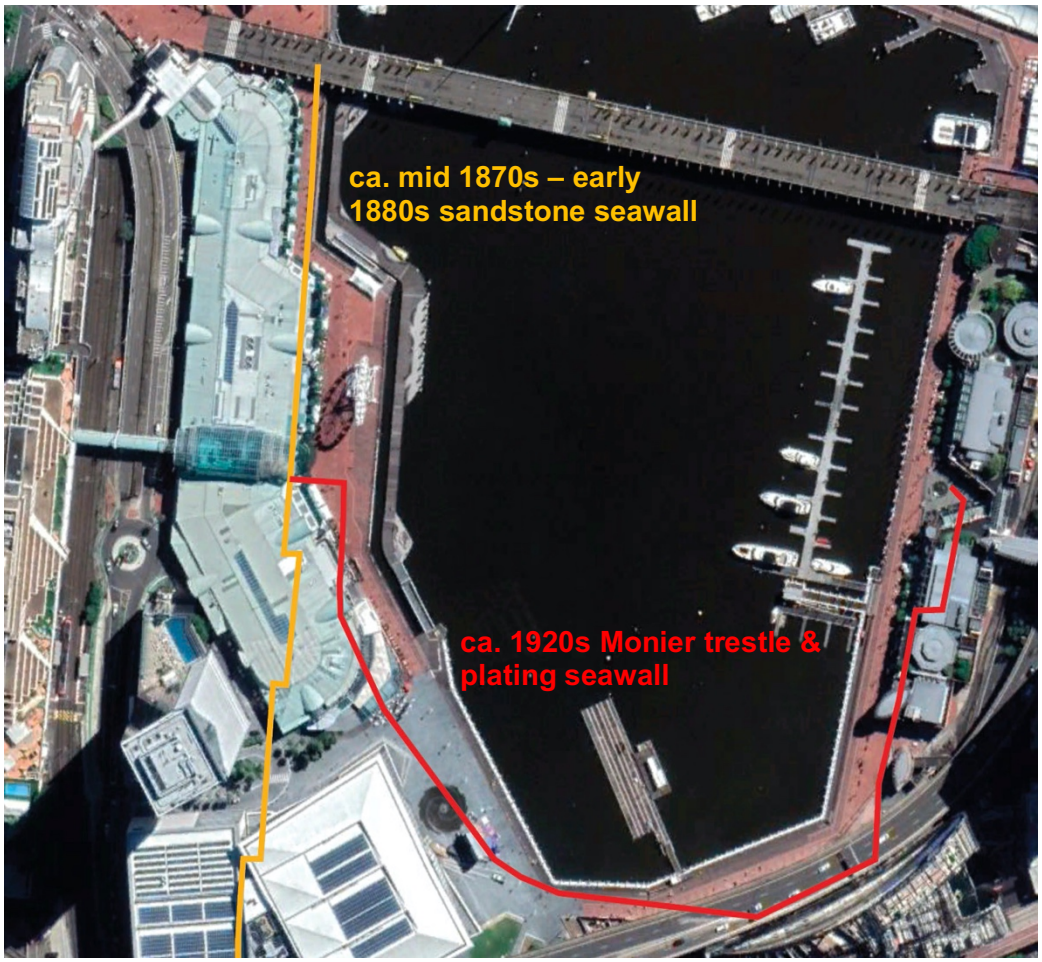


Figure 33: Identified seawalls within the vicinity of the Harbourside study area.

[49] **Anon ca. 1876** *Iron Wharf, Darling Harbour*. State Library of New South Wales, Image SPF / 844.

The line of seawalls established around the western side of Cockle Bay by the end of the 1920s reclamation, consisting of a combination of sandstone seawall and Monier trestle and plate seawall, remained operational until the mid-1980s redevelopment. Minor modification and repairs may have been conducted between the 1920s and 1980s; however, no alteration of alignment appears to have occurred. The 1980s redevelopment of Cockle Bay involved the retention of a portion of the sandstone seawall in the north-west and the burial, and possibly partial demolition in places, of the remainder of seawalls along the south-west side of Cockle Bay.

A plan produced for the 1980s development shows the existing structures and outfalls (Figure 34). This shows that at this time the seawall consisted of sections of steel sheet piling, precast concrete sheet piling and close drive timber piles with concrete facing panels. The rest of the harbour was faced with precast concrete plate and trestles.

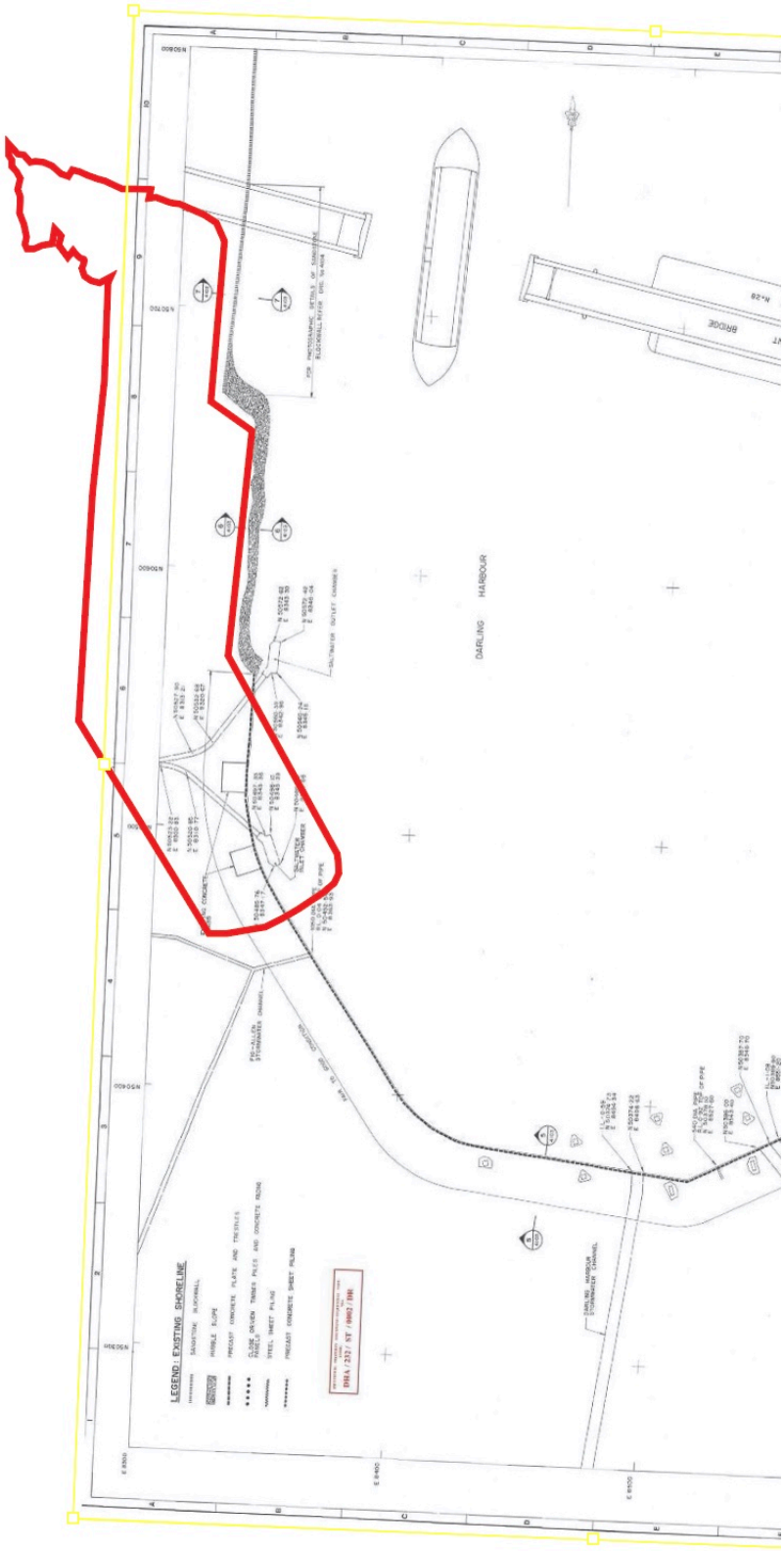


Figure 34: Existing Structures and Outfalls Plan of Waterfront Promenade, for the Darling Harbour Development Project, 1985. [50] Approximate location of study area in red.

[50] **Macdonald Wagner 1985**, "Darling Harbour Development Project: Waterfront Promenade: Existing Structures and Outfalls Plan", for Leighton Contractors Pty Ltd on behalf of New Darling harbour Authority, as found in

3.4 Geotechnical Analysis

Douglas Partners was commissioned by Mirvac Projects to undertake a geotechnical Investigation for the Harbourside Redevelopment in March 2021. The investigation was undertaken to primarily provide information on rock levels and the drilling of 8 boreholes (Figure 35).[51] This work supplemented previous geotechnical investigations in 2013 and 1985.[52]

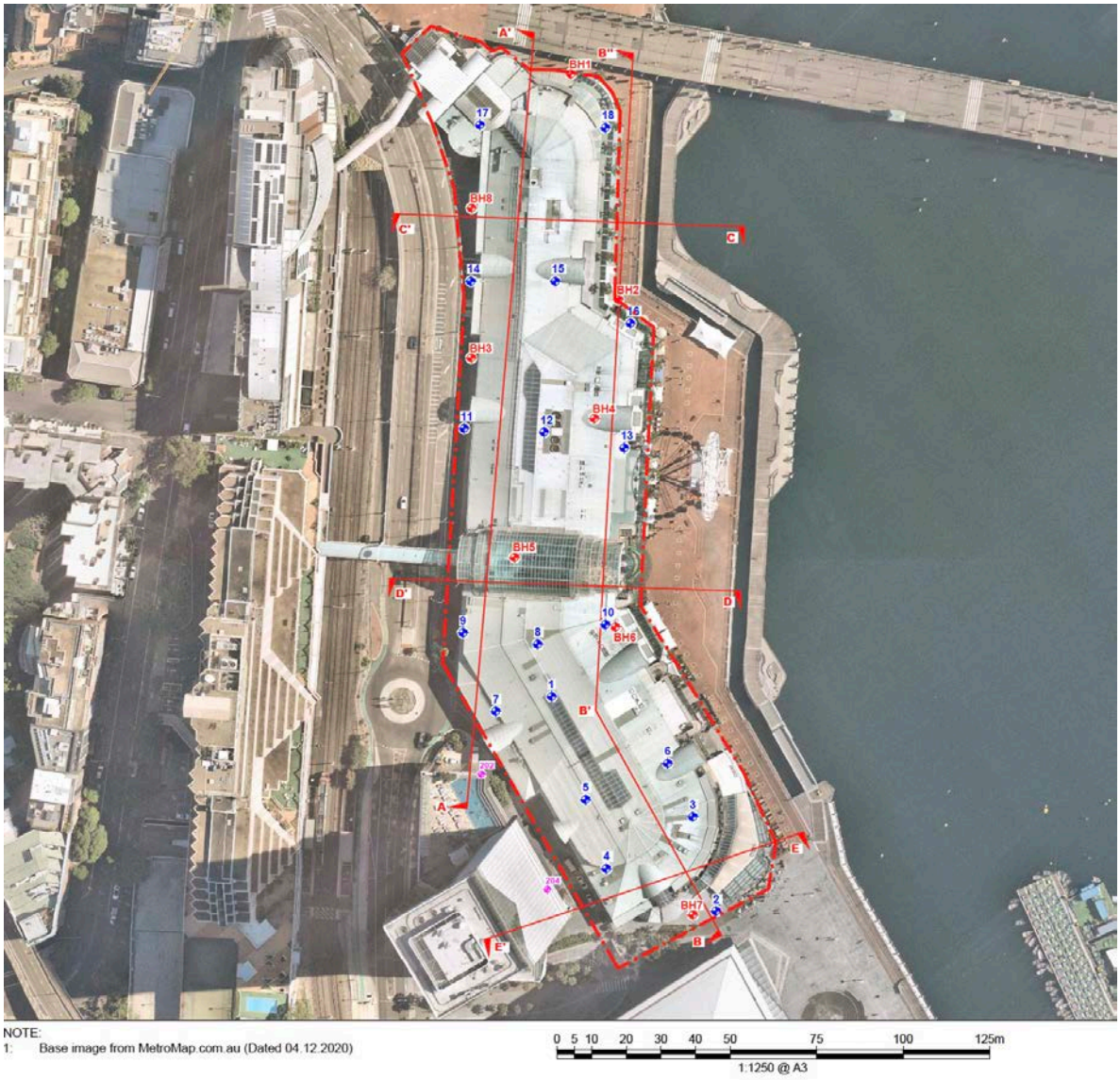


Figure 35: Geotechnical investigations for the Harbourside development; 2021 boreholes in red.

The geotechnical investigations concluded that the site is underlain by between 2.7 m and 11.9 m of fill which appears to have been placed over either a thin layer of natural soil (marine sediment) or bedrock. The fill is generally sandy with varying proportions of gravel,

Enstruct Group Pty Ltd, August 2017, *Cockle Bay Park Structural Engineering Report*, prepared for DPT Operator Pty Ltd & DPPT Operator Pty Ltd: 14.

[51] **Douglas Partners March 2021** Report on Geotechnical Investigation Harbourside Redevelopment, 2-10 Darling Drive, Darling Harbour, Report prepared for Mirvac Projects Pty Ltd; p.1.

[52] **Coffey Geotechnics Pty Ltd 2013,** Report on Geotechnical Investigation SICEEP – International Convention Centre (ICC) Hotel, Darling Harbour, Sydney for Lend Lease Developments and **Jeffery & Katauskas Pty Ltd 1985** Proposed Development, Darling Harbour Sydney for Wargon Chapman Partners Pty Ltd.

boulders and clay. The natural soils comprise soft clays and loose sands, with some organic clay encountered in BH7.

The bedrock profile generally consists of a thin layer of weathered sandstone overlying medium, medium to high and high strength sandstone below levels of between RL -0.4 m and RL -9.8 m AHD. The rock levels are relatively consistent along the western side of the site but do vary, and generally fall to the south, along the eastern side.

Figure 36 shows the two cross sections across the central and northern parts of the study area. The interface between the reclamation fill (hatched pattern) and the former seabed – what is termed as 'natural soil' – is clearly shown. These natural soils are described as being marine sediments being predominantly composed of sandy clay.

For the northern transect (C-C') the former seabed drops away from shore, that is eastwards, from around -1 m AHD to -3.5 m AHD. For the central transect (D-D') the top of the former seabed is around 0.5 m to 1 m AHD and possibly may have been truncated by excavation/dredging prior to reclamation. The tops of the former seabed in the northern half of the study area are below the inferred water level.

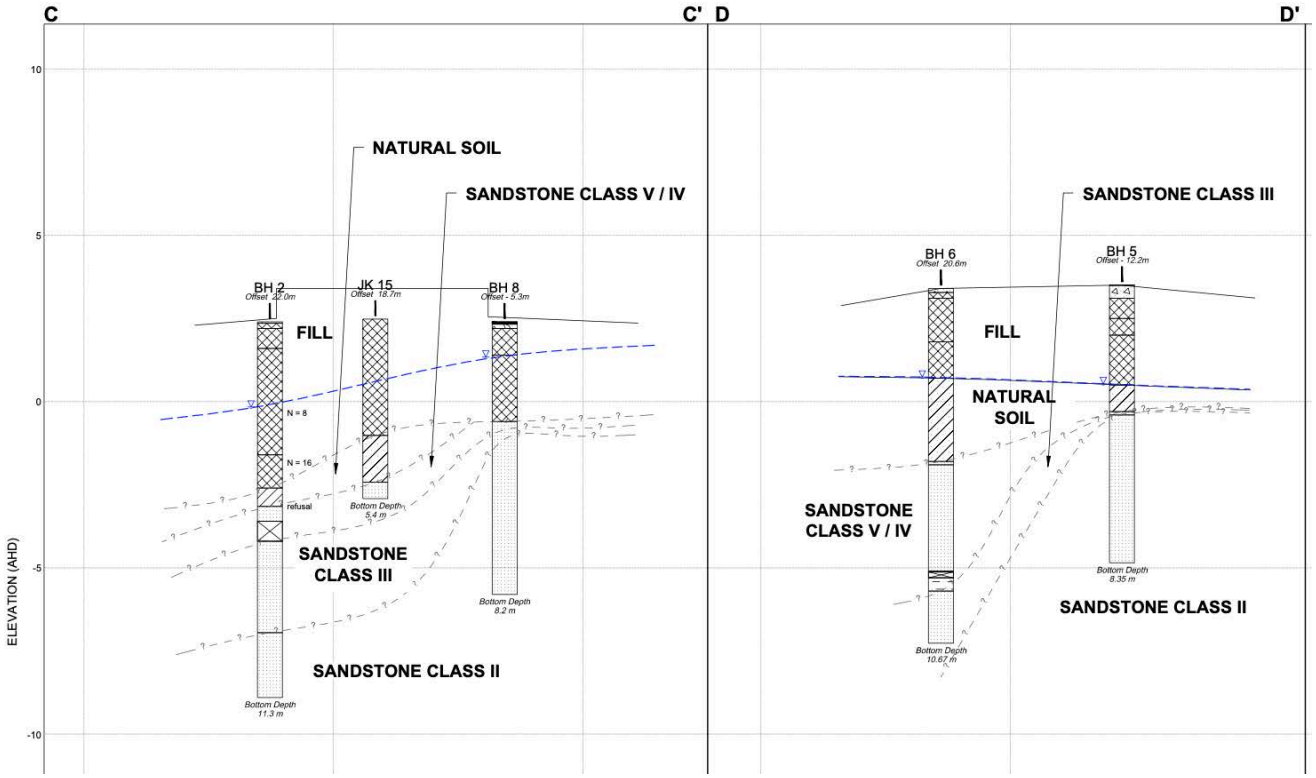


Figure 36 : Extrapolated cross sections from east to west along the northern and central parts of the study area. See Figure 35 for details on locations of transects.

3.5 Previous maritime archaeological inspection

In 2015, CA conducted a dive inspection in Cockle Bay, adjacent to the current study area. The objective of this dive survey was to document any exposed cultural features which may be impacted by the renewal of marine structures south of Pyrmont Bridge, and to identify the historic seawall within the vicinity of the study area.[53] While the dive inspection covered both the eastern and western sides of Cockle Bay, the results outlined below only relate to the western side relevant to the current study area.

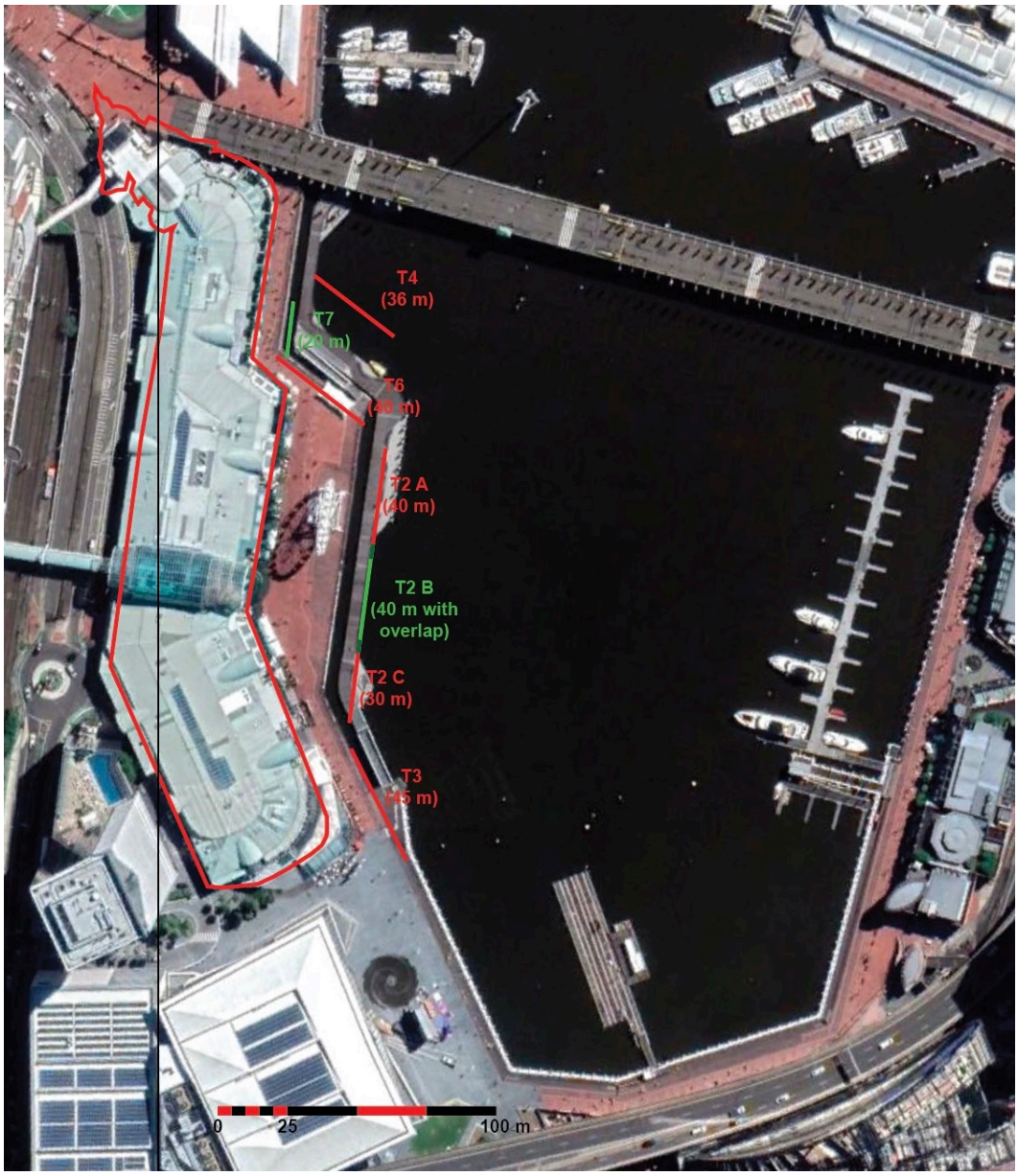


Figure 37: Locations of transects on aerial image of the study area. Study area in red.

3.5.1 Seabed Type

The seabed throughout all areas inspected consisted of a fine soft silt which was easily disturbed and greatly restricted visibility, with small round animal holes scattered throughout. Some areas also had a scatter of litter and marine debris in a thin layer on top of the sediment, likely deposited from stormwater drains. A light sediment cover carpeted all

[53] **Cosmos Archaeology Pty Ltd, May 2015**, Cockle Bay Marine Structures Redevelopment: Maritime Archaeological Survey and Statement of Heritage Impact, report for Sydney Harbour Foreshore Authority.

objects on the seabed which enabled the shape to be viewed but disguised their material. Seaweed and algae were not common other than a where they had grown on some cultural remains. Rock or stone cultural remains all showed evidence of a yellow marine growth while objects that were possibly timber and/or metal did have some seaweed growth. Visibility was restricted to a maximum of 1 m, although the majority of transects had a visibility between 0.2 and 0.5 metres at a maximum, often reduced to less as a result of soft sediment clouds.

3.5.2 Transect Results

The following discussion describes in detail the conduct and findings on the western side of Darling Harbour. Transects 1 and 5 are located on the eastern, Cockle Bay, side of Darling Harbour and not discussed below.

Transect 2 – Western Seawall

The second transect conducted was along the western seawall of Cockle Bay, parallel to the eastern side of the Harbourside Steps and terminating north of the Convention Wharf. This transect was conducted in three sections measuring 40 m, 40 m and 30 m with approximately 5 m overlaps between the sections.

T2 A

The first section surveyed was the northern extent of Transect 2, measuring 40 m in length. The seabed was consistently of fine silt. Probing was conducted at intervals with results of over 0.5 m of soft silt along its length other than at the 0 m mark (southern end) where only 0.05 m depth was possible before hitting a buried item.

A number of modern items were identified in this transect including a bicycle, a plastic chair , a metal chair and a piece of PVC pipe. A modern metal object described as a ‘stand’ was also identified, consisting of a pole 0.4 m long and 200 mm diameter topped with three pronged ‘legs’ of equal distance perpendicular to the pole, measuring 300 mm long and 10 mm in diameter. The metal is smooth with no marine growth indicating recent deposition. An unidentified metal sheet of some description was partially buried beneath the stand, measuring 0.6 m wide, 30 mm thick and of unknown length, also smooth with no marine growth.

T2 B

The second section surveyed was the central extent of Transect 2, measuring 40 m in length. The seabed was consistently of fine silt, as described above. Probing was conducted only at the northern end of this transect, with a result of over 0.5 m of silt.

Modern items such as a chair, two glass bottles and a plastic cup, aluminium can, rectangular bricks and a plastic cup were identified. A timber plank was recorded, being crescent-shaped in profile, over 1 m in length, 250 mm wide and of approximately 100 mm depth. The plank had a flat and smooth surface showing upright, with the bottom curved edge rough. There was a split along the length of the plank towards one edge, with a 20 mm diameter circular hole in the narrower flat surface. This plank appears modern by the condition of the wood, possibly with bark on the curved side to create the rough texture.

A number of unidentified metallic items were also recorded including a frame formed by two round bars at right angles, approximately 400 mm long and 50 mm in diameter, with vertical perpendicular bars acting as supports at the intersection and at the end of one of the bars. This could possibly be a chair, as it is of similar dimensions to others identified during this survey. Another possibly metallic item consists of a square object, approximately 200 mm wide and with 100 mm protruding from the seabed. This item was heavily concreted and had no discernible features, although it was firmly fixed in the seabed.

Another possible metal object, heavily concreted, was present. The item was long with one narrow end similar to a flat bar of 300 mm length and 100 mm width intersecting the centre of a much larger and square profiled tapering section, approximately 700 mm long and 300 to 100 mm wide. This item was situated slightly on top of a metal bar approximately 1 m long and 100 mm in diameter.

The last unidentified metallic item was a right-angled frame formed from a 0.5 m long circular bar sticking vertically out of the seabed before curving into a circular bar over 1 m long and parallel to the seabed. This item was smooth in texture and exhibited no marine growth.

One large timber anomaly was also identified during this survey. Due to the limited visibility and marine growth, only a clear identification could not be made. The anomaly presented as two lengths of timber, heavily degraded and lying parallel on the seabed. They could possibly be two halves of one split pile, with fissures and cracking evident throughout the timbers and sections of timber missing. The outsides of the timbers appeared circular while the inside appeared almost flat. The longer timber, to the east, had a length of over 2.5 m while the shorter timber was approximately 2 m long. They appeared to have had an original diameter of approximately 500 mm or larger.

T2 C

The last section surveyed was the southern extent of Transect 2, measuring 30 m in length. The seabed was consistently of fine silt with an evident upward slope towards the seawall on the western side. Probing was conducted at intervals with results of over 0.5 m of soft silt along its length other than at the 30 m mark (southern end) where only 0.05-0.10 m depth was possible on the slope to the seawall, and 0.25 m at the base of the slope. This was likely due to hitting buried rocks or stones similar to those that have been placed at the base of the seawall.

A number of modern items were identified in this transect including a chair, a bar stool, a round café table and a wheelbarrow. There was also an ‘A’ frame object approximately 1.3 m long and 500 mm wide that may be for an advertisement sign, along with a folded piece of unidentified sheeting that may have been said sign. One unidentified object hesitantly called an ‘axle’ consisted of an upright pole over 0.4 m long and of 100 mm diameter attached to a top with five spokes. The spokes were evenly spaced, approximately 0.6 m long, 100 mm wide and 30 mm thick, with the whole object appearing heavy and sturdy in construction. The centre of the spokes, opposite to the pole, was raised and hollow which defies identification as a table.

Transect 3 – Convention Wharf

The third transect ran underneath Convention Wharf, in the space between two sets of piles and measuring 45 m in length. There were 8 piles along each line with distance between piles approximately 6 m. The seabed was consistently of fine silt. Probing was conducted at the base of most piles with the majority of results being over 0.5 m of soft silt with the only exceptions being at 14 m on the eastern line finding 0.1 m of soft sediment then sand to over 0.5 m depth, and 0.4 m probe at 20 m on the eastern line likely due to buried items.

This transect identified a number of modern items including three 44 gallon drums, one café table, a besser block and a possible chair. Other items included a six inch pipe with a flange, a 2 m long pile of 150 mm diameter and heavy concretion, and a dump of unidentified material. This possibly includes a timber plank, 1.5 m long with hard growth and other concrete or rock items.

Transect 4 – Harbourside Jetty

Transect 4 ran underneath Harbourside Jetty, just inside the northern line of piles, measuring 35 m in length. The seabed was observed to be consistently of fine silt. Probing was only

conducted at the western end of the transect, resulting in 0.05 m depth of strata next to the pile, 0.15 m at 0.3 m distance east from the pile and then more than 0.5 m of soft sediment at a distance of one metre east from the pile. The western end of this transect abutted against the pile of rock / stone at the base of the seawall, and it was probably this material that caused the lower readings.

Material found along this transect was all of modern origin. Some were of obviously recent deposition, including a crab cage and rectangular frame, a large white sign with a green letter “R” at the start and a possible traffic cone. Other items included three pipes partially exposed of 100 mm, 50 mm and 30 mm diameter, the last being of square profile. One small length of concreted metallic bar was also identified protruding from the seabed, approximately 200 mm long and 40 mm in diameter.

Transect 6 – Harbourside Promenade

Transect 6 ran underneath Harbourside Promenade, measuring 40 m in length. The transect was situated just inside the northern line of piles, with 11 piles in total, spaced 4 m apart. The seabed was consistently of fine silt. Probing results consistently identified buried material beneath the seabed. At the 8 m mark, probing reached 0.05 m to 0.6 m away from the pile, then over 0.5 m silt at 1 m from the pile. Probing at the 28 m mark found less than 0.10 up to 1 m distance from the pile and probing at the 40 m mark was less than 0.15 m out to 1 m distance.

Modern material identified included a plastic chair, a garbage bin, and a crushed paint tin or similar. Other material included a concrete pipe, 0.5 m in diameter and 30 mm thick but with only 0.3 m length present, as well as a flat metal board approximately 1 m long, 0.25 m wide and 50 mm thick covered in sediment but no concretion. One large rock was identified, similar to others by the seawall, measuring approximately 0.7 m by 0.4 m, as well as a rock scatter nearby with sizes ranging from 0.3 m to 50 mm, with yellow algae growth. One modern glass bottle was also found amongst the rock scatter. An unidentified flat object, likely metallic, was located nearby measuring over 0.7 m wide and 0.4 m long.

Transect 7 – Heritage Seawall

Transect 7 ran along the heritage seawall between the Harbourside Promenade and Harbourside Jetty, located roughly 2 m away from the seawall and measuring 20 m long. The seabed here was vastly different as the transect ran over the lower end of the rock slope at the base of the seawall. Seabed visibility was reduced to 0 m for the majority of the transect due to rock and a large amount of seaweed or marine growth. Probing was conducted at either end with 0.3 m of silt then over 0.5 m of sand at the northern end and 0 m at the southern due to rocks.

Only one item was identified in this transect, and that was a circular object buried in the sediment that has been potentially identified as a glass bottle. No identifying features were visible. The sediment appeared to be a combination of fine silt and sand, both black in colour.

3.5.3 Discussion

The Cockle Bay survey encountered low visibility, mostly under 0.5 m, which was worsened by the fine soft silt sediment that made up the seabed. This greatly reduced the potential scale of the survey and made the identification of some items quite difficult without a larger view. The sediment also effectively coated all items on the sea floor and, although their general shape could be determined, the material could not. Sparse areas were also covered in litter or leaf matter that improved visibility. Despite these conditions, a number of conclusions can be drawn from the survey results. Specifically, these results include the type of remains identified during the survey and the condition of the seabed.

The majority of finds were clearly recently deposited that were slowly sinking into the soft silty seabed. There were a number of unidentified metal objects including a variety of framing and dumps of what appeared to be an assortment of metallic material.

There were also a number of rocks and three rock scatters identified in this survey, with all the rock closely resembling the rock piled at the base of the seawall. The rock may have been intended or originally used as part of the seawall but has ended up in a different location, or it may have been purposefully placed to support the wharf structures which they were found beneath.

Probing was conducted along all transects. The results varied greatly but all towards one consistent observation. Cockle Bay consists of a soft fine silt to over 0.5 m depth across the bay. There was some evidence of a sand layer beneath this, with some probes finding sand, but not enough to suggest the depth of the sand layer. There were also a few localised areas where litter and leaf matter, likely from stormwater drains, lightly covered the sediment. Probing did result in the location of a large number of buried items in the seabed in under 0.5 m depth, with a majority of these finds at depths between 10 and 100 mm. This gives a strong indication of the likelihood for a large number of buried objects in Cockle Bay. There is the high potential for remains associated with the previous wharfs, jetties and activities in Cockle Bay are also currently buried below a considerable amount of sediment that has accumulated since the last dredging occurrence in the 1970s.

The potential for archaeological deposits associated with the shipping and transportation immediately around the former wharves is affected by site formation processes that have occurred during and after the lifespan of the wharves. This includes shipping movements, but also the demolition and removal of one wharf and the construction of another in the same area. Typically, archaeological deposits associated with vessels berthed at a wharf are located immediately between the wharf and the vessel or on the opposite side of the vessel away from the berth. The limit of these deposits is based on the width of the vessels berthed at the wharf. Relics associate with the working life of the wharf also have the potential to be deposited immediately below the footprint of the former wharf, particularly from material that has fallen between deck planking. This material would relate directly to the working life of the wharf. Given the number and scale of the wharves constructed in Cockle Bay, and the 150-year continuous maritime activity at Cockle Bay, the archaeological potential located within the seabed within this area is considered to be high.

4 KNOWN AND POTENTIAL SITES

4.1 Known Maritime Heritage Sites

4.1.1 Remains of Wharves from the Late 19th Century

This study has identified six well documented former wharves which were constructed on the western side of Darling Harbour, in or near the study area, including some established as early as the 1870s (Former Railway Wharves).

While these wharves were demolished at varying times between 1890 and the 1980s, remains such as cut piles and associated archaeological deposits are almost certainly present within the study area, relating to the following wharves:

- Former Railway Wharves (early/mid 1870s – early 1890s)
- Wharf 48 (1890s – late 1920s)

4.1.2 Remains of seawalls

Two seawalls are known to be in the study area (see Figure 33). Construction commenced on the north-south seawall in the mid 1870s/early 1880s and is on the same alignment as the sandstone seawall visible immediately to the south of the Pyrmont Bridge. This wall was 'rat-proofed' between 1908 and 1911.

A second seawall which traverses the southern portion study area may have originally been composed of a variety of types – stone cut, rubble, timber sheet piling – that were replaced by a Monier trestle and plate seawall by the 1920s which was still present in the 1980s.

4.2 Potential Maritime Heritage Sites

4.2.1 Physical Setting

Reclamation and seabed type within the study area all have an effect on the preservation of potential maritime heritage sites. Wharves, seawalls or other forms of infrastructure are not likely to be removed in their entirety for reclamation to take place as remains can easily be buried and added to the reclamation fill. The construction of seawalls has the same effect, as the new seawall is typically constructed on the outside of older seawalls, effectively burying the old seawall within fill. Burial within reclamation, behind a seawall or simply by accumulated sediments can improve the survival rate of remains as it creates an anaerobic environment that is beneficial for the preservation of organic materials. The current shopping centre does not have a basement carpark, therefore reclamation beneath the study area is likely to have remained undisturbed in many areas, potentially leaving the former seabed underneath largely undisturbed too.

4.2.2 Wharves and Related Material

The potential for archaeological deposits associated with the shipping and transportation immediately around each wharf is affected by site formation processes that have occurred

during and after the lifespan of the wharf. This includes shipping movements, but also the demolition and removal of one wharf and the construction of another in the same area.

Typically, archaeological deposits associated with vessels berthed at a wharf are located immediately between the wharf and the vessel or on the opposite side of the vessel away from the berth. The limit of these deposits is based on the width of the vessels berthed at the wharf. Relics associated with the working life of the wharf can potentially be deposited immediately below the footprint of the former wharf, particularly material that has fallen between deck planking.

Considering wharves have been located on the western side of Cockle Bay since as early as the 1870s, the archaeological potential located on and under the former seabed within these areas are considered to be high.

There is also the potential that remains relating to a possible slipway connected to Newstead House in the 1840s could be extant within the study area, that is, on the former seabed. There is also potential archaeological remains of shipbuilding slipways or other infrastructure resulting from the brief period the Atlas Engineering Works occupied Newstead House and surrounding land. While land modification in the late 19th century (to make way for the Goods Yard) may have resulted in the poor preservation of the easement/slipway leading down to the water's edge, archaeological remains such as slip rails or sandstone blocks may have remained intact below the low water make and would have been buried and preserved by subsequent reclamation activities. As such the archaeological potential located on and under the former seabed within the vicinity of the possible slipway and other infrastructure is considered to be high.

Furthermore, evidence of unrecorded maritime/commercial activity from Phase 1 could possibly exist within the study area. This could include artefact scatters, remains from unrecorded jetties, such as the one which seems to evident in the 1875 Newstead House photo (Figure 4), and stone or timber slipways.

4.2.3 Seawalls

It has been established that a number of historic seawalls extend across the eastern side of the study area, consisting of a combination of forms and materials, built between the mid-1870s and the 1920s. The 1980s to 1990s development of Darling Harbour included construction of the current promenade wharf and concrete seawall observed in the site inspection. It is likely that remains of undocumented former seawalls are present within the study area within the reclamation. The archaeological potential is considered to be Moderate.

4.2.4 Shipwrecks

There are four shipwrecks known to have occurred in Darling Harbour, as detailed in Section 2.2.3. However, it is unlikely that any remains associated with those vessels would exist within the study area and as such, the archaeological potential is considered very low.

Nonetheless, it should also be noted that remains of abandoned vessels could be found within reclamation fill, as has been recently found during works for the Sydney Metro site at Barangaroo.[54]

4.2.5 Moorings and Discard from Vessels

Vessel movement and mooring in the western side of Cockle Bay inevitably coincides with discard from working vessels. Discard can take the form of accidental or deliberate discard

[54] https://www.sydneymetro.info/article/historic-180-year-old-boat-uncovered-barangaroo.

of items such as personal objects, food and drink containers, ships fittings and equipment, fishing and boating equipment as well as cargo and shipping materials being loaded or offloaded at the wharves of Cockle Bay. The likelihood for such cultural deposits being present in the study area is high. Such deposits could be concentrated around moorings. Such moorings could be sandstone blocks, ferrous weights such as railway tracks or actual anchors.

4.2.6 Discard Under Reclamation Fill

The western side of Cockle Bay has been gradually reclaimed throughout the 19th and 20th centuries. This reclamation would have the effect of burying and preserving any potential archaeological remains on and under the seabed, such as wharf remains described above, as well as possibly containing items within the fill from the original source of the material. There may have also been opportunistic discard within the fill as locals, workers or even the local council took advantage of the operation to bury unwanted refuse. The type, material kind, size and extent of these remains cannot be predicted. Regardless, the process of burial generally conserves material and it is likely that these items are relatively intact. The archaeological potential of discard within reclamation fill is considered low.

4.2.7 Dredging

It is likely that dredging has occurred on the western side of Darling Harbour especially larger scale dredging by the Sydney Harbour Trust. Dredging has the potential to remove surface archaeological remains and expose remains of piles from previous structures which may then be cut or removed. Dredging former seabed that remained exposed in the 20th century – the southeast corner of the study area - would have the effect of reducing the archaeological potential to low.

4.2.8 Summary

Based on the findings of the historical information and previous investigations presented in **Section 3,** the following map of maritime archaeological potential has been produced (Figure 38).

Zones of high potential indicate areas where there were maritime structures, including wharves and seawalls, which are likely to remain buried within the seabed or beneath reclamation. Zones of lower potential are areas where there are no built structures, but maritime activities took place that may have left artefacts which are now buried in the seabed or beneath reclamation. The zones marked as not applicable are areas where there is no former seabed and hence are outside the scope of this assessment.

Historical Phase	Potential remains under reclamation	Maritime Archaeological potential
Phase 1: 1788 – 1874 Early European occupation of the site	Remains of undocumented early wharves/jetties, slipways, land reclamation and possible use of seawalls in early maritime commercial enterprises. Archaeological deposits and moorings associated with vessel activity. Such deposits would be under reclamation from the Phase 2.	Moderate

	Shoreline east of Newstead House where appears that a wharf, slipway and jetty were located	High
Phase 2: 1874 – 1960s Darling Harbour Goods Yard	Remains of structures associated with Atlas Engineering Works occupation of Newstead House and associated shipbuilding activities Piles stumps associated with Wharf 48 and Railway wharves associated with activities on and around the wharf. Basal remains of mid 1870s sandstone block seawall. Monier Trestle and plate seawall.	High
	Basal remains of earlier versions of seawalls. Artefacts associated with vessels and goods transport as well as activities on and around the wharves.	Moderate
Phase 3: 1960s - present	Study area totally reclaimed by this time except for sliver in southeast corner. This portion of exposed seabed likely to have been dredged repeatedly	Low

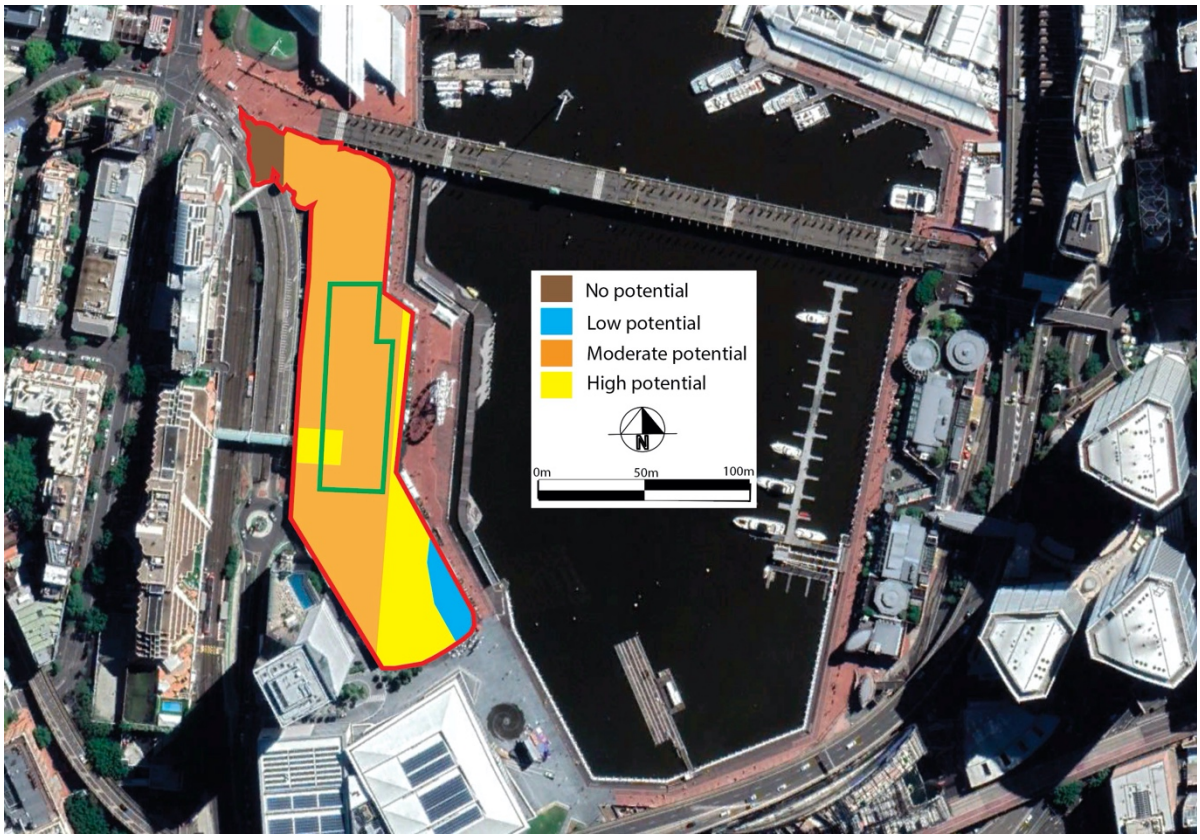


Figure 38: Assessment of maritime archaeological potential within the study area. Green line indicates basement carpark.

5 ASSESSMENT OF SIGNIFICANCE

5.1 Significance Criteria

An assessment of cultural significance or heritage significance seeks to understand and establish the importance or value that a place, site or item may have to select communities and the general community. The Australian ICOMOS *Charter for the Conservation of Places of Cultural Significance*[55] (the *Burra Charter 1979,* most recently revised in 1999) is the standard adopted by most heritage practitioners in Australia when assessing significance. It defines cultural significance as "aesthetic, historic, scientific or social value for past, present or future generations".

This value may be contained in the fabric of the item, its setting and relationship to other items, the response that the item stimulates in those who value it now, or the meaning of that item to contemporary society.

Accurate assessment of the cultural significance of sites, places and items is an essential component of the NSW heritage assessment and planning process. A clear determination of a site's significance allows informed planning decisions to be made for place, in addition to ensuring that their heritage values are maintained, enhanced, or at least minimally affected by development.

Assessments of significance are made by applying the following standard evaluation criteria provided by the NSW Office of Environment and Heritage[56] in order to establish a statement of significance:

a. An item is important in the **course or pattern** of NSW's **cultural or natural history** (or the cultural or natural history of the local area);

b. An item has strong or special **associations with** the life or works of **a person, or group of persons, of importance in NSW' cultural or natural history** (or the cultural or natural history of the local area);

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);

d. An item has strong or special **associations with a particular community or cultural group** in NSW (or the local area) for **social, cultural or spiritual reasons**;

e. An item has **potential to yield information** that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

f. An item possesses **uncommon, rare or endangered** aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

g. An item is important in **demonstrating the principal characteristics of a class of NSW's cultural or natural places**; or cultural and natural environments.

5.2 Assessment of Historic Significance

The cultural heritage significance of known archaeological sites within the study area are assessed below using the criteria presented in **Section 5.1**. It should be stated that these statements below are for the resource as a whole within the footprint of the proposed development. The cultural heritage significance of an artefact, archaeological deposit or structure is dependant largely on its condition and to an extent its context. This cannot be determined until such remains are exposed and examined. Preliminary statements of cultural significance have also been provided for other potential site types. A complete significance assessment for these would only be possible once a site has been identified.

[55] **The Australia ICOMOS, 1999,** Charter for the conservation of places of cultural significance.
[56] **NSW Heritage Office, 2001,** Assessing Heritage Significance.

5.2.1 Remains of Maritime Infrastructure and Associated Archaeological Deposits (c.1830 to 1970)

The following section assesses the historical significance of the former maritime infrastructure such as wharves, jetties, slipways, moorings and their associated archaeological deposits within the study area against the seven aforementioned criteria. Seawalls are assessed separately in Section 5.2.2.

Criterion a) *An item is important in the **course or pattern** of NSW's **cultural or natural history** (or the cultural or natural history of the local area)*

The southern portion of Darling Harbour has served as a trade hub for Sydney from the 1830s when the first private wharves were built along the eastern and southern side of the harbour. While the western side saw minimal, smaller scale enterprises during Phase 1, a range of unrecorded maritime and commercial activity may have taken place there. This is supported by photographic evidence of a slipway and jetty adjoining Newstead House in the 1870s that may have been in place for a few decades.

The number of wharves and maritime infrastructure that was stacked on the eastern side of Cockle Bay, largely under private development, shows the value of this waterfront area, however the western side of Cockle Bay had fewer development phases and was mostly associated solely with the Darling Harbour Branch Railway and goods yard. This side of the harbour did not see the mass scale development and redevelopment that the eastern side encountered. There is a brief three to four year period of works associated with the Atlas Engineering Company, however very little is known from the historical record of the structures and/or slipways built at this time. The wharves on the western side, built from the late 19th century onwards were mainly constructed to facilitate the extension of the Darling Harbour railway which played a key role in the booming wool industry. By the late 19th century, the yards were handling coal, shale, timber and wheat and played a vital role in goods distribution across NSW.

The resumption of the waterfront area along Darling Harbour in 1900 saw a change in governance and control of the wharves and associated infrastructure, including seawalls. This shift was an integral part of the change of design and thinking that allowed for a holistic approach to the design of wharves in Darling Harbour, particularly at the southern end in Cockle Bay. This is clearly seen in the longevity of wharves built from the 1920s onwards and their continued use until the 1970s.

The former maritime infrastructure such as wharves, jetties, slipways, moorings within the study area are assessed to be of ***Local significance*** under this criterion.

Table 4: Historical significance of former maritime infrastructure under criterion (a).

Period	Date Range	Site type / Assessment / Significance		
Phase 1	European Settlement (1788 – 1870)	Potential remains relating to a wharf and possible slipway connected to Newstead House in the 1830s Potential remains of an undocumented jetty. Potential evidence of unrecorded maritime/commercial	Archaeological remains associated with this phase have the potential to contribute to the history of processes and practices relating to the (sometimes unrecorded) small-scale enterprises operating on the western side of Darling Harbour, before urbanisation and industrialisation took place in the late 19th century.	Local

Period	Date Range	Site type / Assessment / Significance		
		activity (artefact scatters).		
Phase 2	Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)	Atlas Engineering Works shipbuilding infrastructure (c. 1878 - 1882)	Archaeological remains associated with the shipbuilding activities have the potential to contribute to a relatively undocumented period of the western side of Darling Harbour.	Local
		Former Railway Wharves (early/mid1870s-early 1890s)	The former Railway Wharves are associated with the extension of the Darling Harbour Branch Railway to just south of the Pyrmont Bridge and the establishment of adjacent railway goods yards and the construction of the Iron Wharf to the south. These wharves played a key role in the booming wool market of the 1880s.	Local
		Wharf 48 (1890s – late 1920s)	Wharf 48 was constructed in the early 1890s as part of the extension of the Darling Harbour railway to the new Government wharves in Pyrmont Bay and is associated with the expansion of the Darling Harbour railway goods yard. This was part of a concentrated effort by the NSW government to encourage wool growers to send their wool to Sydney rather than Melbourne. The goods yards also played a vital role in the movement of general goods across the state. Wharf 48 was absorbed into the wharf 49 when it was widened in 1908, as part of the Sydney Harbour Trust improvements.	Local
Phase 3	Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)	Not assessed		

Criterion b) *An item has strong or special **associations with** the life or works of **a person, or group of persons, of importance in NSW's cultural or natural history** (or the cultural or natural history of the local area);*

The site during Phase 1 has a connection to Sydney identities such as Captain George Bunn of Newstead House, however the maritime archaeological record is unlikely to demonstrate an explicit link.

Considering the wharves on the western side of Cockle Bay were primarily utilised in conjunction with the rail infrastructure, they are not so likely to have the kind of associations with early Sydney identities that private holdings and wharves had.

The rat proofing and future design of wharves in Cockle Bay were managed by Henry Walsh, engineer-in-chief of the Sydney Harbour Trust, whose designs were implemented throughout

Sydney Harbour. Specifications created by Walsh were certainly implemented in Cockle Bay, however, they were not considered to be individual or independent from the designs that were implemented elsewhere around the harbour.

The archaeological remains of the former maritime infrastructure such as wharves, jetties, slipways, moorings within the study area are assessed to be of ***Local significance*** under this criterion.

Table 5: Association of maritime infrastructure with persons of importance under criterion (b).

Period	Date Range	Site type / Assessment / Significance		
Phase 1	European Settlement (1788 – 1870)	Potential remains relating to a wharf and possible slipway connected to Newstead House in the 1830s. Potential remains of an unrecorded jetty. Potential evidence of unrecorded maritime/commercial activity (artefact scatters).	Site generally associated with Captain George Bunn of Newstead House, who was a master mariner and principal Sydney merchant up until his death in 1834.	Local
Phase 2 Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)		Atlas Engineering Works shipbuilding infrastructure (c. 1878 - 1882)	No known association with a person or persons of importance in NSW.	Does not meet criterion threshold
		Former Railway Wharves (early/mid1870s-early 1890s)	No known association with a person or persons of importance in NSW.	Does not meet criterion threshold
		Wharf 48 (1890s – late 1920s)	No known association with a person or persons of importance in NSW.	Does not meet criterion threshold
Phase 3	Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)	Not assessed		

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);*

The earliest wharves on the western side of Cockle Bay were built at a time when wharf construction was undertaken via private contracts and did not follow any one standard. The known and potential maritime archaeological remains present which is associated with the late 19th century wharves could demonstrate creative and/or technical achievement relating to the construction and maintenance of those wharves.

However, the post 1900s resumption and the construction of the 1930s wharves in Cockle Bay were based on a design standard created for the redevelopment works of Sydney Harbor. Archaeological remains of these wharves would not be unique to these wharves built after the 1930s.

The archaeological remains of the former maritime infrastructure such as wharves, jetties, slipways, moorings within the study area are assessed to be of ***Local significance*** under this criterion.

Table 6: Technical and creative merits of maritime infrastructure under criterion (c).

Period	Date Range	Site type / Assessment / Significance		
Phase 1	European Settlement (1788 – 1870)	Potential remains relating to a wharf and possible slipway connected to Newstead House in the 1830s Potential remains of an unrecorded jetty. Potential evidence of unrecorded maritime/commercial activity (artefact scatters).	Structural remains from this period could demonstrate colonial-era jetty/slipway construction methods and characteristics.	Local
Phase 2 Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)		Atlas Engineering Works shipbuilding infrastructure (c. 1878 - 1882)	Structural remains could reveal previously undocumented methods of building iron vessels in this area of Darling Harbour.	Local
		Former Railway Wharves (early/mid1870s-early 1890s)	Built at a time when private construction contracts were common, these wharves may display unique creative or technical achievement.	Local
		Wharf 48 (1890s – late 1920s)		
Phase 3	Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)	Not assessed		

Criterion d) *An item has strong or special **associations with a particular community or cultural group** in NSW (or the local area) for **social, cultural or spiritual reasons**;*

While these wharves at Cockle Bay were an integral part of the goods transportation and waterside warehousing needs from the turn of the century onwards, there was no single particular community or cultural group who was associated with the wharf.

The maritime infrastructure on the western side of Darling Harbour from the 1830s through to the 1970s **do not** meet the requirements of this criterion.

Criterion e) *An item has **potential to yield information** that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);*

There is a high potential for archaeological remains associated with the chronology of wharves built at Cockle Bay dating from the 1870s through to the 1980s to be present within

the seabed and immediately behind the seawall. These remains are likely to contribute to our understanding of materials and construction methods (especially for wharves built prior to 1900), as well as how wharves were removed, and new wharves constructed over the top of the previous.

Furthermore, there may be physical evidence relating to unrecorded maritime activities in the area during Phase 1, which could have high research potential. There is a lack of historical documentation about activities which took place in this area of Darling Harbour between 1788 and 1874, therefore the recovery of archaeological remains from this period could be significant. The use of Newstead House by Atlas Engineering for shipbuilding and subsequent construction of infrastructure for the same is largely undocumented in the historical record.

The western side of Darling Harbour developed significantly slower than its eastern counterpart and provides a unique opportunity to compare this kind of site to some of the more rapidly developed sites around the harbour. This would allow for a comparative analysis to better understand the intricacies of 19th century Darling Harbour development.

Artefacts discarded, accidentally or deliberately, from the wharves present in the study area and from vessels moored alongside can contribute towards knowledge of the variety of traffic and goods that passed between Sydney and the rest of the world from the early 19th century through to the 20th century. Through 150 years of maritime operations in Cockle Bay, these relics have the potential to contribute to our understanding of the working operation of the wharves.

The archaeological remains of the former maritime infrastructure such as wharves, jetties, slipways, moorings within the study area are assessed to be of ***Local significance*** under this criterion.

Table 7: Potential of maritime infrastructure to yield new information under criterion (e).

Period	Date Range	Wharf Name / Assessment / Significance		
Phase 1	European Settlement (1788 – 1870)	Potential remains relating to a wharf and possible slipway connected to Newstead House in the 1830s. Potential remains of an unrecorded jetty. Potential evidence of unrecorded maritime/commercial activity (artefact scatters).	Physical evidence relating to the domestic or commercial maritime use of the western side of Darling Harbour could have high research potential and would complement existing artefacts from similar archaeological sites such as Barangaroo. The western shoreline's point of difference was its relatively slow development, hence any remains from the early to mid-19th century could make a meaningful contribution to the historical record.	Local
Phase 2	Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)	Atlas Engineering Works shipbuilding infrastructure (c. 1878 - 1882)	Physical evidence relating to the commercial shipbuilding associated with the Atlas Engineering Works could have high research potential.	Local
		Former Railway Wharves (early/mid1870s-early 1890s)	In the 1890s, the Former Railway Wharves were either demolished or incorporated into Wharf 49, therefore, remains may still be present in the seabed. Structural remains of wharves as well as	Local

Period	Date Range	Wharf Name / Assessment / Significance		
			discarded artefacts within the vicinity of the former wharves could contribute to our understanding of late 19th century Darling Harbour as a major wool port and goods distribution hub.	
		Wharf 48 (1890s – late 1920s)	Wharf 48 was absorbed into the widening of Wharf 49 in ca. 1908-1911 and subsequently buried in the Railway Departments reclamation of the head of Darling Harbour during the mid to late 1920s. Therefore, structural remains and artefact deposits could be extant within the seabed, preserved by upper layers of reclamation. Such remains could yield information relating to wharf construction and the role played by the railway goods yards/line in the development of early 20th century Sydney.	Local
Phase 3	Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)	Not assessed		

Criterion f) *An item possesses **uncommon, rare or endangered** aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);*

The maritime archaeological site is likely to include remains of early harbour development dating from the 1870s and continuing through until the 1920s. Archaeological remains under the seabed are likely to relate to the physical structures of the wharves, other maritime infrastructure and relics relating to over 150 years of maritime related activity.

Archaeological remains associated with the post-resumption development of the harbour can still be seen in the harbour today. Wharves such as Woolloomooloo, Walsh Bay and Jones Bay wharves all relate to the post 1900 resumption redevelopment. While many wharves have been removed from the harbour there are surviving examples today that are considered to be common.

The archaeological remains of the former maritime infrastructure such as wharves, jetties, slipways, moorings within the study area are assessed to be of ***Local significance*** under this criterion.

Table 8: Potential to possess uncommon, rare or endangered aspects of history under criterion (f).

Period	Date Range	Wharf Name / Assessment / Significance		
Phase 1	European Settlement (1788 – 1870)	Potential remains relating to a wharf and possible slipway connected to Newstead House in the 1830s. Potential remains of an unrecorded jetty. Potential evidence of unrecorded maritime/commercial activity (artefact scatters).	Recorded maritime infrastructure from the 19th century is relatively uncommon.	Local
Phase 2	Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)	Atlas Engineering Works shipbuilding infrastructure (c. 1878 - 1882)	Recorded maritime infrastructure from the 19th century is relatively uncommon.	Local
		Former Railway Wharves (early/mid1870s-early 1890s)	Recorded maritime infrastructure from the 19th century is relatively uncommon.	Local
		Wharf 48 (1890s – late 1920s)	Recorded maritime infrastructure from the 19th century is relatively uncommon.	Local
Phase 3	Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)	Not assessed		

Criterion g) *An item is important in **demonstrating** the **principal characteristics of a class of NSW's cultural or natural** places; or cultural and natural environments.*

The maritime archaeological infrastructure constructed in Cockle Bay, namely the series of wharves and potential jetties and slipway, are likely to be represented by maritime archaeological remains present below the seabed and/or behind the seawall. These remains will not be intact or complete given the extensive amount of redevelopment that has occurred before and after the resumption of wharves in 1900. As such, the site is not likely to retain the principal characteristics of its type or design, but a representation.

At present without knowing the surviving condition of the archaeological remains of the former maritime infrastructure such as wharves, jetties, slipways, moorings within the study area they **do not** meet the standards of this criterion.

Statement of Cultural Significance

The southern end of Cockle Bay now known as Darling Harbour has been associated with maritime transport in Sydney Harbour since c.1830s, with the first major wharves constructed on the western side in the 1870s. These early wharves were eventually demolished or reincorporated into larger wharves as the rail yard infrastructure developed steadily over the final decades of the 19th century. This continued until the resumption of wharves and the creation of the Sydney Harbour Trust in 1900. Immediately after this time the seawalls were improved to be rat proofed, and new wharves were built at the southern end of Darling Harbour, known as Cockle Bay, in the 1930s.

The maritime infrastructure present in Cockle Bay represent almost 200 years of maritime industry, commerce and trade. The archaeological resource present on and under the seabed is representative of 19th century private maritime infrastructure development in Sydney Harbour. This includes not only the potential for physical remains of these structures, but also archaeological deposits associated with activities around these structures.

The archaeological remains of the former maritime infrastructure such as wharves, jetties, slipways, moorings within the study area are assessed to be of ***Local significance***.

5.2.2 Remains of Seawalls

The following section assesses the historical significance of seawall remains within the study area against the aforementioned NSW Heritage criteria.

The long north-south sandstone seawall corresponds to the line of reclamation conducted in the late 1860s to early 1870s in association with the extension of the Darling Harbour Branch Railway, the establishment of the adjacent railway goods yard and the construction of the Iron Wharf to the south. The wall curving around the southern extent of Cockle Bay runs along the front of reclamation conducted in the mid-1920s by the NSW Railway Department.

Criterion a) *An item is important in the **course or pattern** of NSW's **cultural or natural history** (or the cultural or natural history of the local area)*

Table 9: Historical significance of seawall remains under criterion (a).

Period	Date Range	Seawall / Assessment / Significance		
Phase 1	European Settlement (1788 – 1870)	Possible undocumented seawall remains relating to domestic or commercial use of the study area during the initial development period of Darling Harbour.	Seawall remains relating to the mid-19th century maritime usage of the western shoreline of Darling Harbour would improve our understanding of the area's development as a whole. This is particularly relevant considering the contrasting rapid development on the eastern side of Darling Harbour.	Local

Period	Date Range	Seawall / Assessment / Significance		
Phase 2	Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)	North-South Sandstone Seawall (mid 1870s-early 1880s)	Information regarding any seawalls constructed as part of various stages of reclamation between the 1850s and 1890s is only available from the archaeological record. This includes cut stone walls on solid stone ballast foundations, rubble seawalls and timber piling seawalls. The location of rat-proof seawalls are noted on plans by Sydney Harbour Trust after 1903, however, the specific type of seawall is not distinguished on the plans nor are details whether it was an existing, upgraded or newly constructed seawall.	Local
		Monier Trestle & Plating Seawall (1920s)	The introduction of reinforced concrete towards the end of the 19th century provided some solutions to difficult engineering problems. Of relevance is the application of reinforced concrete to the improvement and construction of seawalls for rat-proofing.	Local
Phase 3	Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)	The existing modern seawall currently situated within the study area which dates from the 1980s is not assessed.		

Criterion b) *An item has strong or special **associations with** the life or works of **a person, or group of persons, of importance in NSW' cultural or natural history** (or the cultural or natural history of the local area);*

Table 10: Association of seawall remains with persons of importance under criterion (b).

Period	Date Range	Seawall / Assessment / Significance		
Phase 1	European Settlement (1788 – 1870)	Possible undocumented seawall remains relating to domestic or commercial use of the study area during the initial development period of Darling Harbour.	Potential seawall remains could be related to maritime infrastructure and the merchant activities of Captain George Bunn of Newstead House.	Local

Period	Date Range	Seawall / Assessment / Significance		
Phase 2	Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)	North-South Sandstone Seawall (mid 1870s-early 1880s)	This seawall has no known associations with particular persons or groups.	Does not meet criterion threshold.
		Monier Trestle & Plating Seawall (1920s)	The personages of Joseph Monier, who patented the reinforced concrete used in Monier plates, and H.D. Walsh, Engineer in Chief of the Sydney Harbour Trust, could be considered to have derivative associations with the Monier seawall on the western side of Cockle Bay.	Local
Phase 3	Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)	The existing modern seawall currently situated within the study area which dates from the 1980s is not assessed.		

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);*

Table 11: Technical and creative merits of seawall remains under criterion (c).

Period	Date Range	Seawall / Assessment / Significance		
Phase 1	European Settlement (1788 – 1870)	Possible undocumented seawall remains relating to domestic or commercial use of the study area during the initial development period of Darling Harbour.	A seawall dating to the early/mid-19th century would demonstrate construction techniques and materials used in colonial maritime infrastructure. Seawall remains could provide valuable evidence only available in the archaeological record.	Local
Phase 2	Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)	North-South Sandstone Seawall (mid 1870s-early 1880s)	The basal remains of the sandstone block wall is likely to be well preserved under reclamation, with some of the wall still existing and operational in the north-western corner of Darling Harbour. It may have important aesthetic characteristics while demonstrating maritime technical achievements from the 1870s.	Local
		Monier Trestle & Plating Seawall (1920s)	While the Monier systems were highly innovative, it is unknown what state this seawall is currently in. Remains, if they exist at all, may be fragmentary.	Local

Period	Date Range	Seawall / Assessment / Significance
Phase 3	Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)	The existing modern seawall currently situated within the study area which dates from the 1980s is not assessed.

Criterion d) *An item has strong or special **associations with a particular community or cultural group** in NSW (or the local area) for **social, cultural or spiritual reasons**;*

Table 12: Potential for seawall remains to have a community association under criterion (d).

Period	Date Range	Seawall / Assessment / Significance		
Phase 1	European Settlement (1788 – 1870)	Possible undocumented seawall remains relating to domestic or commercial use of the study area during the initial development period of Darling Harbour.	There is no known group or community associated with possible seawall remains within Phase 1.	Does not meet criterion threshold
Phase 2	Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)	North-South Sandstone Seawall (mid 1870s-early 1880s)	Remains of the sandstone seawall are likely to have associations with the workers on the railway wharves, however, the remains would no longer be identifiable.	Local
		Monier Trestle & Plating Seawall (1920s)	The Monier concrete plates have an association with the workers on wharves of Cockle Bay, however, they would not be able to readily identify the remains.	Local
Phase 3	Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)	The existing modern seawall currently situated within the study area which dates from the 1980s is not assessed.		

Criterion e) *An item has **potential to yield information** that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);*

Table 13: Potential for seawall remains to yield new information under criterion (e).

Period	Date Range	Seawall / Assessment / Significance		
Phase 1	European Settlement (1788 – 1870)	Possible undocumented seawall remains relating to domestic or commercial use of the study area during the initial development period of Darling Harbour.	Little is known about the maritime usage of the western shoreline during Phase 1 as it was generally unrecorded. While there is some photographic evidence of maritime infrastructure, archaeological remains such as a seawall would greatly contribute to our understanding of development in this part of Darling Harbour.	Local
Phase 2	Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)	North-South Sandstone Seawall (mid 1870s-early 1880s)	There is very little historic information regarding the sandstone seawall on the western side of Cockle Bay. Any archaeological remains will contribute to our knowledge of materials and construction methods used, as well as to a greater understanding of seawall construction not commonly documented in the archaeological record.	Local
		Monier Trestle & Plating Seawall (1920s)	Remains of Monier trestle and concrete plates may provide additional information on the adaption of existing seawalls in Sydney Harbour in the early 20th century using a new technology.	Local
Phase 3	Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)	The existing modern seawall currently situated within the study area which dates from the 1980s is not assessed.		

Criterion f) *An item possesses **uncommon, rare or endangered** aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);*

Table 14: Potential to possess uncommon, rare or endangered aspects of history under criterion (f).

Period	Date Range	Seawall / Assessment / Significance		
Phase 1	European Settlement (1788 – 1870)	Possible undocumented seawall remains relating to domestic or commercial use of the study area during the initial development period of Darling Harbour.	Potential seawall remains dating to the construction of Newstead House in the early 1830s would provide a relatively rare example of early colonial maritime infrastructure, demonstrating construction techniques and material selection.	Local
Phase 2	Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)	North-South Sandstone Seawall (mid 1870s-early 1880s)	The archaeological resource that is the sandstone seawall can be considered to be a finite resource relating to a specific form of maritime infrastructure in Sydney.	Local
		Monier Trestle & Plating Seawall (1920s)	Monier trestle and plating seawalls were an innovative response to engineering and public health issues using a new technology, and such recorded remains are uncommon. Remains, if they exist at all, may be fragmentary.	Local
Phase 3	Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)	The existing modern seawall currently situated within the study area which dates from the 1980s is not assessed.		

Criterion g) *An item is important in* ***demonstrating*** *the* ***principal characteristics of a class of NSW's cultural or natural*** *places; or cultural and natural environments.*

Table 15: Seawall remains demonstrate principal characteristics under criterion (g).

Period	Date Range	Seawall / Assessment / Significance		
Phase 1	European Settlement (1788 – 1870)	Possible undocumented seawall remains relating to domestic or commercial use of the study area during the initial development period of Darling Harbour.	Potential seawall remains dating to the early/mid 1800s are likely to be buried under reclamation, in which case the design characteristics would be intact.	Local

Phase 2	Growth and Expansion of the Darling Harbour Railway Goods Yard (1870 – 1960s)	North-South Sandstone Seawall (mid 1870s-early 1880s)	It is likely that much of the sandstone seawall is intact under reclamation within the study area and is likely to retain the principal characteristics of its type or design.	Local
		Monier Trestle & Plating Seawall (1920s)	Remains, if they exist at all, may be fragmentary and therefore its principal characteristics are not likely to be well preserved.	Local
Phase 3	Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s – Present)	The existing modern seawall currently situated within the study area which dates from the 1980s is not assessed.		

Statement of Cultural Significance

Potential Seawalls from Phase 1

Nineteenth century seawalls were rarely or poorly documented in the historic record, hence archaeological remains are a crucial source of information regarding their design, construction, and material choices. Early Darling Harbour seawalls may yield information about how the first European settlers designed such infrastructure, as they adapted to a new environment.

As such, the remains of any seawalls dating to the Phase 1 historical period would be of ***Local significance***.

North-South Sandstone Seawall

Information regarding seawalls constructed between the 1850s and 1890s in Cockle Bay is only available from the archaeological record. Even from the 1900s, plans of the seawalls do not distinguish the type of seawall or whether the rat-proofed seawalls were existing, upgraded, or newly constructed. Any archaeological remains are a finite resource relating to a specific form of maritime infrastructure in Sydney and will contribute to a greater understanding of seawall construction rarely documented in the archaeological record.

As such, the remains of the North-South Sandstone Seawall is of ***Local significance***.

Monier Trestle & Plating Seawall

Wharves and seawalls were constructed on private holdings until 1900 when Sydney Harbour Trust undertook improvement and rat-proofing, including upgrading of timber sheet piling with Monier trestles and concrete plates. Reinforced concrete was a new technology and provided a solution for engineering and public health problems. Archaeological remains may yield information on the adaption of seawalls which may not be available in the historic record.

As such, the remains of Monier Trestle and Plating seawalls are of ***Local significance***.

5.2.3 Other Site Types

Shipwrecks

There is a very low likelihood for any shipwreck remains to be present within the study area, along with remains of other unidentified and unrecorded shipwrecks. These shipwrecks would all have had an industrial purpose for being in Darling Harbour. Any wrecked vessels would likely have been stripped of cargo, superstructure and/or usable equipment. Industrial vessels may have been personalised for a specific task but generally conformed to certain types. However, they were also likely to have more obvious repairs than recreational vessels. Wrecks can demonstrate the sequence of maintenance that the vessel has undergone in its working life. Vessels may also be associated with specific industries or businesses related to the western side of Darling Harbour.

The significance of such a wreck will vary according to its age, manner of construction and more importantly its state of preservation. The Barangaroo wreck (UDHB1) recovered during the construction of the Barangaroo Metro Station in 2018 has been assessed to be of State and possibly National significance.[57]

[57] **Casey and Lowe July 2022** Sydney Metro Project: Barangaroo X – Volume 2 - UDHB1 'Barangaroo Boat' Excavation Report. Prepared for Sydney Metro

6 MARITIME ARCHAEOLOGY IMPACT ASSESSMENT

6.1 Proposed works

Only the proposed works which may impact the seabed westward of the current seawall and the former seabed under reclamation are assessed in this report. Based on available information the identified forms of works which could have such an impact are the proposed bulk excavation.

It is understood that bulk excavation will be undertaken to facilitate the construction of a multi-level basement carpark. It is understood that the basement construction will require excavation to depths of approximately 16 m below the existing ground surface (Figure 39).[58]

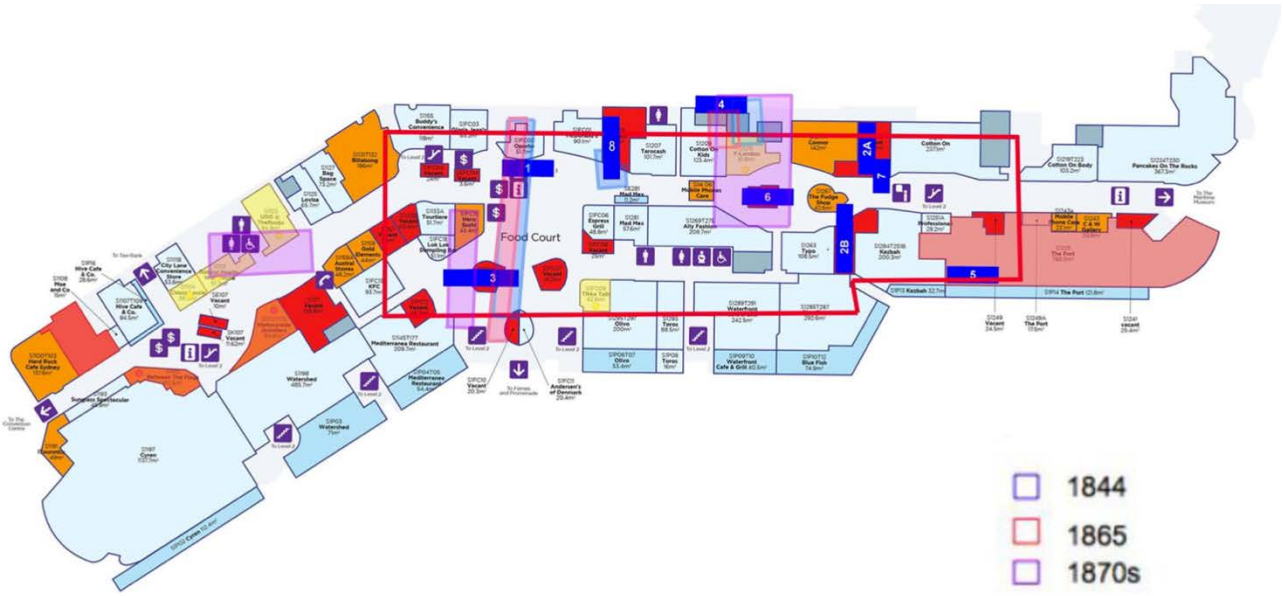


Figure 39 : Location of proposed basement (red outline). Top of image is west and the numbered rectangles are test trench location proposed by Curio Projects.[59]

6.2 Potential Impacts

6.2.1 Bulk Excavation

The areas where bulk excavation is proposed which will intersect the former seabed interface with the fill are what is assessed in this report (Figure 40). The footprint of the proposed area of fill will possibly impact the location of the former slipway and possible jetty associated with Newstead House. The majority of the area impacted however will be former seabed that was not fully reclaimed until the 1870s. In this area there are likely to be moorings and archaeological deposits formed by discard from passing and moored vessels. It seems that the proposed excavation avoids impacting the alignment of the former 1870s sandstone seawall, however deadman anchors and ties associated with this wall could be impacted.

The act of bulk excavation will remove all archaeological material from its context. It will also require the removing, breaking and/or truncating of archaeological structures within the excavation envelope which may destroy a substantial part, or all, of such structures and deposits.

[58] Op. Cit., **Douglas Partners March 2021** : 1
[59] **Curio Projects, December 2021** Harbourside, Darling Harbour – Archaeological Research Design : Figure 4-1

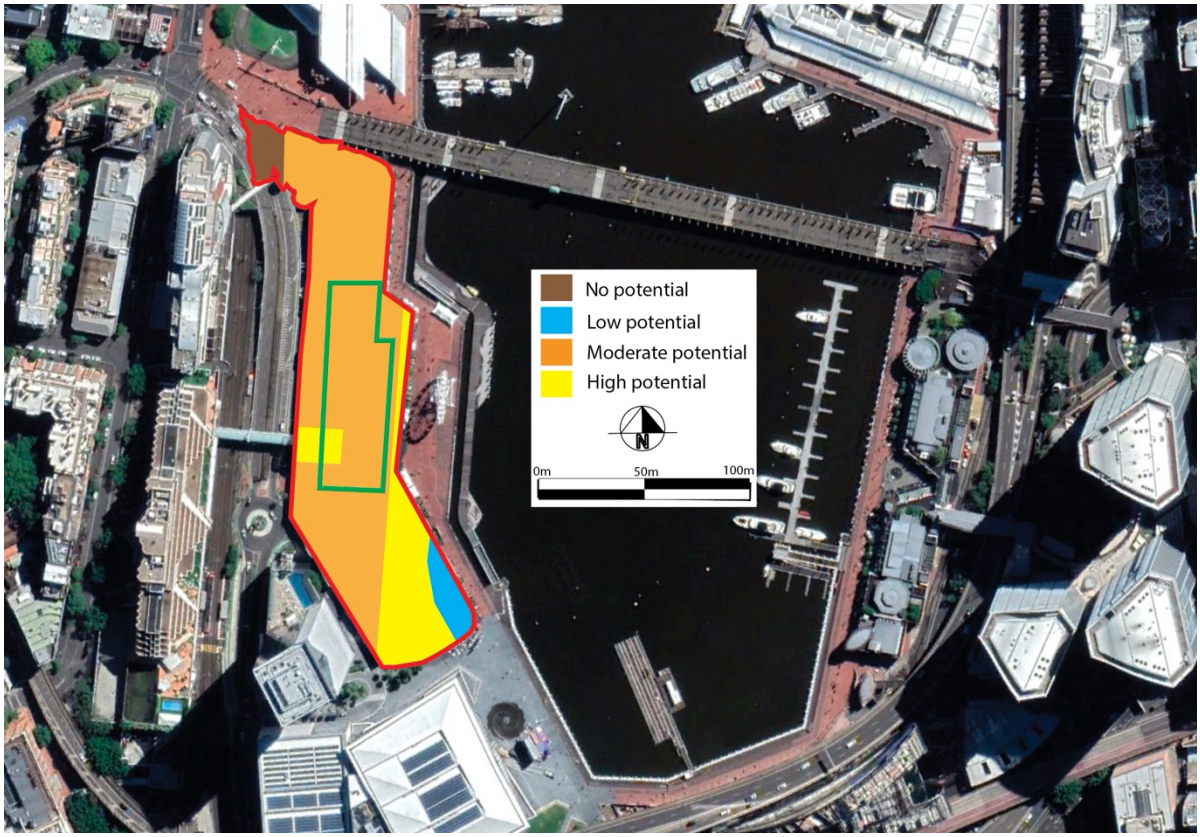


Figure 40: Footprint of proposed basement excavation (green line) overlayed onto areas of maritime archaeological potential.

6.3 Statement of Heritage Impact

Based on the NSW Heritage Office Manual 'Statements of Heritage Impact', an impact assessment for an item of heritage significance must address a number of questions relevant to the proposed works.[60] These questions help to ascertain whether all options have been explored prior to the proposed works taking place and whether the proposed option will have an acceptable or unacceptable impact on the heritage significance of the item.

What aspects of the proposal respect or enhance the heritage significance of the item/study area?

There are no aspects of the proposed works that enhance the heritage significance of the archaeological remains associated with the former wharves and related material present on the western side of Cockle Bay.

What aspects of the proposal could have a detrimental effect on the heritage significance of the item/study area?

The bulk excavation for the basement will remove features and archaeological deposits on the former seabed prior to the reclamations in the 3rd quarter of the 19th century. Such archaeological features may include the former underwater portions – and associated archaeological deposits - of the potential slipway and jetty associated with Newstead House, as well as the wharf documented as being partly built in 1833. The archaeological remains

[60] NSW Heritage Office and Department of Urban Affairs and Planning, 2002, *Statements of Heritage Impact.*

associated with the shipbuilding activities of Atlas Engineering Works, if present, would also be impacted.

The impact to the heritage values of these archaeological resources assessed to be of Local significance would be detrimental if unmitigated.

Also removed across the majority of the excavation footprint will be any moorings, associated archaeological deposits, general discards and potential undocumented maritime infrastructure pre-dating the 1870s. The impact to the heritage values of these archaeological resources assessed to be of Local significance would be detrimental if unmitigated.

Though it appears unlikely that the basal remains of the1870s sandstone seawall will be impacted by the excavation of the basement, the deadman anchors and ties associated with this wall could be removed. The impact to the heritage values to this archaeological resource assessed to be of Local significance would be detrimental if unmitigated.

Mitigation measures which would reduce the assessed impacts to an acceptable level are presented in **Section 6.4.**

Have more sympathetic options been considered and discounted? Why?

No. At present the presence and condition of the predicted maritime archaeological remains is not known. As these resources are below the water table, archaeological test excavations carried out early 2022 were not able investigate and determine their nature. As these remains, should they be present, are assessed to be of Local significance an archaeological investigation (see below) during the construction phase is a proportionate response and once their condition is understood sympathetic options could be considered.

Are the proposed changes sympathetic to the heritage item/study area? In what way? (e.g. form, proportions, design)

Not relevant (see above).

Is the assessed impact acceptable / can it be mitigated?

The assessed impact to areas of High archaeological potential – those remains that may be associated with Newstead House in the southwestern corner of the excavation footprint - are unacceptable without mitigation. Mitigation which would reduce the severity of the impact to acceptable would be an archaeological excavation where these remains are likely to be situated.

The assessed impact to areas of Moderate archaeological potential – the former seabed which would contain moorings and associated archaeological deposits - are unacceptable without mitigation. Mitigation which would reduce the severity of the impact to acceptable would be a sampling programme comprising of number of archaeological trenches across the excavation footprint and archaeological monitoring of the bulk excavation until bedrock is reached.

Any impact to the 1870s sandstone seawall and the associated deadman anchors and ties would be unacceptable without mitigation. Mitigation which would reduce the severity of the impact to acceptable would be archaeological monitoring of the bulk excavation until bedrock is reached.

Mitigation measures which would reduce the assessed impacts to an acceptable level are presented in **Section 6.4.**

6.4 Mitigation Measures

6.4.1 Archaeological excavation of the potential maritime infrastructure associated with Newstead House.

An archaeological excavation should be undertaken on the former seabed within the vicinity of the potential maritime infrastructure associated with Newstead House. This would be undertaken during the construction phase when the basement footprint would be gradually dewatered. This excavation would very likely be a continuation of the non-Aboriginal archaeological excavation that would be undertaken in the reclamation fill overlaying it – that is the excavation would continue under the reclamation layers and into the marine sediments.

6.4.2 Archaeological sampling across the former seabed.

The purpose of the sampling is to obtain an understanding of the maritime related activities that took place in this part of Darling Harbour in the early to mid- 19th century. This would supplement the poorly documented activities in this area during this time, especially with regards to George Bunn's mercantile activities.

Approximately 7.5% (around 24 sqm) of the former seabed within the basement footprint should be sampled focusing on the vicinity of the potential maritime infrastructure associated with Newstead House. Sampling would commence when the former seabed is exposed and the sample area has been sufficiently de-watered. The sampling would take the form of trenches manually and/or mechanically excavated to depths of around 1.5 m below the surface of the exposed marine sediments. Selective sieving of the excavated material would also be undertaken.

6.4.3 Archaeological monitoring during bulk excavation.

The purpose of the monitoring is to ensure that hitherto undocumented maritime infrastructure and wrecks are recorded and treated in proportion to their significance in the event of their discovery. Monitoring would also cover the area where the deadman anchors and ties associated with the 1870s sandstone wall would be situated. These features if discovered would be documented and the locations recorded by the archaeologist before removal.

6.4.4 Archaeological Research Design and Excavation Methodology.

An Archaeological Research Design and Excavation Methodology (ARD) for the archaeological works during bulk excavation should be prepared which provides further detail on the mitigation measures presented in the previous section. The ARD should include:

- Further details on the proposed works
- Research questions based on a comparative analysis of archaeological resources recorded at similar sites.
- Details of the excavation, sampling and recording methods
- Artefact management
- Post excavation analysis and reporting
- Nominated team

It is expected that an Archaeological Research Design and Excavation Methodology will be prepared for the non-Aboriginal historical archaeology component of this project. It is recommended that the maritime and historical ARD be incorporated into one document.

7 CONCLUSION AND RECOMMENDATIONS

The key findings of this MAA are as follows:

- In response to the Future Environmental Assessment Requirements, Condition C28(d) of Development Consent SSD 7874 stipulates that a qualified maritime archaeologist must be engaged to prepare a maritime archaeological assessment (MAA).
- Documented land usage on the western side of Darling Harbour didn't commence until the 1830s. This began with the construction of a sandstone homestead at the waterfront property of Sydney merchant Captain George Bunn, known as Newstead House, or Bunn's House.
- The sustained economic growth of the 1860s and early 1870s led to increased prosperity in the NSW colony, culminating in an era of building boom and substantial port expansion.
- For a brief period between 1878 and 1882, Atlas Engineering undertook shipbuilding activities within the study area, constructing two iron torpedo boats for the NSW Colonial Navy.
- After the bubonic plague in 1900, the Sydney Harbour Trust began a program of 'rat-proofing' wharves and other maritime infrastructure.
- A total of three (3) former wharves have been identified that are likely to have been situated within, or very close to, the current Harbourside study area. A stone seawall from the 1800s likely runs north south though the study area but outside the bulk excavation footprint.
- Potential maritime archaeological sites include remnants from slipways or jetties from Bunn's use of the site.
- Geotechnical investigations concluded that the site is underlain by between 2.7 m and 11.9 m of fill which appears to have been placed over either a thin layer of natural soil (marine sediment) or bedrock.
- Based on available information the identified forms of works which could have a major impact are the proposed bulk excavation.
- The bulk excavation for the basement will remove features and archaeological deposits on the former seabed prior to the reclamations in the 3rd quarter of the 19th century. Such archaeological features may include the former underwater portions – and associated archaeological deposits - of the potential slipway and jetty associated with Newstead House, as well as the wharf documented as being partly built in 1833. The impact to the heritage values of these archaeological resources assessed to be of Local significance would be detrimental if unmitigated. See recommendations for acceptable mitigation.
- The assessed impact to areas of High archaeological potential – those remains that may be associated with Newstead House in the southwestern corner of the excavation footprint - are unacceptable without mitigation. See recommendations for acceptable mitigation.

7.1 Recommendations

Based on the above findings it is recommended that the following steps be undertaken:

- *Archaeological excavation of the potential maritime infrastructure associated with Newstead House during the construction phase when the basement footprint would be gradually dewatered.*
- *Archaeological sampling across the former seabed focusing on the vicinity of the potential maritime infrastructure associated with Newstead House. Around 24 sqm*

(7.5% of former seabed within the basement footprint) to be excavated manually and/or mechanically when the former seabed is exposed.

- *Maritime archaeological monitoring during bulk excavation.*
- *Preparation of an Archaeological Research Design and Excavation Methodology for the archaeological works during bulk excavation (ARD). The ARD should include:*
    - *Further details on the proposed works*
    - *The nominated team*
    - *Research questions based on a comparative analysis of archaeological resources recorded at similar sites.*
    - *Details of the excavation and recording methods*
    - *Artefact management*
    - *Post excavation analysis and reporting*

REFERENCES

Archival Images

Adastra Aerial Survey, May-June 1943, Commissioned by NSW Main Roads Department; available from NSW Land and Property Information, SIX viewer http://maps.six.nsw.gov.au/

Anon, n.d., "Construction of a "rat proof" wall at Darling Harbour, NSW." NSW State Records, Digital ID: 9856_a017_A017000009.

Anon, n.d., "View of a rat-proofed wall." NSW State Records, Digital ID: 9856_a017_A017000018.

Anon, 1822, *Plan of the town and suburbs of Sydney, August, 1822,* Ferguson Collection, Map 107, State Library of New South Wales.

Anon., c.1840, "Albion Mills (Darling Harbour) c.1840", archival print, State Library of New South Wales, available https://shop.sl.nsw.gov.au/albion-mills-darling-harbour-c-1840/, accessed 10 August 2017.

Anon, 1866, "Views of Sydney and N.S.W. No. 58. Darling Harbour, East Side, 1866." Dixson Library, State Library of New South Wales, Image No. DL PX 148.

Anon, 1902, "Views of Sydney and N.S.W. No. 46. Pyrmont Bridge." Dixson Library, State Library of New South Wales, Image No. DL PX 146.

Anon, 1907, "Pyrmont Bridge." Geoff Ward collection, NSW Transport - Roads and Maritime Services archives, Image No. H032110.

Anon, 1909, "Darling Harbour, 1909." City of Sydney Archives, Graeme Andrews "Working Harbour" Collection; 79983. MSBK 451.

Anon, 13th September 1918, "Construction of new No. 35 Darling Harbour." Government Printing Office Collection, State Library of NSW, Image No. GPO/1-21067.

Anon, 13th September 1918, "Construction No. 36, Darling Harbour." NSW State Library, NSW Government Printing Office Series, Image MSBL810, Digital # d1_21066.

Anon, 18th December 1918, "No. 36 Darling Harbour under construction." Government Printing Office Collection, State Library of NSW, Image No. GPO/1-21062.

Anon, 24th February 1919, "Cross Wharf, No. 35-36, Darling Harbour." NSW State Library, NSW Government Printing Office Series, Image MSBL907, Digital # d1_25064.

Anon, 5th June 1919, "Seawall between No.35 & 36, Darling Harbour." NSW State Library, NSW Government Printing Office Series, Image MSBL908, Digital # d1_25066.

Anon, 1930s, "The coastal cargo ship *Craigend* departing wharf 37B, Darling Harbour, during the 1930s." Sam Hood Collection, Australian National Maritime Museum.

Anon, 1984, "Darling Harbour." Sydney Reference Collection, City of Sydney Archives, Image No. 071490.

Anon, 1988, "Aerial view of Darling Harbour." Sydney Reference Collection, City of Sydney Archives, Image No. 031482.

Bayliss, C., ca. 1890s, "Union Wharf, Darling Harbour, New South Wales." Collection of photographs of New South Wales, ca. 1876-1897, National Library of Australia, Image pic-vn4193945-v.

City of Sydney Council, Surveyor's Department, 1865, *Trigonometrical Survey of Sydney; Sections E & W, 1865.* City of Sydney Archives – Digital Information http://www.photosau.com.au/CoSMaps/scripts/home.asp

City of Sydney, 1958, *City of Sydney Planning Scheme.* "Historical Atlas of Sydney." City of Sydney Archives – Digital Information http://www.photosau.com.au/CoSMaps/scripts/home.asp

Foster, A. E., 1923, "Panorama of Darling Harbour and Pyrmont Bridge from Pyrmont, 1923." Box 32, No. 357, Series 06; Sydney views, ca. 1916-1947, State Library of New South Wales.

Great Britain Parliament, House of Commons, Select Committee on Transportation, 1836, Plan of Sydney with Pyrmont, New South Wales: the latter the property of Edwn Macarthur Esqre, divided into allotments for building, 1836. National Library of Australia, Map T 1551.

Mitchell, Sir. T., Lt. Coll.; Surveyor General, 1853, Trigonometrical survey of Port Jackson: commenced as a military survey by order of General Darling and continued as civil duties permitted or required. Engraved by J. W. Lowry. T. & W. Boone, New Bond Street, London. National Library of Australia MAP RM 1267; Tile C1.

NSW Department of Lands, 1895, *City of Sydney, Sections 21 & part of 30, 2nd ed., 1895 (Sydney Metropolitan Detail Series).* Lithographed & printed at the Surveyor General's Office Sydney N.S.W. State Library NSW, Digital Order No. a1367424.

NSW Roads and Bridges Branch, 1900, Darling Harbour Resumptions, Showing by red tint part of land resumed in connection with the Darling Harbour Improvement Scheme, City of Sydney, Within Section 21 and part of Section 30 (Plan K). City of Sydney Archives – Digital Information http://www.photosau.com.au/CoSMaps/scripts/home.asp

NSW Department of Lands, 1970, *Parish of St Andrew, County of Cumberland.* 2nd Edition. NSW Land & Property Information.

Putnam, C., 1969, "Darling Harbour, 1969." Contributed by G. Putnam, *Dictionary of Sydney.* http://dictionaryofsydney.org/item/20947

Sheilds, F. W., 1844, *Map of the City of Sydney, New South Wales.* "Historical Atlas of Sydney." City of Sydney Archives – Digital Information http://www.photosau.com.au/CoSMaps/scripts/home.asp

Walsh, H. D and S. E. Perdriau / Sydney Harbour Trust, 1907, Map of part of the water frontage of the City of Sydney showing parts of the land and wharfage vested in the Sydney Harbour Trust Commissioners. State Library of New South Wales, Image No. Z/M3 811.15/1907/1.

Walsh, H. D and S. E. Perdriau / Sydney Harbour Trust, 1911, *Map of part of the water frontage of the Port of Sydney showing parts of the land and wharfage vested in the Sydney Harbour Trust Commissioners.* State Library of New South Wales, Image No. Z/M3 811.15/1911/1.

Walsh, H. D and S. E. Perdriau / Sydney Harbour Trust, 1919, *Map of part of the water frontage of the Port of Sydney showing parts of the land and wharfage vested in the Sydney Harbour Trust Commissioners.* State Library of New South Wales, Image No. Z/M3 811.15/1919/1.

Secondary Sources

Attenbrow, V., 1987, *The Upper Mangrove Creek Catchment: a study of quantitative change in the archaeological record.* Unpublished PhD Thesis, University of Sydney.

Attenbrow, V., 1990, *The Port Jackson Archaeological Project: Stage 1.* Unpublished report to the NSW National Parks and Wildlife Service.

Attenbrow, V., 2002a, *Sydney's Aboriginal Past: Investigating the Archaeological and Historic*

Records. UNSW Press, Sydney.

Attenbrow, V., 2002b, *Resource and land use patterns around Sydney Harbour.* Unpublished seminar, Australian Museum, Prehistoric and Historical Archaeology Department.

Attenbrow, V. and D. Steele, 1995, "Fishing in Port Jackson, New South Wales – more than meets the eye." *Antiquity.* V. 69: 47-60.

Birch, G. F., 2007, "A short geological and environmental history of the Sydney estuary, Australia." In Birch, G. F. (ed) *Water, Wind, Art and Debate*, Sydney University Press, The Sydney University.

Bowdler, S., 1970, *Bass Point: the excavation of a south-east Australian shell midden, showing cultural and economic change.* Unpublished BA (Hons) Thesis, Sydney University.

Bureau of Meteorology, Australian Government, 2017a, 'Tide Predictions for Australia, South Pacific and Antarctica', available http://www.bom.gov.au/australia/tides, accessed 22 August 2017.

Bureau of Meteorology, Australian Government, 2017b, 'Sydney, New South Wales, August 2017 Daily Weather Observations', available http://www.bom.gov.au/climate/dwo/IDCJDW2124.latest.shtml, accessed 22 August 2017.

Casey and Lowe July 2022 *Sydney Metro Project: Barangaroo X – Volume 2 - UDHB1 'Barangaroo Boat' Excavation Report.* Prepared for Sydney Metro

Coffey Corporate Pty Ltd, 2016, *Proposed Development (CBW Project) at Cockle Bay: Initial Geotechnical Assessment*, report for DPT Operatory Pty Ltd.

Cosmos Archaeology Pty Ltd, May 2015*, Cockle Bay Marine Structures Redevelopment: Maritime Archaeological Survey and Statement of Heritage Impact*, report for Sydney Harbour Foreshore Authority.

Cosmos Archaeology Pty Ltd September 2017 *Cockle Bay park Development; Maritime Archaeological Assessment*. Prepared for Thelem Consulting on behalf of DPT Operator Pty Ltd as trustee of the Darling Park Trust and DPPT Operator Pty Ltd as trustee of the Darling Park Property Trust.

Curio Projects, December 2021 *Harbourside, Darling Harbour – Archaeological Research Design.* Prepared for Mirvac

Douglas Partners September 2021 *Interim Report on Geotechnical Investigation, Cockle Bay Park Redevelopment 241 – 249 Wheat Road, Sydney*. Prepared for DPTY Operator Pty Ltd

Enstruct Group Pty Ltd, July 2017, *Cockle Bay Park Structural Drawings*, prepared for DPT Operator Pty Ltd & DPPT Operator Pty Ltd.

Enstruct Group Pty Ltd, August 2017, *Cockle Bay Park Structural Engineering Report*, prepared for DPT Operator Pty Ltd & DPPT Operator Pty Ltd.

FJMT Studio, 2017, *Cockle Bay Development*, draft report for GPT, Brookfield and AMP: 90-101.

GML Heritage, August 2017a, *Cockle Bay Park: Historical Archaeological Assessment,* draft report prepared for DPT and DPPT.

GML Heritage, August 2017b, *Cockle Bay Park: Aboriginal Heritage Due Diligence Report*, prepared for DPT and DPPT.

Harris, P. and O'Brien, P., December 1998, *Australian Ports Environmental Data and Risk Analysis. Phase 1; Literature Review,* Prepared for Australian Quarantine Inspection Service (AQIS) Petroleum and Marine Division, Australian Geological Survey Organisation, Canberra, ACT.

Hiscock, P., 2008, *Archaeology of Ancient Australia*. London and New York: Routledge.

JBA, 2016, *Environmental Impact Statement: State Significant Development Application: 241-249 Wheat Road, Cockle Bay (SSD 7684): Cockle Bay Wharf Redevelopment*, report for Department of Planning on behalf of DPT and DPPT Operator Pty Ltd: iii.

Kohen, J.L., E.D. Stockton and M.A.J. Williams, 1984, "Shaws Creek KII Rockshelter: a prehistoric occupation site in the Blue Mountains piedmont, eastern New South Wales." *Archaeology in Oceania.* Vol. 19: 57-93.

Lampert, R.J., 1971, "Burrill Lake and Currarong." *Terra Australis 1.* Department of Prehistory, Australian National University, Canberra.

Lourandos, H. and A. Ross, 1994, "The great 'Intensification Debate': Its history and place in Australian archaeology." *Australian Archaeology* 39:54-63.

Macdonald Wagner, 1985, "Darling Harbour Development Project: Waterfront Promenade: Existing Structures and Outfalls Plan", for Leighton Contractors Pty Ltd on behalf of New Darling harbour Authority, as found in **Enstruct Group Pty Ltd, August 2017**, *Cockle Bay Park Structural Engineering Report*, prepared for DPT Operator Pty Ltd & DPPT Operator Pty Ltd: 14.

Multiplex, Brookfield and AMP Capital, August 2017, *DP5-CMP-SK02 Construction Staging Plan Part 1 for Cockle Bay Park Project,* prepared for DPT Operator Pty Ltd & DPPT Operator Pty Ltd.

Nanson, G.C. *et al*., 1987, "Chronology and paleoenvironment of the Cranebrook Terrace (near Sydney) containing artefacts more than 40,000 years old." *Archaeology in Oceania.* Vol. 22 (2): 72-78.

Nutley, D. M., 2005, *Surviving Inundation: An examination of environmental factors influencing the survival of inundated Indigenous sites in Australia within defined hydrodynamic and geological settings.* Unpublished thesis (MA Maritime Archaeology), Department of Archaeology, Flinders University, South Australia.

Roy, P.S., 1981, "Quaternary Geology." in Herbert C, (ed.) *Geology of the Sydney, 1:1000,000 Sheet 9130.* Geological Survey of New South Wales, Sydney.

Roy P.S., Zhuang, W., Birch, G. F., Cowell, P.J. and Li, C., 1997, *Quaternary geology of the Forster-Tuncurry coast and shelf, Southeast Australia*. Geological Survey of New South Wales, Department of Minerals Resources, Sydney.

Sale, C., 2000, "Sydney: Olympic City 2000" *Geography Bulletin.* (Summer).

Stockton, E.D. and W.N. Holland, 1974, "Cultural sites and their environment in the Blue Mountains." *Archaeology and Physical Anthropology in Oceania.* Vol. 9: 36-64.

Thom, B.G., and P.S. Roy, 1985, "Relative sea levels and coastal sedimentation in southeastern Australia in the Holocene." *Journal of Sedimentary Petrology.* Volume 55 (2)

Vinnicombe, P., 1980, "Predilection and Prediction: A Study of Aboriginal Sites in the Gosford-Wyong Region." Unpublished report to the NSW National Parks and Wildlife Service.

Walsh, H.D., 1911, *Notes on Harbour Engineering.* A Paper read before the Sydney University Engineering Society on 8th November 1911.

Weir Phillips Heritage, August 2017, *Heritage Impact Statement: Cockle Bay Park Redevelopment: 241-249 Wheat Road, Cockle Bay*.

Weir Phillips Heritage 2021. *Cockle Bay Redevelopment Heritage Interpretation Strategy*. Report to DPT Operator Pty Ltd and DPPT Operator Pty Ltd.

Williams, R. J., 2014, *Estuarine shorelines of southeastern Australia.* In Swapan, P. (ed) *Workbook for Managing Urban Wetlands in Australia.* Sydney Olympic Park Authority, NSW.

Williams, A.N., P. Mitchell, R.V.S. Wright and P.S. Toms, 2012, "A Terminal Pleistocene Open Site on the Hawkesbury River, Pitt Town, New South Wales. *Australian Archaeology.* No. 74.

Legislative Items and Guidelines

Australia ICOMOS Inc. 1999 *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance.* Article 1.2.

NSW Heritage Branch, 2000, Schedule of General Exceptions

NSW Heritage Branch, 2006, Standard Exceptions for Works Requiring Heritage Council Approval

NSW Heritage Branch, 2006, Schedule of Additional Exceptions

NSW Environment and Heritage, 2002, "Pyrmont Bridge", available http://www.environment.nsw.gov.au/heritageapp/HeritageItemImage.aspx?ID=5053337#ad-image-8, accessed 26 February 2015

NSW Environment and Heritage, 2002, "Corn Exchange", available www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?id=5050763, accessed 09 August 2017.

NSW Heritage Office, 2007, 'Maritime Heritage Online', NSW, available http://www.environment.nsw.gov.au/maritimeheritage/index.htm

NSW Heritage Office and Department of Urban Affairs and Planning, 2002, *Statements of Heritage Impact*