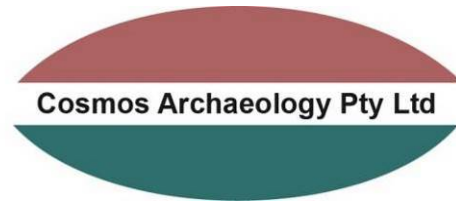


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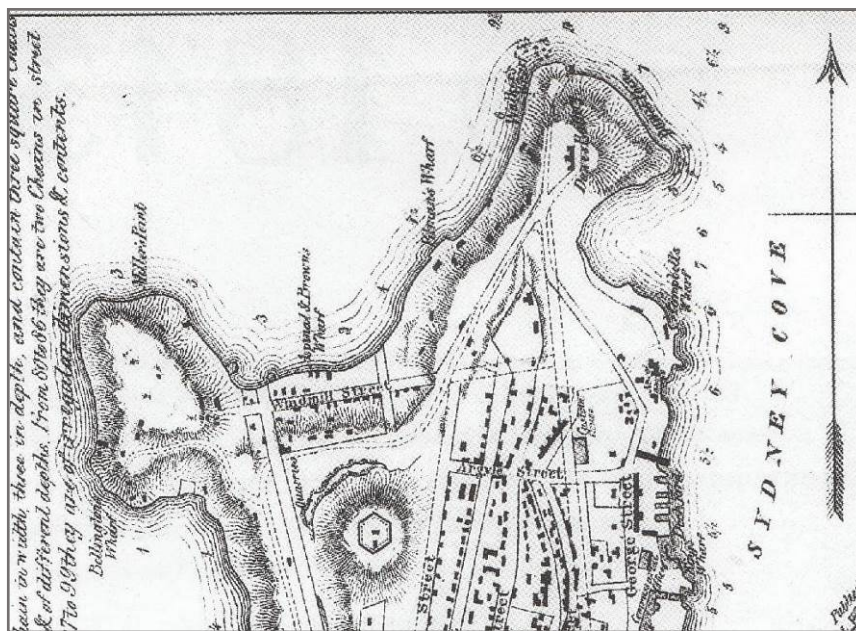
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## Walsh Bay Arts Precinct



## Maritime Archaeological Assessment and Management Plan

November 2016

Walsh Bay  
Dawes Point  
NEW SOUTH WALES

**Walsh Bay Arts Precinct  
Maritime Archaeological Assessment  
and Management Plan**

*Prepared for:*

Tropman and Tropman Architects  
On behalf of Tonkin Zulaikha Greer Architects

**By:**

Danielle Wilkinson  
Cosmos Coroneos

November 2016

Cosmos Archaeology Job Number J16/22

<i>Revision</i>	<i>Date</i>	<i>Prepared By</i>	<i>Approved By</i>	<i>Comments</i>
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## EXECUTIVE SUMMARY

Arts NSW is enhancing the arts precinct at Walsh Bay to expand and strengthen the existing cluster of cultural institutions and attractions along Sydney's harbour foreshore. This includes the creation of a new waterfront public square to become an innovative external platform for collaborative performances, festivals, public art, cafes, restaurants, commercial and community activities.

The area is of historical and archaeological significance to Sydney and the State of NSW. Tropman and Tropman Architects have engaged Cosmos Archaeology Pty Ltd to undertake the underwater aspect of the Archaeological Assessment and Management Plan in relation to the development of the proposed waterfront square to inform the requirements of the Stage 1 conditions of consent and Stage 2 Secretary's Environmental Assessment Requirements.

Underwater archaeological remains were identified within the study area through historical research and an underwater diver survey. The assessed significance and predicted density of these remains are detailed in the table below.

Identified Underwater Archaeological Remains	Predicted Density	Significance
<ul style="list-style-type: none"> <li>Cultural deposits prior to wharf development</li> </ul>	Negligible – higher densities towards the southern part of the study area	Not assessed
<ul style="list-style-type: none"> <li>Wharf elements from Pitman's Wharf (later Alger's Wharf)</li> <li>Cultural deposits from Pitman's Wharf (later Alger's Wharf) and/or moored vessels</li> </ul>	Low – higher densities within the footprint of Pitman's Wharf decreasing with distance from the wharf. Also lower densities in the berths of Pier 3 and Wharf 4.	State significance
<ul style="list-style-type: none"> <li>Wharf elements from Hoffnung's Wharf (later Parbury's Wharf 3)</li> <li>Cultural deposits from Hoffnung's Wharf (later Parbury's Wharf 3) and/or moored vessels</li> </ul>	Low to medium – higher densities within the footprint of Hoffnung's Wharf decreasing with distance from the wharf. Also lower densities in the berths of Pier 3 and Wharf 4.	State significance
<ul style="list-style-type: none"> <li>Wharf elements from Pier 2/3 and Wharf 4/5 during the operational years of the wharves until the 1970s</li> <li>Cultural deposits from Pier 2/3 and Wharf 4/5 during the operational years of the wharves until the 1970s</li> </ul>	Medium – higher densities from the final operational years closer to Pier 3, Wharf 4 and the timber apron linking the two. Lower densities from early and middle years of operation due to dredging.	Local Significance
<ul style="list-style-type: none"> <li>Shipwreck material from the tug <i>Undine</i></li> </ul>	Low – higher towards Wharf 4 although the exact location of the wrecking event is not known.	Local significance

It has been assessed that the indicative plan for piling and impacts to the seabed for the proposed waterfront square would have a minor impact on the cultural heritage significance of identified underwater archaeological remains. This impact could be further mitigated by an archaeological monitoring and recording programme. As such, based on the available information, the proposed piling has been assessed as an acceptable impact.

All of the remains of local or State significance are considered to be 'relics' under the *NSW Heritage Act 1977* and impacts to these items must be considered and managed

in any development of the waterfront square area. A number of guidelines have been provided for the management of the identified underwater archaeological remains. These are as follows:

***For Detailed Design of Proposed Works***

- Limit the number and size of piles to reduce the physical footprint of the development upon the seabed;
- Dredging works should not take place in this area if possible;
- Reclamation or deposition of sediment on the seabed is acceptable;
- A number of identified underwater archaeological remains have been identified in this Maritime Archaeological Assessment and Management Plan. When available, the detailed engineering subsurface works, including piling and any other services which may affect the sea floor in the waterfront square area, should be examined by a qualified maritime archaeologist in accordance with the Heritage Branch Guidelines to review the potential impact on the underwater archaeological remains identified in this report. An Archaeological Research Design and Method report should be prepared by a qualified maritime archaeologist in accordance with the Heritage Branch Guidelines prior to any construction works proceeding. This report will outline further work that may need to be undertaken such as, but not limited to:
  - Targeted remote sensing surveys;
  - Dive inspection(s) of a particular areas;
  - Archaeological excavation, and/or;
  - Archaeological monitoring during construction.
- There is no requirement to obtain permits under the *Environmental Planning and Assessment Act 1979* Section 89J (2) as it is a State significant development.

***For Mitigation during Development***

Mitigation measures are to be present in detail in the Archaeological Research Design and Method report to be implemented during the construction phase of the Development. The measures are likely to include but are not limited to:

- Contractors on site are to be given a Heritage Induction in order for them to be aware of the identified underwater archaeological remains within the works area identify possible relics;
- Engage a suitably qualified maritime archaeologist to monitor works if piling or other localised impacts to the seabed are to take place. Monitoring may be done on site or remotely if workers are fully briefed to identify possible relics;
- Engage a suitably qualified maritime archaeologist to be on site to monitor works if any dredging is to take place;
- Any cultural remains that may be relics should be recorded in detail by a suitably qualified maritime archaeologist, and;
- If a concentration of relics is discovered, works should stop and the archaeologist should have the opportunity to conduct a dive inspection of the area to record the site in detail prior to works commencing.

***For Interpretation***

- Historic plans of Walsh Bay showing old wharf structures would be useful in the interpretation the transforming coastline of Walsh Bay due to changing shipping activity and demands; and,
- Any relics recovered as part of proposed developments could be preserved and displayed as part of the interpretation of past structure and activities in Walsh Bay.

## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	1
<b>1 INTRODUCTION .....</b>	<b>1</b>
1.1 Background .....	1
1.2 Objectives .....	1
1.3 Methodology .....	2
1.4 Authorship .....	2
1.5 Previous Reports .....	2
1.6 Abbreviations Used .....	3
<b>2 SITE AND PROJECT DESCRIPTIONS .....</b>	<b>4</b>
2.1 The Site and Surrounds .....	4
2.2 The Project .....	5
2.3 The Study Area.....	8
<b>3 HISTORICAL BACKGROUND .....</b>	<b>9</b>
3.1 General History of Walsh Bay .....	9
3.1.1 <i>Phases of use</i> .....	10
3.1.2 <i>Phase 1 – A ‘vacant’ shore from 1788 to the early 1820s</i> .....	10
3.1.3 <i>Phase 2 – Beginnings of maritime commerce from the early 1820s to 1870</i> .....	11
3.1.4 <i>Phase 3 – Bulk overseas export from 1870 to 1900</i> .....	15
3.1.5 <i>Phase 4 – Government reconstruction from 1900 to present</i> .....	18
3.1.6 <i>The Tug Undine</i> .....	19
3.2 Description of the Seabed within the Study Area.....	20
3.3 Remote Sensing Data .....	21
3.4 Known Maritime Archaeological Remains within the Study Area .....	23
<b>4 SITE INSPECTION .....</b>	<b>27</b>
4.1 Objective.....	27
4.2 Dates and Personnel.....	27
4.3 Weather and Tide Conditions.....	27
4.4 Conduct of Inspection.....	28
4.5 Seabed Type .....	28
4.6 Transect Results.....	29
4.6.1 <i>Transect 1</i> .....	29
4.6.2 <i>Transect 2</i> .....	31
4.6.3 <i>Circle Search 1</i> .....	33
4.6.4 <i>Circle Search 2</i> .....	34
4.7 Summary of Results and Archaeological Potential .....	35
<b>5 ARCHAEOLOGICAL POTENTIAL .....</b>	<b>36</b>
5.1 Introduction.....	36
5.2 Underwater Archaeological Remains .....	36
5.2.1 <i>Phase 1 – A ‘vacant’ shore from 1788 to the early 1820s</i> .....	36
5.2.2 <i>Phase 2 – Beginnings of maritime commerce from the early 1820s to 1870</i> .....	36
5.2.3 <i>Phase 3 – Bulk overseas export from 1870 to 1900</i> .....	36
5.2.4 <i>Phase 4 – Government reconstruction from 1900 to present</i> .....	37
5.2.5 <i>Shipwrecks</i> .....	37
5.3 Summary .....	38
<b>6 ASSESSMENT OF HERITAGE VALUES.....</b>	<b>40</b>
6.1 State Heritage Criteria .....	40
6.2 Remains of the tug <i>Undine</i> – Evaluation of Cultural Significance .....	41
6.3 Wharves and Cultural Deposits from the 19 <sup>th</sup> Century to Early 20 <sup>th</sup> Century – Evaluation of Cultural Significance.....	43
6.4 Cultural Deposits from the Middle to Late 20 <sup>th</sup> Century – Evaluation of Cultural Significance .....	46

7	HERITAGE IMPACT .....	49
7.1	Proposed Development.....	49
7.2	Predicted Impact on the Cultural Heritage Significance of the Identified Underwater Archaeological Remains.....	49
7.3	Statutory Context.....	51
7.3.1	<i>Heritage Act 1977 (amended 1999)</i> .....	51
7.3.2	<i>Environmental Planning and Assessment Act 1979</i> .....	53
8	MITIGATION AND MANAGEMENT .....	56
8.1	Objectives.....	56
8.2	Discussion .....	56
8.3	Guidelines for Impact Management .....	58
8.3.1	<i>For Detailed Design of Proposed Works</i> .....	58
8.3.2	<i>For Mitigation during Development</i> .....	58
8.3.3	<i>For Interpretation of Heritage</i> .....	59
9	CONCLUSION.....	60
	ANNEX A – DIVE SURVEY RESULTS .....	62
	REFERENCES.....	67

# 1 INTRODUCTION

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## 1.1 Background

Cosmos Archaeology Pty Ltd have been engaged by Tropman and Tropman Architects to prepare the following maritime archaeological and management plan for the proposed waterfront square area in Walsh Bay. Arts NSW are enhancing the arts precinct at Walsh Bay to expand and strengthen the existing cluster of cultural institutions and attractions along Sydney's harbour foreshore. The site and project description is detailed in **Section 2**.

The Stage 2 Secretary's Environmental Assessment Requirements (SEARs) for this project included conditions to be met for Heritage and Archaeology as follows:

- Provide an Archaeological Assessment and Management Plan, prepared by a suitably qualified person, to assess the likelihood of significant historical, maritime and aboriginal archaeology on the site, how this may be impacted by the project and measures to mitigate impacts.
- Propose opportunities to interpret the site's heritage significance, and archaeology and historical association.

Condition B5 of the Stage 1 Development Consent for the project requires:

- Preparation of an Archaeological Assessment and Management Plan in accordance with Recommendations of Tropman and Tropman CMP Policy. Include an underwater visual survey and record any structural remains and/or cultural deposits associated with previous wharves.
- Any new piles associated with construction of the waterfront square are to be informed by Archaeological Assessment and Management Plan and demonstrate minimal disturbance to any archaeological fabric.

The Tropman and Tropman CMP Policy 9.2.1.2 to 9.2.1.5 states:

*9.2.1.2 Before any commencement of works a dive team under the supervision of a maritime archaeologist should be engaged to undertake an underwater visual survey within the site to locate and record any structural remains and/or cultural deposits associated with the previous wharves.*

*9.2.1.3 Any maritime archaeological items should be retained in-situ and conserved.*

*9.2.1.4 During any works to take place within the site, care should be taken where possible, to avoid any disturbance of the maritime archaeology.*

*9.2.1.5 In the event that any disturbances of the seabed or removal within the site have to take place a maritime archaeologist should be consulted.*

Tropman and Tropman Architects have engaged Cosmos Archaeology Pty Ltd to undertake the maritime aspect of the Archaeological Assessment and Management Plan. Wendy Thorpe at Cultural Resources Management has been engaged to undertake the Historical (land) and Aboriginal aspects of the assessment.

## 1.2 Objectives

The key objective of this report is to:

*Prepare a Maritime Archaeological Assessment and Management Plan for the waterfront square area between Pier 2/3 and Wharf 4/5 to satisfy the Stage 2 SEARs for Heritage and Archaeology, Stage 1 Condition B5 of the*

*Development Consent and items 9.2.1.2 to 9.2.1.5 of the Tropman and Tropman CMP Policy.*

### 1.3 Methodology

This Maritime Archaeological Assessment and Management Plan has been completed following the below methodology:

- Prepare a history of maritime infrastructure constructed at Walsh Bay Arts Precinct, including known and potential features present between Pier 2/3 and Wharf 4/5, using past heritage reports and additional historic research. Also review remote sensing data and identify any anomalies of potential cultural heritage significance. The findings are presented in **Section 3**.
- Conduct a maritime archaeological visual dive survey within the waterfront square area to identify exposed archaeological features and relics and assess the potential for underwater archaeological remains elsewhere. The results of the site inspection are presented in **Section 4**.
- Determine the archaeological potential of the area, presented in **Section 5**, and prepare statements of significance for all identified heritage items, in the form of archaeological remains, between Pier 2/3 and Wharf 4/5, as presented in **Section 6** Error! Reference source not found..
- Identify heritage impacts arising from the proposed development, presented in **Section 7**.
- Prepare mitigation measures and management guidelines for identified underwater archaeological remains, including advice on pile locations and the construction of the waterfront square, as presented in **Section 8**.

### 1.4 Authorship

This report was written by Danielle Wilkinson, Archaeologist at Cosmos Archaeology Pty Ltd. Cosmos Coroneos, Director at Cosmos Archaeology Pty Ltd, provided technical advice and assisted in the dive inspection.

### 1.5 Previous Reports

There are a number of previous heritage reports prepared for Walsh Bay. Cosmos Archaeology Pty Ltd has completed a variety of maritime archaeological assessments including the following:

- Cosmos P. Coroneos, September 1997, *Walsh Bay Redevelopment Maritime Archaeological Assessment of Wharves 6/7 and 8/9*, report for Walsh Bay Properties Pty Ltd.
- Cosmos Archaeology Pty Ltd, February 2000, *Re-Development of Pier 8/9, Walsh Bay, Maritime Archaeological Investigation*, report for Tropman and Tropman Architects.
- Cosmos Archaeology Pty Ltd, May 2000, *Demolition of Pier 6/7, Walsh Bay, Maritime Archaeological Inspection*, report for Tropman and Tropman.
- Cosmos Archaeology Pty Ltd, January 2002, *Re-Development of Pier 2/3, Walsh Bay, Maritime Archaeological Assessment*, report for Tropman and Tropman Architects.
- Cosmos Archaeology Pty Ltd, February 2002, *Re-Development of Pier 2/3, Walsh Bay, Maritime Archaeological Inspection of Copper Sheathed Piles*, report for Tropman and Tropman Architects.

- Cosmos Archaeology Pty Ltd, June 2005, *New Piling Works, Towns Place North, Walsh Bay, Maritime Archaeological Impact Assessment*, report for Tropman and Tropman Architects.

## 1.6 Abbreviations Used

The following abbreviations have been used throughout this report:

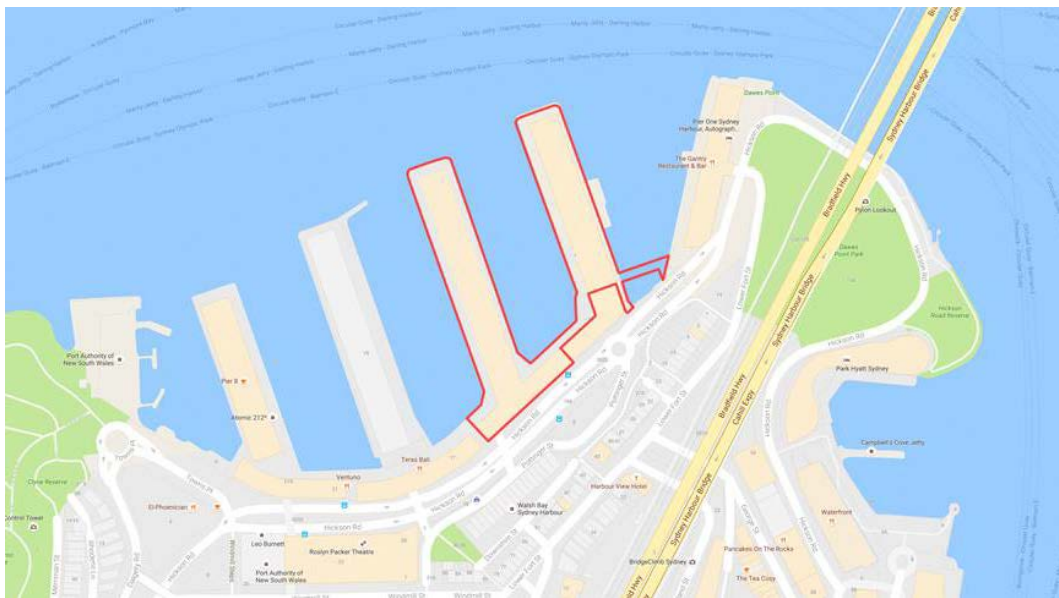
CMP	Conservation Management Plan
FSWR	Flexible Steel Wire Rope
LAT	Lowest Astronomical Tide
LEP	Local Environmental Plan
NSW	New South Wales
RSJ	Rolled Steel Joist (beam)
SEARs	Secretary's Environmental Assessment Requirements
SREP	Sydney Regional Environmental Plan
WBAP	Walsh Bay Arts Precinct

## 2 Site and Project Descriptions

### 2.1 The Site and Surrounds

The Walsh Bay Arts Precinct (WBAP) (the “site”) generally comprises Pier 2/3, Pier 4/5 and its shore sheds which make up Wharf 4/5, as well as the adjoining waterway. The site has a street frontage to Hickson Road. The site is shown in Figure 1 and Figure 2. The site is part of the Walsh Bay area which is located adjacent to Sydney Harbour within the suburb of Dawes Point. The site is located within the City of Sydney Local Government Area.

Walsh Bay is strategically located to the north of Sydney’s CBD in the vicinity of major tourist destinations including the Sydney Harbour Bridge, the historic areas of Millers Point and The Rocks, Circular Quay and the Sydney Opera House. The Barangaroo redevelopment precinct is located immediately to the south-west.



**Figure 1: Site Location** (Source: Google Maps)



**Figure 2: Aerial view.** (Source: [www.nearmap.com](http://www.nearmap.com))

Pier 2/3 is legally described as Lot 11 in DP 1138931 and Wharf 4/5 is legally described as Lot 65 in DP 1048377. The total area for these lots is 18,090sqm.

The land owner of the site is the Roads and Maritime Services (RMS). Both Pier 2/3 and Wharf 4/5 are occupied under various lease arrangements with Arts NSW, Department of Justice, primarily for arts and cultural uses.

The area of water that the project proposes to build over is also owned by RMS. Its land title description is Lot 12 in DP 1138931.

Walsh Bay comprises ten berths constructed between 1908 and 1922 for international and interstate shipping. These are collectively known as the Walsh Bay Wharves. The Walsh Bay Wharves Precinct is listed as an item on the State Heritage Register.

The Walsh Bay Wharves comprise the following:

- Pier One which contains the Sebel Pier One Sydney Hotel;
- Pier 2/3 the last remaining undeveloped pier (has previously received approval for cultural uses, temporary arts events and some commercial events);
- Wharf 4/5 which is occupied by the Sydney Theatre Company (STC), the Australian Theatre for Youth Program (ATYP), Sydney Dance Company (SDC), Bangarra Dance Theatre and the choirs comprising Gondwana, the Song Company and Sydney Philharmonia;
- Pier 6/7 which has been redeveloped for residential apartments and associated boat marina;
- Pier 8/9 which has been redeveloped for office uses; and,
- Shore sheds aligning Hickson Road which contain a range of commercial activities, including restaurants, bars, shops and offices.

## 2.2 The Project

The approved Stage 1 development application comprised:

- A new waterfront public square between Pier 2/3 and Wharf 4/5;

- A series of new stairs and balconies on Pier 2/3 and Wharf 4/5 and modification to the roof of Pier 2/3;
- The inclusion of new tenancy spaces in Pier 2/3 and Wharf 4/5 for arts and cultural activities; and,
- The use of the precinct for arts festivals, events and pop-ups and associated uses, including restaurants, cafes and bars.

The WBAP Stage 2 State Significant Development Application seeks consent for construction works for the above to realise the WBAP project, as well as the proposed external alterations and additions to all of Wharf 4/5. It also seeks consent for new commercial and event uses in the precinct. Key aspects of the proposed development are outlined below:

#### Early works

- Early construction works comprising infrastructure upgrades, demolition, hazmat removal and sub structure works.

#### Pier 2/3

- Internal alterations and reconfiguration to provide for the following:
  - Performance venues;
  - Rehearsal rooms, production workshops, back of house facilities and offices;
  - Function spaces, bars, cafes and foyer spaces extending onto external gantry platforms (balconies) providing breakout space for internal foyers and allowing views of outdoor performances;
  - Mezzanine spaces for offices and back of house facilities;
  - Upgrades to meet compliance with current BCA, DDA and fire codes;
  - New lifts and stairs;
  - Creation of new commercial tenancies and public toilets;
  - Removal of some storey posts and beams to facilitate internal reconfiguration and new uses; and
  - Retention of a large proportion of the ground floor in its existing 'raw' heritage state for events and festivals including Sydney Writers' Festival and Biennale including venue and commercial hire.
- External alterations and additions comprising:
  - New balconies and external stairs for fire egress;
  - New external lift for access;
  - Installation of glazing in existing cargo sliding door openings and other solid panels on the eastern, western and northern elevations to allow for views into and out of the building;
  - Roof penetrations within the central valley at the southern and northern end to accommodate new performance spaces and associated structural modifications including truss strengthening;
  - Installation of ESD elements, such as photovoltaic panels and seawater heat exchange systems; and

- Raising of the external floor level on the eastern side by introducing a new raised deck and continuous set of stairs beyond the existing column line.

#### Wharf 4/5

- Internal alterations and reconfiguration to the Bangarra Dance Theatre (BDT) tenancy to provide for the following:
  - Upgrade of the main rehearsal and performance spaces;
  - Upgraded foyer and exhibition space along the eastern frontage;
  - Improved office space at mezzanine level including a new lift and stairs;
  - Provision of a function space at ground level of the northern end of wharf with associated kitchen facilities; and
  - New entrance and new glazing in bays of sliding cargo doors, opening up the foyer and main studio to the Pier 4 apron.
- Minor internal alterations and additions to the SDC tenancy comprising:
  - Reducing the existing workshop space to create a fifth dance studio; and
  - Upgrading office and reception areas.
- External alterations and additions to SDC tenancy comprising:
  - Raising of the timber wharf deck adjoining the SDC café and opening of the facade with new glazing to activate the waterfront square.
- Creation of new commercial tenancies and public toilets;
- External fabric alterations around the Sydney Theatre Company (STC) tenancy comprising:
  - Improved street entry at Hickson Road involving relocation of the stairs to allow for an improved landing and point of arrival to the STC;
  - New 'gantry' balconies, stairs and lifts mid-wharf and at the end of the wharf to provide for improved accessibility and compliance with fire engineering solutions;
  - Minor amendments to the existing façade to accommodate new entries and exits along the wharf;
  - Roof penetrations within the central valley at two locations to accommodate theatre and workshop spaces and associated structural modifications including truss strengthening; and
  - Reinstallation of existing photovoltaic panels where applicable.

#### Wharf 4/5 Shore Sheds

- Internal alterations to reconfigure the choir spaces, including provision of a mezzanine for choir administration;
- Creation of new commercial tenancies at ground and mezzanine levels; and
- Provision of office space at ground level.

#### Public Domain

- Construction of a new waterfront square comprising a deck on piled structure:
- Shaded informal performance space on piled structure; and

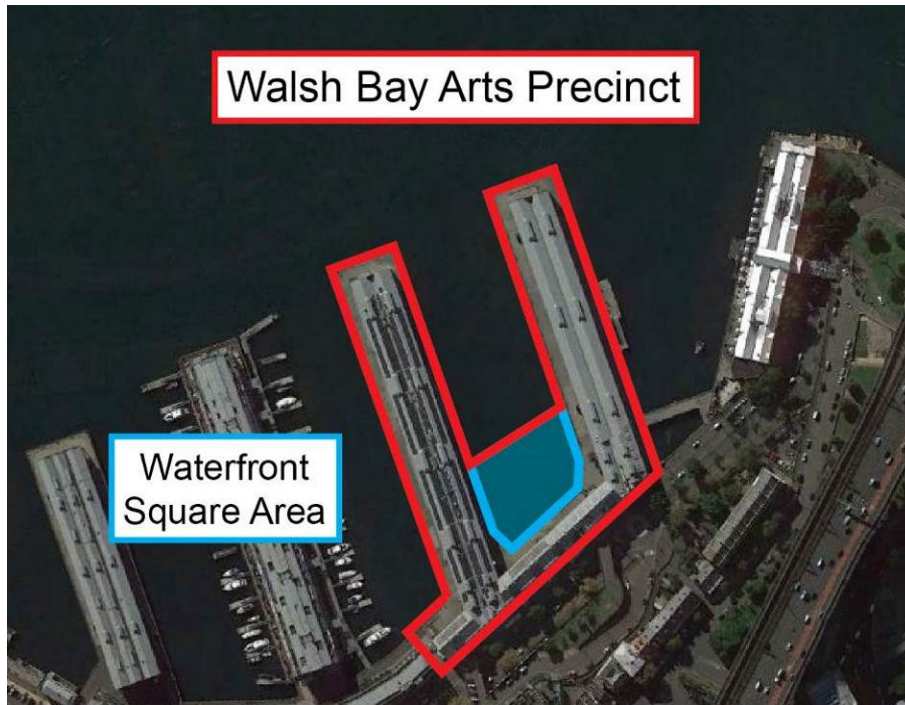
- Changes to existing levels and steps down to facilitate access between the existing apron and new waterfront square.

#### New Uses

- Use of the precinct for arts festivals, events and pop ups as well as a range of activating uses such as retail, restaurants, cafes and bars.

### 2.3 The Study Area

The area for this Maritime Archaeological Assessment and Management Plan comprises the waterfront square area between Pier 2/3 and Wharf 4/5 (Figure 3).



**Figure 3: Location of the waterfront square area, being the study area for this assessment.** (Base image: Google Earth)

## 3 HISTORICAL BACKGROUND

### 3.1 General History of Walsh Bay

Walsh Bay served as a major shipping and trade hub for Sydney from the 1830s until the 1970s. During the 1830s, with the increase in overseas and coastal shipping, the need for additional wharfage led to the development of the Walsh Bay foreshore. At first the jetties that were constructed did not allow for berthing of large vessels. Instead, the vessels were moored in deeper water and the cargo was moved to shore via lighters. The volume of trade to Sydney increased in the 1840s leading to the construction of new and larger wharves.<sup>1</sup>

The trade passing through the wharves at this time dealt with a wide variety of products and commodities from along the east coast of Australia and the South Seas. Most of this was destined for the domestic market but the more expensive and exotic items such as whale oil, trepang, sandalwood, and turtle shell were re-exported to overseas markets. Crowded in amongst the merchants' wharves and warehouses of Walsh Bay were ancillary businesses such as boat builders, sail and mast makers.

From as early as the 1840s, wool was being seen as the future export staple for the colony. Wool exports increased steadily over the decades until the 1870s when it completely dominated the export market. For Walsh Bay this almost single reliance on one export commodity led to the re-configuration of the waterfront and the construction of larger warehouses to store and press the wool and longer jetties to accommodate larger ocean going vessels. This move towards specialisation resulted in the gradual expulsion of smaller maritime industries and their associated wharves.<sup>2</sup>

The extensive changes in infrastructure that took place in the 1870s soon proved to be inadequate in the face of rapidly changing shipping technology. With the sizes of vessels visiting Sydney at the start of the 20th century expected to increase beyond the berthing capacity of the Walsh Bay wharves, further improvements were required. The scale of works required was beyond the means of the individual companies operating in the area.

An outbreak of plague in Sydney in 1900 was attributed to the poor maintenance of the wharves at Walsh Bay. This was thought to allow the disease bearing rats to come ashore and was the catalyst for Government intervention. In that year the Sydney Harbour Trust was formed with the task of upgrading shipping and wharfage and creating modern facilities which would be leased back to private companies for increased rates and charges offset by more efficient docking and loading operations.<sup>3</sup> From 1905 to 1921 the new wharf complex at Walsh Bay was constructed which involved the demolition of previous wharves. The new wharves at Walsh Bay functioned successfully before and after World War II but the gradual decline of coastal shipping after the War and the 'containerisation' of shipping rendered the Walsh Bay facilities obsolete.

By the 1980s Walsh Bay had ceased functioning as a shipping terminal. In the 1990s some of the finger wharves of the Bay and the associated shore buildings were converted into a mixed residential and office complex, whilst Sydney Theatre Company, Sydney Dance Company and Bangarra occupied Wharf 4/5.

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<sup>1</sup> Fitzgerald, S., Keating, C., 1991, *The urban Millers Point village*, Hale and Iremonger Pty Limited, Sydney:22

<sup>2</sup> *Op. Cit.* Fitzgerald, S., Keating, C., 1991:47

<sup>3</sup> *Op. Cit.* Fitzgerald, S., Keating, C., 1991:81

### 3.1.1 Phases of use

The following section on the phases of chronological use of Walsh Bay focuses on the position and alignment of the many wharves constructed, as well as the functions that were carried on and around those wharves. The material compiled for this section comes primarily from maps and charts augmented by secondary sources. It is by no means complete, but is comprehensive to meet the objectives of the assessment. What becomes immediately apparent is the kaleidoscope of wharf construction, with resulting land reclamation and changes in ownership that took place in the periods preceding construction of the present wharves.

### 3.1.2 Phase 1 – A ‘vacant’ shore from 1788 to the early 1820s

The initial European settlement of Sydney focused on Sydney and Farm Coves. Progressively throughout the late 18<sup>th</sup> and early 19<sup>th</sup> century, settlement crept onto and over The Rocks into the Walsh Bay and Millers Point area. However, in the early 1820s the shoreline of Walsh Bay appears to have been devoid of any maritime related structures; the wharves and jetties in Sydney Cove being sufficient for the settlement’s cargo handling needs.

As can be seen in Figure 4, a number of buildings were located in the area. The western most structures were the three mills owned by John Leighton, otherwise known as ‘Jack the Miller’.<sup>4</sup> Leighton produced flour for Sydney Town. As can be seen in 1822, there is no formal road between the Town and Miller’s Point. Although no jetties are present on the plan it would be reasonable to assume that Leighton would have shipped his finished produce via some informal landing close to the western end of Walsh Bay.



Figure 4: 1822 map of Walsh Bay and surrounds.<sup>5</sup>

<sup>4</sup> *Op. Cit.* Fitzgerald, S., Keating, C., 1991:11

<sup>5</sup> Anon., 1822, *Plan of the town and suburbs of Sydney, August, 1822*, National Library of Australia, available <http://nla.gov.au/nla.obj-229911701/view>

### 3.1.3 Phase 2 – Beginnings of maritime commerce from the early 1820s to 1870

It was inevitable with the rising population of Sydney throughout the early 19<sup>th</sup> century that the deep waters of Walsh Bay would prove an attractive location for the construction of new maritime related structures to handle an increase in shipping. This new focus on Walsh Bay as a centre for shipping also attracted maritime related industries such as shipbuilding.

The earliest known jetty at Walsh Bay appears on an 1823 plan of Sydney to the east side of Kent Street.<sup>6</sup> This structure was owned by J. Irving who was a boat builder.<sup>7</sup> The jetty is shown clearly on an 1831 plan (Figure 5).

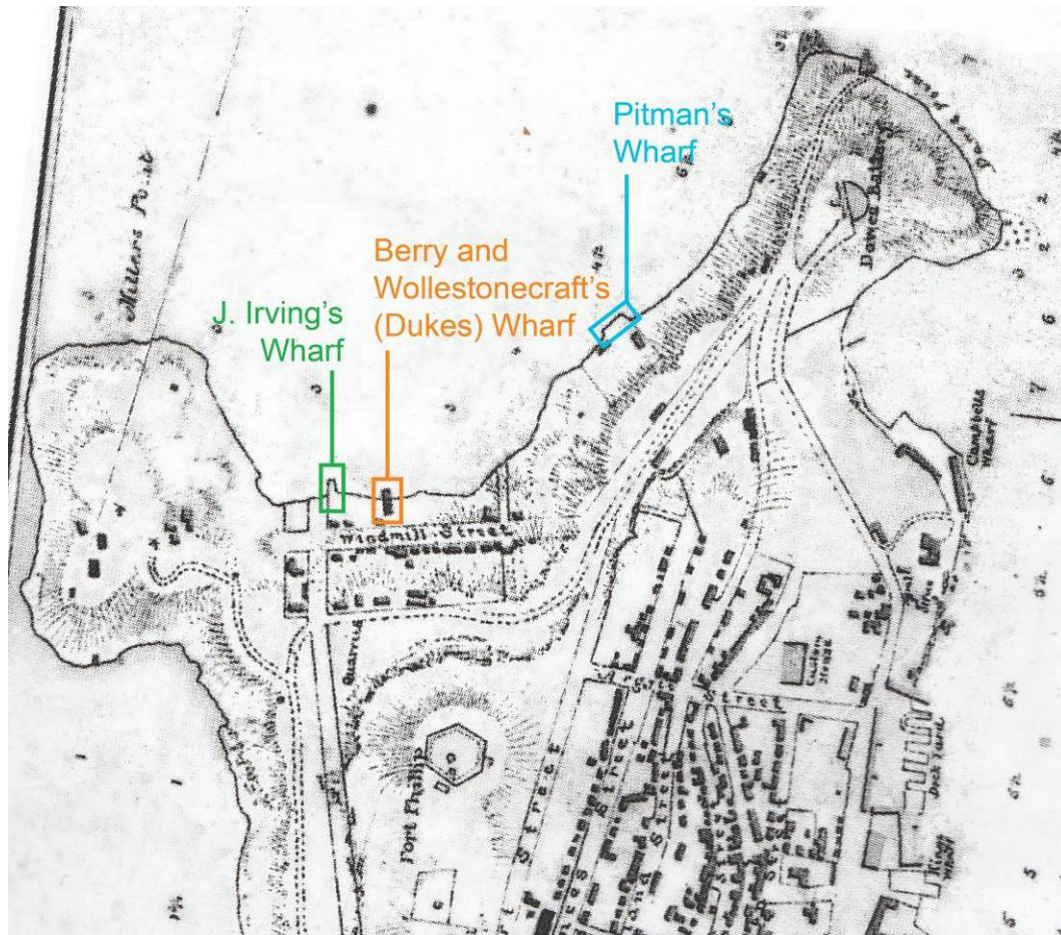


Figure 5: 1831 map of Walsh Bay and surrounds.<sup>8</sup>

The jetty to the west is most likely to be Berry and Wollestonecraft's wharf, possibly otherwise known as Dukes Wharf. This wharf handled produce coming from the Shoalhaven.<sup>9</sup> Sometime in the 1830s Aspinall Brown and Co. took over Dukes Wharf and began specialising in wool exports.<sup>10</sup> Further along the eastern shore was Pitman's

<sup>6</sup> Harper, William, and Stewart, G. C., 1823, *Plan of the allotments of grounds in Sydney*, State Library of New South Wales, Mitchell Map Collection M3 811.16/1823/1.

<sup>7</sup> *Op. Cit.* Fitzgerald, S., Keating, C., 1991:22

<sup>8</sup> Hoddie, Lanner and Mitchell, 1831, *Map of the Town of Sydney*, reproduced in Ashton and Waterson, 2000, *Sydney Takes Shape: A History in Maps*, Hema Maps Pty Ltd, Brisbane:21

<sup>9</sup> *Op. Cit.* Fitzgerald, S., Keating, C., 1991:22

<sup>10</sup> *Op. Cit.* Fitzgerald, S., Keating, C., 1991:23, 43

Wharf, also visible in the 1831 map. Pitman's Wharf, owned by Mr Pitman, received its first vessel on the morning of Saturday 19<sup>th</sup> December, 1829.<sup>11</sup>

An 1836 map clearly notes the location of Pitman's Wharf and Aspinal Brown and Co. wharf as well as showing a new wharf/jetty to the north west of Kent St (Figure 6). The foreshore in this area was owned by William Henry Chapman from the 1820s who was a boat builder.<sup>12</sup> This jetty is likely to be associated with his boat building activities. Towards the end of the 1830s it appears that J. Irving's boatyard and jetty was taken over by A. Summerbell.<sup>13</sup>

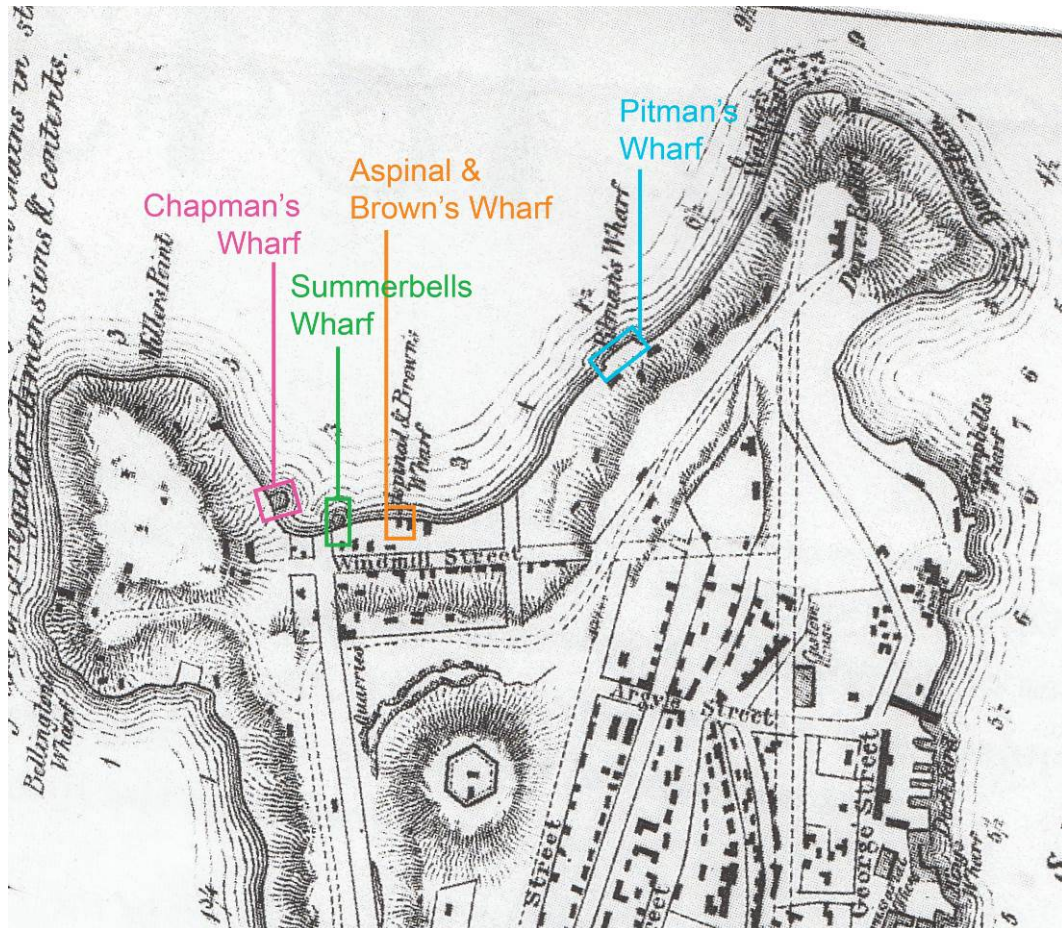


Figure 6: 1836 map of Walsh Bay and surrounds.<sup>14</sup>

The process of land reclamation, which began in the 1830s, is evident on an 1843 plan (Figure 7).<sup>15</sup> As can be seen, the focus of the reclamation was around the site of Chapman's wharf. It was around this time that Jones Wharf was also built, possibly on the site of the old Chapman Wharf.<sup>16</sup> Jones Wharf also specialised in produce from the Shoalhaven. Supposedly adjacent to Jones Wharf (the wharf connected to the north of

<sup>11</sup> F.B., Saturday 19 December 1829, 'Mr. Pitman's New Wharf', *The Sydney Gazette and New South Wales Advertiser*:3.

<sup>12</sup> *Op. Cit.* Fitzgerald, S., Keating, C., 1991:20

<sup>13</sup> *Op. Cit.* Fitzgerald, S., Keating, C., 1991:29

<sup>14</sup> Basire, J., 1836, *Plan of Sydney with Pyrmont, New South Wales: The Latter the property of Edw. Macarthur Esquire, Divided into Allotments for Buildings, 1836*, reproduced in *Op. Cit.* Ashton and Waterson, 2000, *Sydney Takes Shape: A History in Maps*, Hema Maps Pty Ltd, Brisbane:23

<sup>15</sup> *Op. Cit.* Fitzgerald, S., Keating, C., 1991:46

<sup>16</sup> *Op. Cit.* Fitzgerald, S., Keating, C., 1991:22

Jones Wharf in Figure 7) was a structure known as the Limeburners Wharf, where oyster shells were offloaded.<sup>17</sup> Also shown here in the 1843 map is the extension of Pottinger Street to form the North Shore Ferry Wharf (yellow box in Figure 7). There also appears to be a second wharf constructed adjacent to Pitman's Wharf, known as Lamb's Wharf.

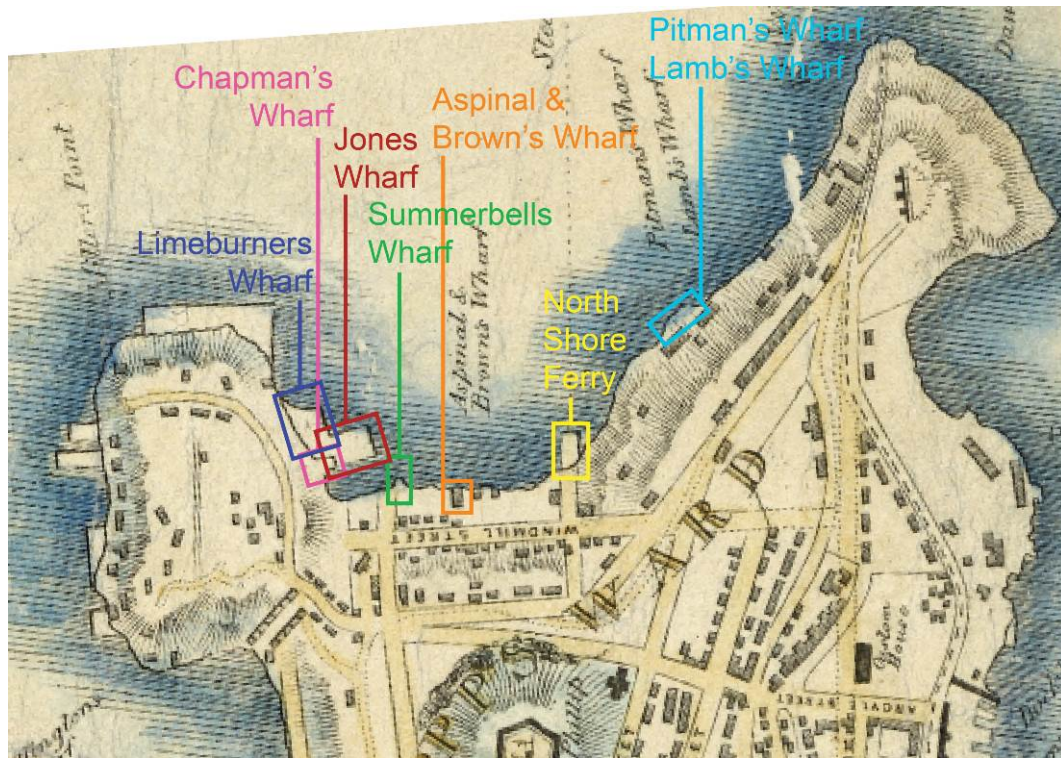


Figure 7: 1843 map of Walsh Bay and surrounds.<sup>18</sup>

In 1844 Captain R. Towns took over Jones Wharf and developed it into one of the major wharves of the area.<sup>19</sup> It became known as Towns Wharf and is clearly shown in Figure 8.

Figure 8 also shows Moore's wharf further along the shore to the west. Moore purchased a wharf – Long's wharf – at the northern tip of Millers Point in 1837.<sup>20</sup> Moore, along with Towns, developed this part of Sydney as the centre point of trade goods from the Pacific, shipping such commodities as whaling products, horses, trepang, sandalwood, turtle shell, wool, sugar, rope, rice, wheat and salt. A near contemporary account of the Walsh Bay waterfront provides a glimpse of the hustle and bustle that would have taken place on the Towns and Moore's wharves:

*The ships gave to the locality the scent of the sea. Whaling and the South Sea Island trade were in their hey-day. In some stores lining the waterfront a strange, motley array of products appeared. Sugar, dark brown in colour, known as 'custard' sugar, packed in big bamboo baskets, seal skins; salt*

<sup>17</sup> Op. Cit. Fitzgerald, S., Keating, C., 1991:22

<sup>18</sup> Wells, William Henry, c.1843, *To the Worshipful the Mayor, Aldermen, Councillors and 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*, Mitchell Library, State Library of New South Wales, a3998001 / Z/M8 811.17/1843/2, available <http://dictionaryofsydney.org/map/24122>

<sup>19</sup> Op. Cit. Fitzgerald, S., Keating, C., 1991:24

<sup>20</sup> Op. Cit. Fitzgerald, S., Keating, C., 1991:23

from Cape Verde; sandalwood; wheat; sperm and black oil and whalebone spoke of other lands. In the streets wandered crews of many ships – European, Americans, Colonials, tattooed New Zealanders, Chinese and South Sea Island boys....<sup>21</sup>

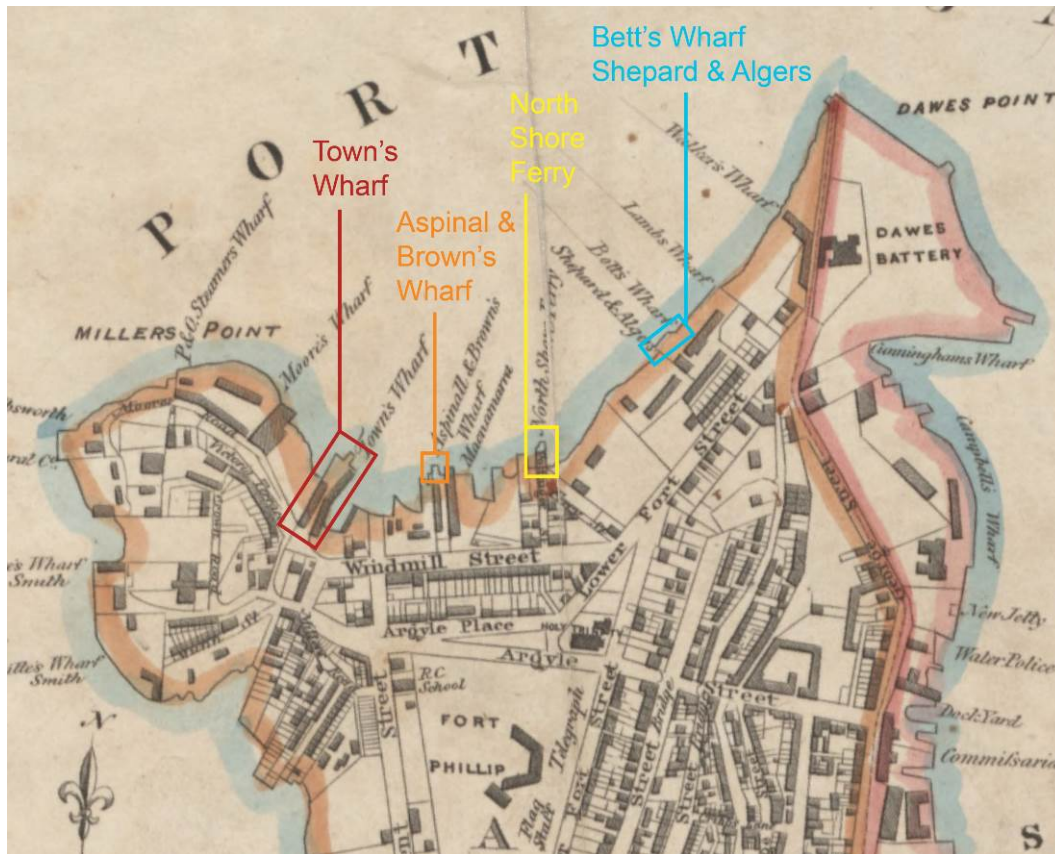


Figure 8: 1854 map of Walsh Bay and surrounds.<sup>22</sup>

By 1851 Towns was running 13 vessels and most of the crews and most likely wharf workers were of South Pacific origin.<sup>23</sup> In the 1850s Towns was trying to sell off his whaling ships as the market was collapsing. These vessels were anchored near his wharf in an area known as “Rotten Row”.<sup>24</sup>

Changes to Walsh Bay also occurred along the shore to the east. Pitman's Wharf appears to have become Bett's Wharf and Shepard and Alger's Wharf. Betts Wharf may have been owned by the Betts and Panton shipping agents while Shepard and Alger's also appear to have been shipping agents for a short time in the mid-19<sup>th</sup> century.<sup>25</sup> Betts and Panton was established in 1840 by John Panton and his brother-in-law John Betts. Panton who later became a politician and Member of the New South

<sup>21</sup> Morton, A.W., 1991, *History of the Garrison Church: Holy Trinity, Sydney*, in Fitzgerald, S., Keating, C., 1991:24

<sup>22</sup> Woolcott and Clarke, 1854, *Map of the City of Sydney with the environs of Balmain and Glebe, Chippendale, Redfern, Paddington andc.*, National library of Australia, MAP NK 3963, available <http://nla.gov.au/nla.obj-230681967/view>

<sup>23</sup> Op. Cit. Fitzgerald, S., Keating, C., 1991:24

<sup>24</sup> Op. Cit. Fitzgerald, S., Keating, C., 1991:42

<sup>25</sup> Betts and Panton, Wednesday 6 March 1844, 'Imports', *The Sydney Morning Herald*:2; Shepard and Alger's, Monday 30 June 1851, 'First packet for Melbourne' and 'For Geelong and Melbourne', *The Sydney Morning Herald*:1

Wales Legislative Council and a Member of the Queensland Legislative Council.<sup>26</sup> Lambs Wharf remained further to the east with Walker's Wharf constructed adjacent to Dawes Battery.

### **3.1.4 Phase 3 – Bulk overseas export from 1870 to 1900**

The last quarter of the 19<sup>th</sup> century witnessed the transformation of Walsh Bay into a major international shipping hub. The scale and complexity of the changes can be seen in Figure 9.

The map shows that Towns Wharf in the 1870s was taken over by Charles Parbury. Smaller wharves are also visible to the west of the main Towns Wharf. A short wharf is shown at the end of Kent St. It appears that it may have been a ferry wharf owned by Sydney Council. Shepard and Alger's Wharf and Walker's Wharf were sold and amalgamated into Alger's Wharves along with associated bonded stores. Betts Wharf was taken over by Charles Parbury, as were many other wharves to the west including Summerbell's Wharf and the lot adjacent to Kent Street. Parbury was another of the successful merchant companies in Sydney. Lamb, Parbury and Co. was a family business operated by the Lamb family, famous as merchants and pastoralists in the mid to late 19<sup>th</sup> century.

Figure 9 also shows the outline of the future extensions to the old Towns and Moore's Wharves as well as Alger's and Parbury's wharves to the east. The 'bent' shape of these wharves was the result of the innovative solution of achieving greater wharfage for individual wharves in response to an imposed 70 foot (21.3 m) limit line for new jetties protruding into the bay.

The 1880 plans in Figure 10 and Figure 11 show details of the new ownerships in Walsh Bay. Figure 12 dates to 1900 and shows the later wharf developments and the final shape of Walsh Bay after the late 19<sup>th</sup> century transformation.

John Alger, the owner of Alger's Wharf on Lower Fort Street, was a successful merchant in Sydney with a private residence in Macquarie Street in the city. This was a wealthy location for business and professional people. He passed away in the early 1900s.<sup>27</sup> Alger's Wharf on Lower Fort Street was known as Hoffnung's Wharf from the 1890s, presumably once the much longer wharf was constructed.<sup>28</sup> This likely indicates that it was bought by S. Hoffnung and Co., a company established by the Polish merchant Sigmond Hoffnung who moved to Sydney in 1852. They were a prosperous company who supplied a wide range of products including horse saddles and harnesses, canned fruits and jams, watches, glass and china, ironmongery, rocking-horses, firearms, iron safes and patent medicines. Sigmond's brother, Abraham, and son, Sidney, continued directing the company after his death in 1904.<sup>29</sup>

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<sup>26</sup> **Parliament of New South Wales, n.d.**, 'Mr John Panton (1815-1866)', Members, available [https://www.parliament.nsw.gov.au/members/Pages/profiles/panton\\_john.aspx](https://www.parliament.nsw.gov.au/members/Pages/profiles/panton_john.aspx)

<sup>27</sup> **"Old Chum", Wednesday 31 December 1902**, 'Old Sydney', *Sydney Sportsman*:3

<sup>28</sup> *Op. Cit.* **"Old Chum", Wednesday 31 December 1902**

<sup>29</sup> **Bergman, G. F. J, 1972**, 'Hoffnung, Sigmond (1830-1904)', Australian Dictionary of Biography, available <http://adb.anu.edu.au/biography/hoffnung-sigmond-3779>

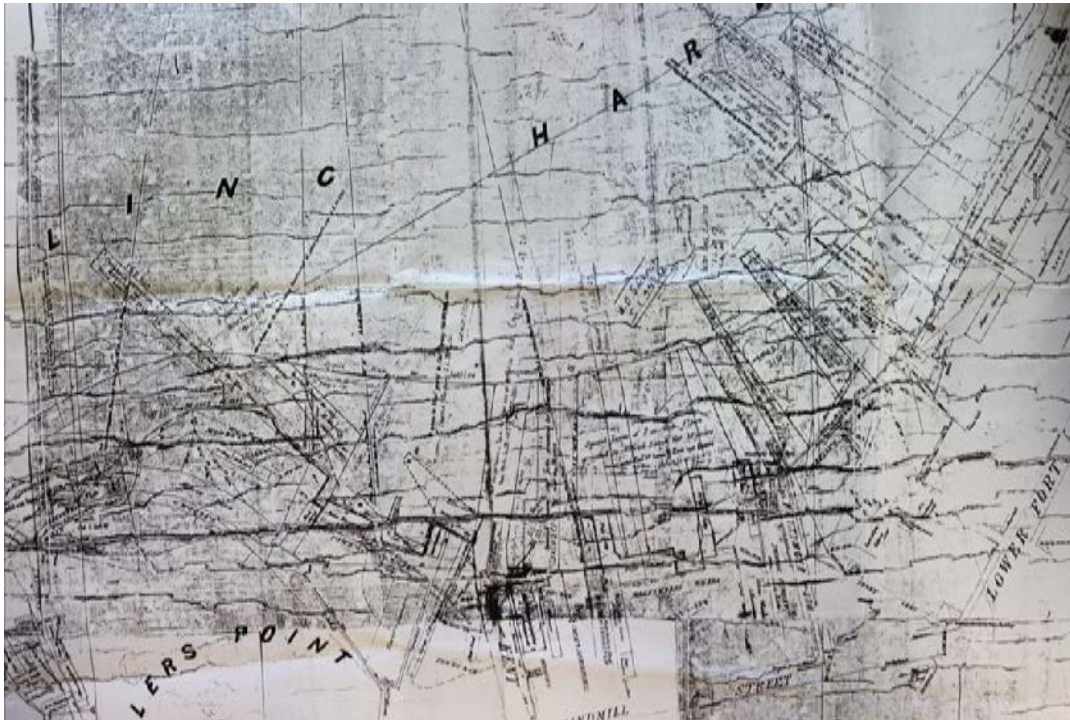


Figure 9: 1870 survey map of Walsh Bay and surrounds, annotated up to 1877.<sup>30</sup>

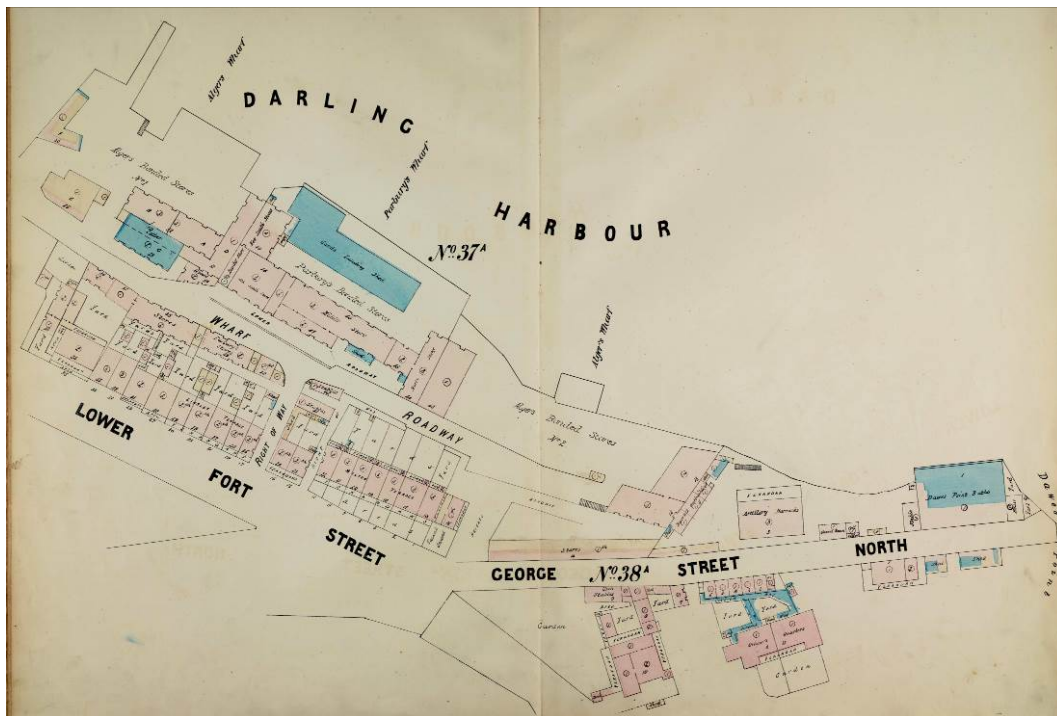


Figure 10: 1880 plan of the north-eastern section of Walsh Bay showing the new Alger's Wharves and Parbury's Wharf. Note that North is to right of plan.<sup>31</sup>

<sup>30</sup> Lands Title, 1870, Survey map of Walsh Bay, Darling Harbour and Millers Point, annotated up to 1877, Lands Title 53-574, Private Collection.

<sup>31</sup> Dove, Percy H., 1880, Plans of Sydney Executed by H. Percy Dove Licensed Surveyor 1 and 2 Vickers Chambers Pitt Street, Block 37A 38A, available <http://www.photosau.com.au/CoSMaps/scripts/displayIndex.asp?Index=DP>

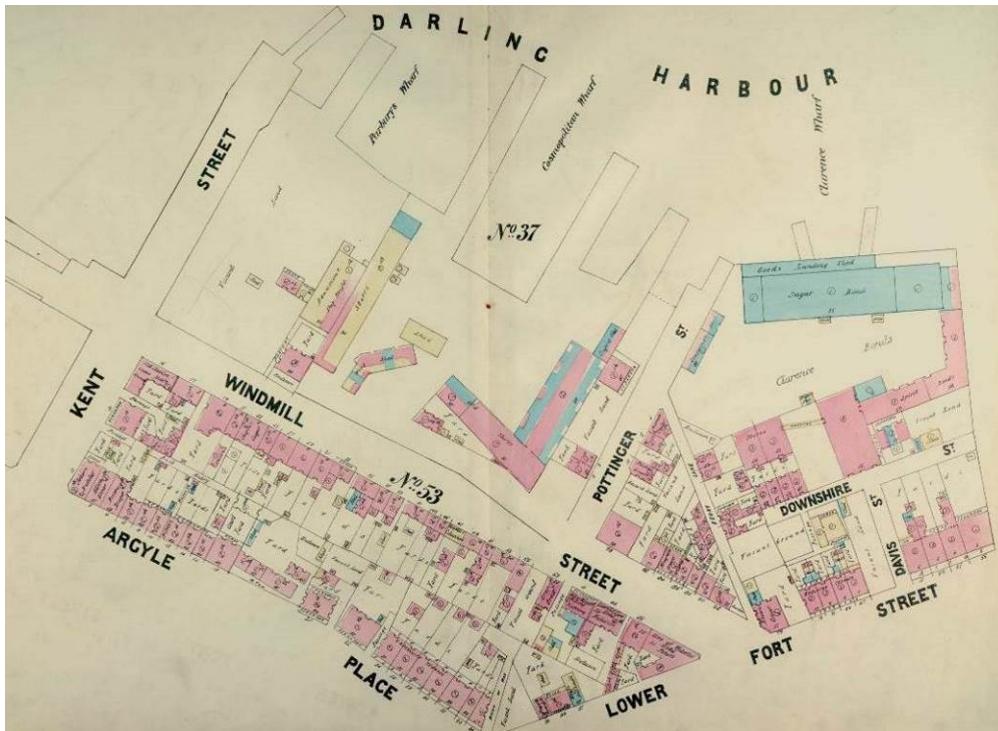


Figure 11: 1880 plan of the central and western section of Walsh Bay showing Parbury's Wharf, Cosmopolitan Wharf and Clarence Wharf.<sup>32</sup>

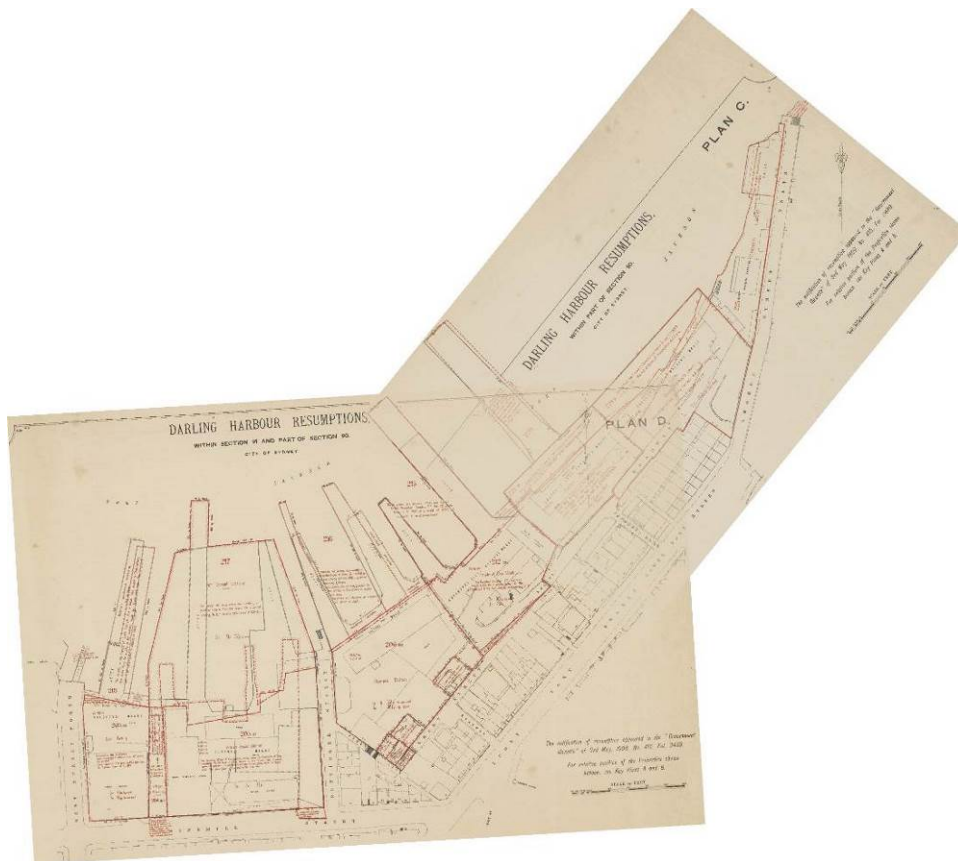


Figure 12: Portion of 1900 Darling Harbour resumptions.<sup>33</sup>

<sup>32</sup> *Op. Cit.* Dove, Percy H., 1880, Block 37 and 53, available <http://www.photosau.com.au/CoSMaps/scripts/displayIndex.asp?Index=DP>

### 3.1.5 Phase 4 – Government reconstruction from 1900 to present

The Sydney Harbour Trust was created in 1900 and the first task in the radical re-configuration of the Walsh Bay was the commencement of a new sea wall in 1905.<sup>34</sup> The wall was made up of pre-cast “L” shaped concrete trestles set at two metre intervals with connecting concrete panels resting on the flanges of the trestles.<sup>35</sup>

The Sydney Harbour Trust Annual Report for 1913 labels Hoffnung’s Wharf as “Parbury’s Wharf 3”. This report notes that the construction of Wharf 4/5 had been delayed as Parbury’s Wharf 3, which crossed the line of new works, was still being used for shipping and had not yet been demolished (Figure 13). However, by this time a portion of the longshore wharf, seawall and reclamation extending westward 70 feet (21.3 m) had been completed.<sup>36</sup> Parbury’s Wharf 3 was demolished in the following year.

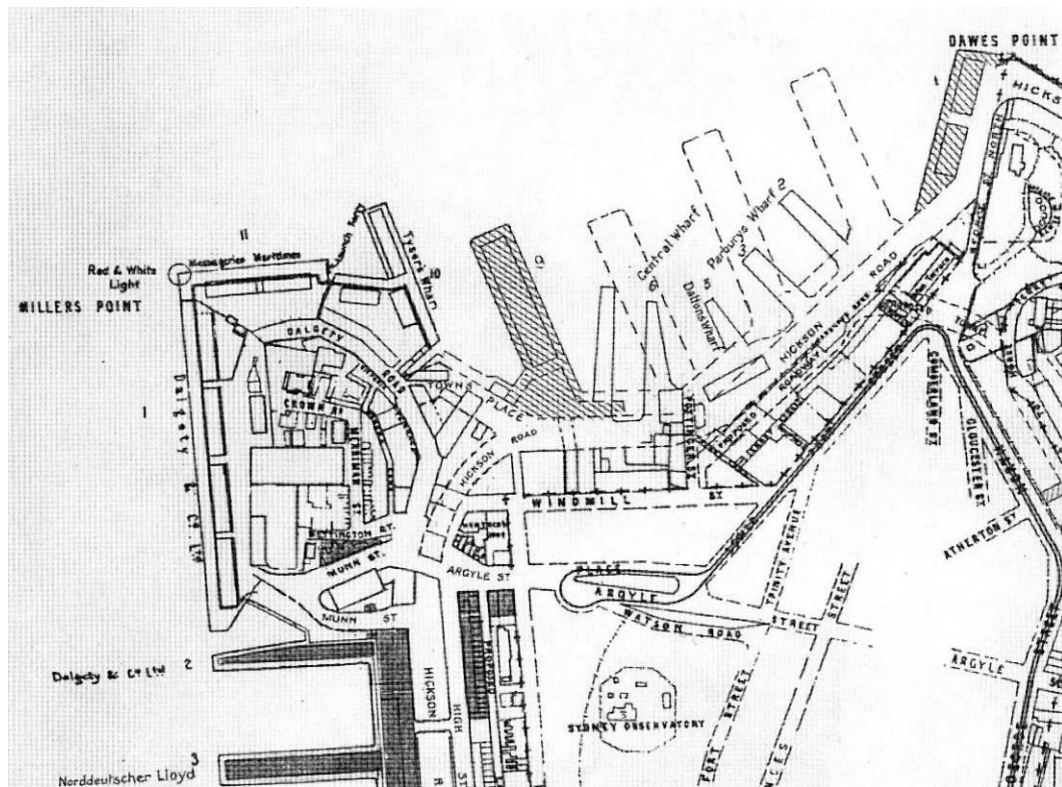


Figure 13: 1911 plan of Walsh Bay wharves.<sup>37</sup>

Construction of Pier 2/3 and Wharf 4/5 began in 1914. Prior to this, dredging took place to prepare for the placement of piles. Including the excavating of rock at the shore end to a depth of 35 feet (10.7 m).<sup>38</sup> Some difficulty was encountered early on with the construction of Wharf 4/5. The depth of water required longer piles that had proven difficult to obtain. Lengths up to 130 feet (39.6 m) were required, which were driven

<sup>33</sup> **Government Gazette, 1900**, *Darling Harbour resumptions*, 3/5/1900, No. 415, Folio 3439.

<sup>34</sup> *Op. Cit.* Fitzgerald, S., Keating, C., 1991:72

<sup>35</sup> **National Trust of Australia, n.d.**, *Heritage study of 19<sup>th</sup> and early 20<sup>th</sup> century trading wharves in Sydney Harbour*, NSW branch of National Trust Australia.

<sup>36</sup> **Sydney Harbour Trust, 1913**, *Sydney Harbour Trust Annual Report 1913:18*

<sup>37</sup> **Sydney Harbour Trust, 1911**, *Sydney Harbour Trust Annual Report 1911*

<sup>38</sup> **Sydney Harbour Trust, 1912**, *Sydney Harbour Trust Annual Report 1912:25*

through 70 to 90 feet (21.3 to 24.4 m) of ballast, clay, silt and sand.<sup>39</sup> At the time of the 1914 Sydney Harbour Trust Annual Report, the new wharf had been completed to a distance from the reclamation of 260 feet (79.2 m) and piles driven for a further 40 feet (12.2 m).

Shipping commenced at Wharf 4/5 in 1915 and construction was completed in 1920-1921.<sup>40</sup> Pier 2/3 was also completed in 1920-1921 resulting in a jetty measuring 525 feet (160 m) long by 130 feet (39.6 m) wide. Dredging in and around the berths as well as maintenance works continued for the remainder of the working life of the wharves. The wharves continued to be heavily used until the early 1970s when they were superseded by changing shipping technology.<sup>41</sup>

### 3.1.6 *The Tug Undine*

Early on the morning of 28 December, 1936, whilst the steam tug *Undine* was slipping its moorings at Walsh Bay No. 4, an explosion from the engine room literally blew the vessel to pieces (Figure 14).<sup>42</sup>

The two crew on board were blown into the water and were later rescued having incurred minor injuries. Another tug nearby, *Bustler*, suffered severe structural damage but managed to stay afloat. Wharves 3 and 4 also received damage from the flying debris. *Undine* sank almost immediately.

It is unclear whether the wreck was raised or salvaged *in situ*. Given its position, next to a working wharf, its presence would have hindered any vessel moored alongside Berth 4. It is most likely that the vessel would have been removed, intact or in pieces.

*Undine* (Official Number 89314) was built in Woolloomooloo and launched on 28 October 1884 (Register of British Ships, 124/1884). The builder was Batty and Sheehy and it was the only vessel built by this pair of builders.<sup>43</sup> Thomas Batty was also its first owner. Little is known about the history of the vessel other than it was last registered to Daniel Sheehy, one of the builders and a shipwright from Sydney, who purchased the vessel in 1894. Daniel Sheehy built a number of vessels in Woolloomooloo including timber yachts and cargo vessels. Praise for his work was published in *The Sydney Morning Herald* newspaper, which stated:

*The most successful yacht builder, however, is Dan Sheehy, of Woolloomooloo Bay. His last vessel, the Xarifa, built for Mr. Parbury, is about as handsome a model as one would desire to see. He was also builder of the Blink Bonnie, also the Australian, a 5 ton open yacht and the Sibyl, and Thought, 22 feet open boats, all of them winners. His work lies solely amongst pleasure yachts, and in this way himself and four men are constantly employed, and have been so far the past two years. He is the only boatbuilder in this particular line of work.*<sup>44</sup>

<sup>39</sup> Sydney Harbour Trust, 1914, *Sydney Harbour Trust Annual Report 1914:15*

<sup>40</sup> Sydney Harbour Trust, 1915, *Sydney Harbour Trust Annual Report 1915:17*

<sup>41</sup> NSW Office of Environment and Heritage, 1999, 'Walsh Bay Wharves Precinct' listing on the State Heritage Register, available <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5045067>

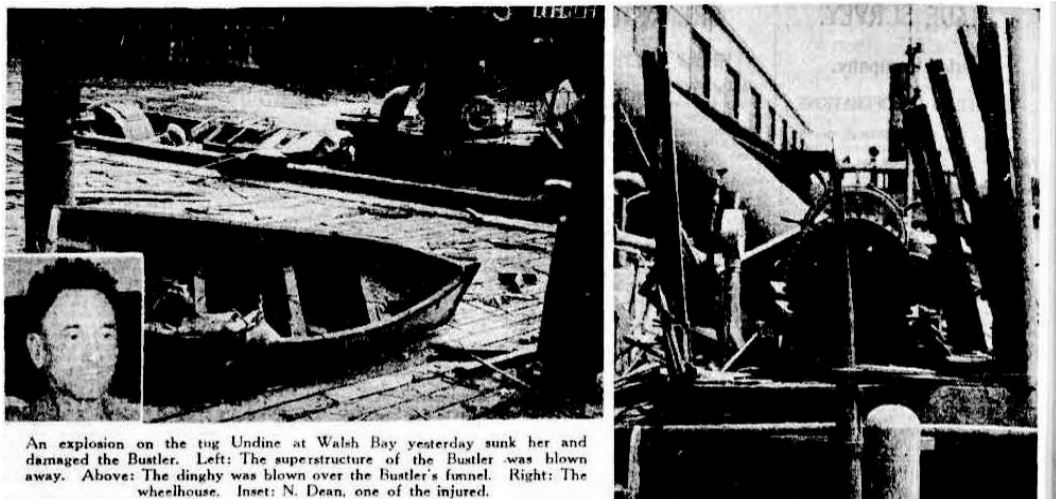
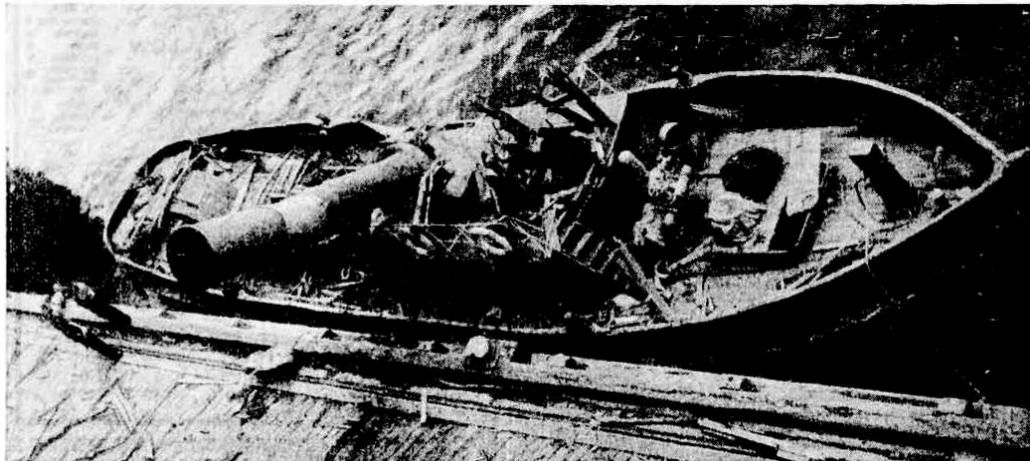
<sup>42</sup> Anon., Tuesday 29 December 1936, 'Explosion. Tug Wrecked. Crew Hurlled Into Air. Vessel Sinks In Harbour', *The Sydney Morning Herald*:9.

<sup>43</sup> Flapan, Mori, 2008, 'List of New South Wales Ship Builders and Boat Builders from the Register of Australian and New Zealand Vessels', available [http://www.boatregister.net/NSW\\_Builders.htm](http://www.boatregister.net/NSW_Builders.htm)

<sup>44</sup> Anon., Tuesday 21 March 1865, 'The Manufacturing Industry of New South Wales – II. Boat Building', *The Sydney Morning Herald*:5

At the time of loss of the *Undine*, the vessel's Certificate of Registry was held by J and J Daley, Tug and Water Tender owners, Lightermen and General Stevedores, of Sydney.

The vessel had a registered tonnage of 37 tons net (54 tons gross). It measured 64.7 feet (19.4 m) in length, 15.5 feet (4.7 m) in width and 9 feet (2.7 m) in depth. Built of wood, it was single decked with a rounded stern. The vessel had two 'high pressure' engines built in 1870 by Vale and Lacy of Pymont. The diameter of both cylinders were 12" (0.305 m) and the length of stroke 18" (0.457 m). The combined horsepower of the engines was rated at 24 horsepower.



**Figure 14: Photographs from The Sydney Morning Herald of the explosion of Undine.<sup>45</sup>**

### 3.2 Description of the Seabed within the Study Area

Previous maritime archaeological dive investigations of the Walsh Bay area, including around Pier 2/3, have recorded similar seabed types (see **Section 1.6**). The observations used in this section were made during 2000 and 2002 and, despite a lapse of 14 years, the physical characteristics of the seabed remain unchanged.

Water depth is, on average, about 4 to 5 m near the seawall and increases to approximately 10 m at the deepest part between the wharves. The seabed beneath the

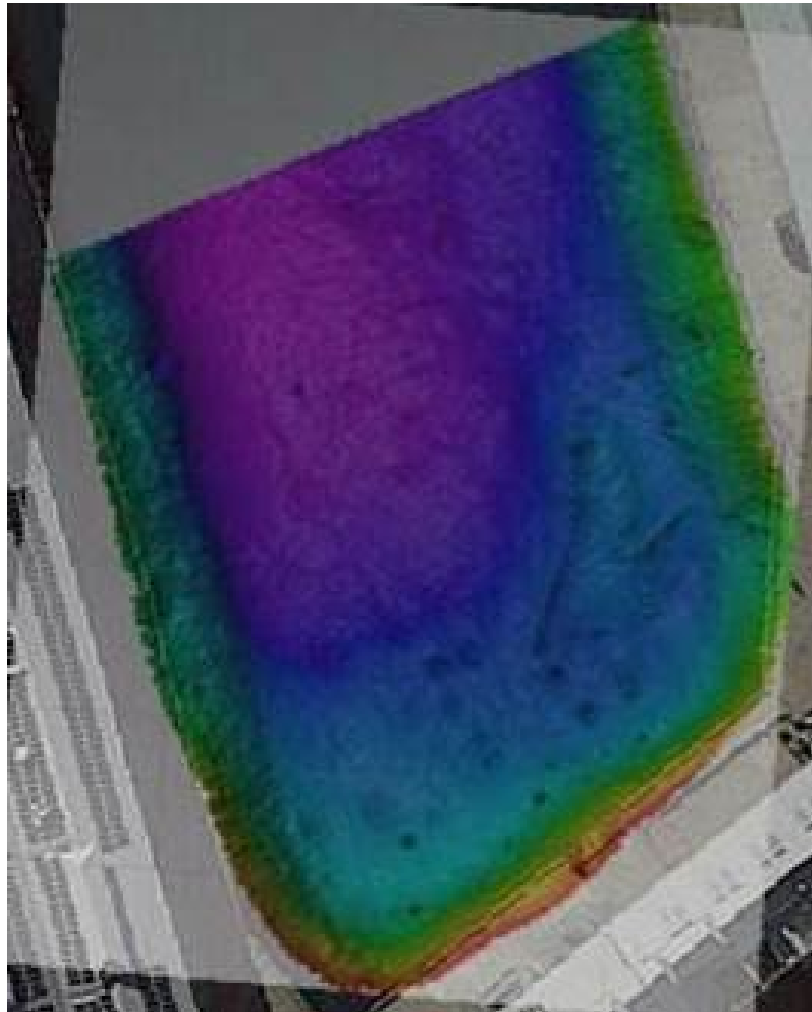
<sup>45</sup> *Op. Cit.* Anon., Tuesday 29 December 1936:12

structures varies between thick layers of shell and coarse silt. However, there is a clear change beyond the wharf apron in that the seabed changes to fine, silty material. The confined nature of waters between the wharves, where there is no tidal stream, appreciable wave activity or other means of flushing, means that there is a net accretion of fine sediments. As a result, thick layers of fine silt build up on the seabed in the study area. In the past, when these were working wharves, dredging would have been routinely carried out so as to continue to allow larger vessels to berth. In all surveys, ballast rock was observed close to the seawall along the southern side of the study area extending outward for approximately 2 m.

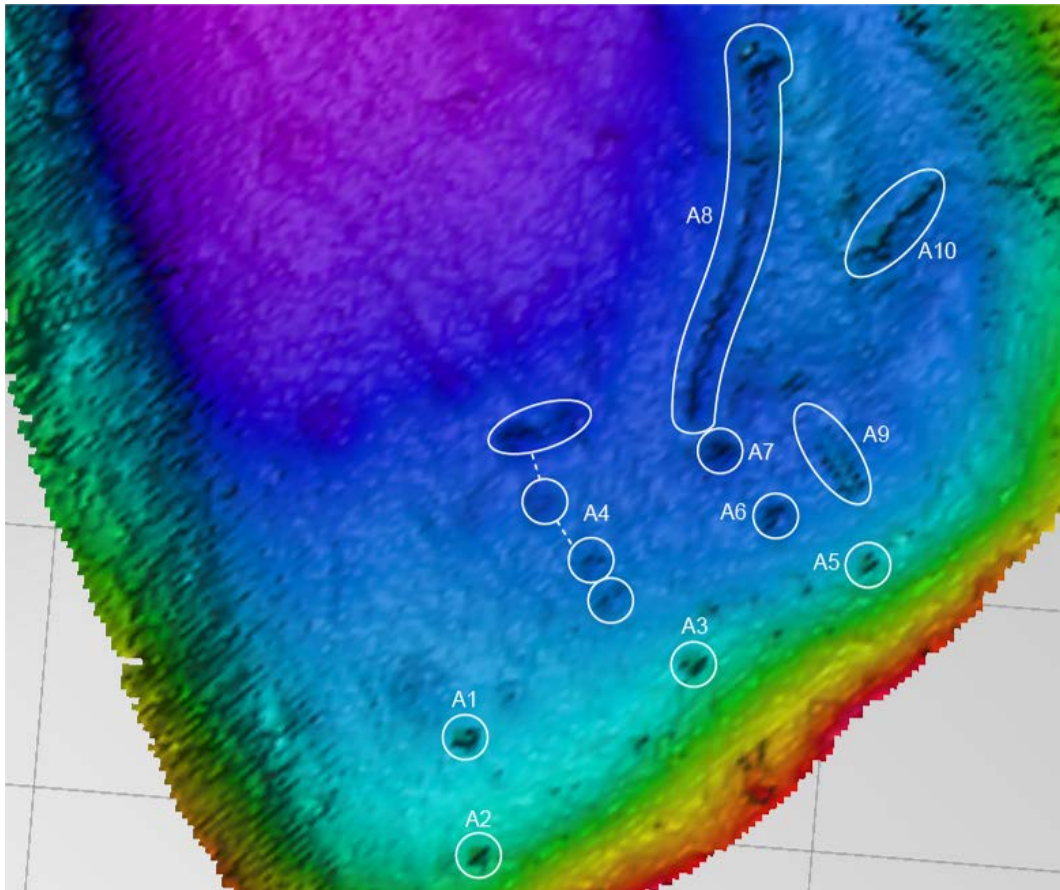
### 3.3 Remote Sensing Data

Bathymetric data acquired by multibeam sonar in November 2013 was sourced from the Port Authority of New South Wales for the southern portion of the seabed between Pier 2/3 and Wharf 4/5 (Figure 15).

A number of anomalies are visible in the bathymetric data including a number of round features, one long (approximately 30 m long) gouge in the seabed, a shorter (4.7 m long) straight feature and areas of irregular seabed or possible debris (Figure 16 and Table 1). These anomalies may be evidence of cultural material or simply disturbances of the seabed by animals or vessels.



**Figure 15: Bathymetric data of the seabed between Pier 2/3 and Wharf 4/5. This information is provided courtesy of the Port Authority of New South Wales. Copyright is owned by Port Authority of New South Wales.**



**Figure 16: Bathymetric data annotated with anomalies.**

**Table 1: Description, identification and location of anomalies in the bathymetric data.**

Item	Description	Identification	Coordinates (UTM)		
			Easting	Northing	Height (AHD)
A1	Round feature, 0.65 m high, 2.0 m wide	Possible rock	334072.55	6252407.05	-9.28
A2	Round feature, 0.70 m high, 1.6 m wide	Possible rock	334074.24	6252398.02	-8.11
A3	Round feature, 0.80 m high, 2.15 m wide	Possible rock	334089.71	6252414.01	-8.86
A4	Line of four depressions (southern end). Three appear round measuring 0.25 m deep and 2 to 3 m wide. The fourth is 8 m by 3.5 m in size.	Possible animal activity	334083.46	6252417.87	-10.54
	Line of four depressions (northern end).	Possible animal activity	334073.60	6252430.39	-11.04
A5	Round feature, 0.60 m high, 2.5 m wide	Possible rock	334102.26	6252422.55	-9.09
A6	Round depression, 0.20 m deep, 2.5 m wide	Possible animal activity	334095.27	6252425.26	-10.81
A7	Round depression, 0.25 m deep, 3.0 m wide	Possible animal activity	334090.80	6252429.50	-11.02
A8	Long narrow depression (northern end). 0.20 m deep, 30.0 m long, 1.5 m wide	Possible anchor drag	334088.81	6252431.74	-10.79
	Long narrow depression (southern end)	Possible anchor drag	334091.68	6252459.97	-10.88
A9	Raised straight feature, 4.7 m long, 1.3 m wide and 0.25 m high.	Possible pile lying diagonally on seabed.	334099.49	6252430.24	-10.44
A10	Raised irregular feature in a rough line, 6.8 m long, 1.0 m wide and 0.20 m high.	Possible debris, anchor chain.	334102.36	6252448.88	-10.55

### 3.4 Known Maritime Archaeological Remains within the Study Area

The following discussion of the known maritime archaeological remains is based on overlaying the historical maps available. When viewing these overlays, consideration should be given to the difficulties in relating plans and maps of differing scales and levels of accuracy. An error margin of around +/- 20 m should be factored in when attempting to ascertain what underwater archaeological remains may be located within the study area.

In particular for this study area, wharf orientation is often conflicting between different plans. As an example, two plans by the same surveyor in 1880 show the Alger's and Parbury's Wharves in the eastern part of Walsh Bay at a differing angle of almost 30 degrees from the shore (shown together in Figure 20). Also plans with a large scale and covering a large area often only show an indication of the location of the wharf rather than an accurate representation and hence have a limited accuracy.

The study area overlaps what has been the edge of the coastline of Walsh Bay since the first structures in 1836. Pitman's Wharf first appears in the map from 1836 as a short but wide projection of the coast which sits entirely within the study area. This wharf is still present in the same location in the 1880 plan, although it changes owners a number of times before being bought and named by Alger's. By this time, it projects further into the harbour possibly indicating that the wharf had been re-built or lengthened in the years between (Figure 18 to Figure 21).

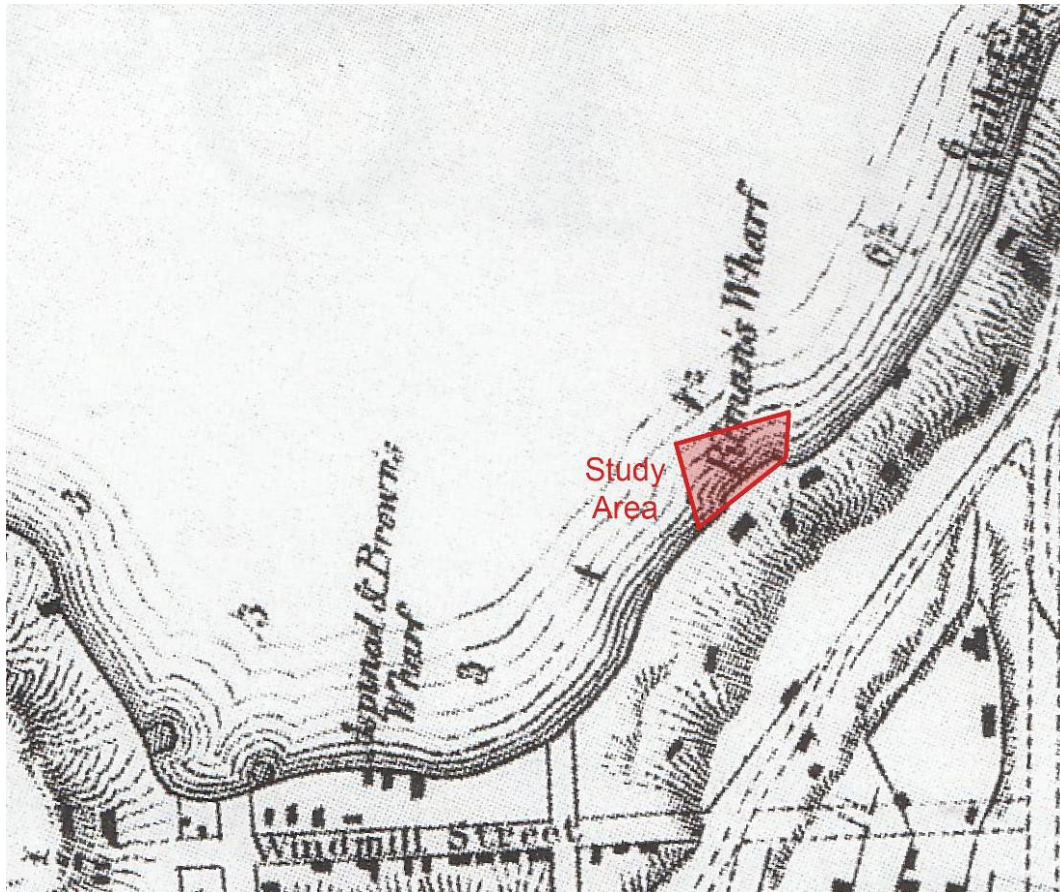
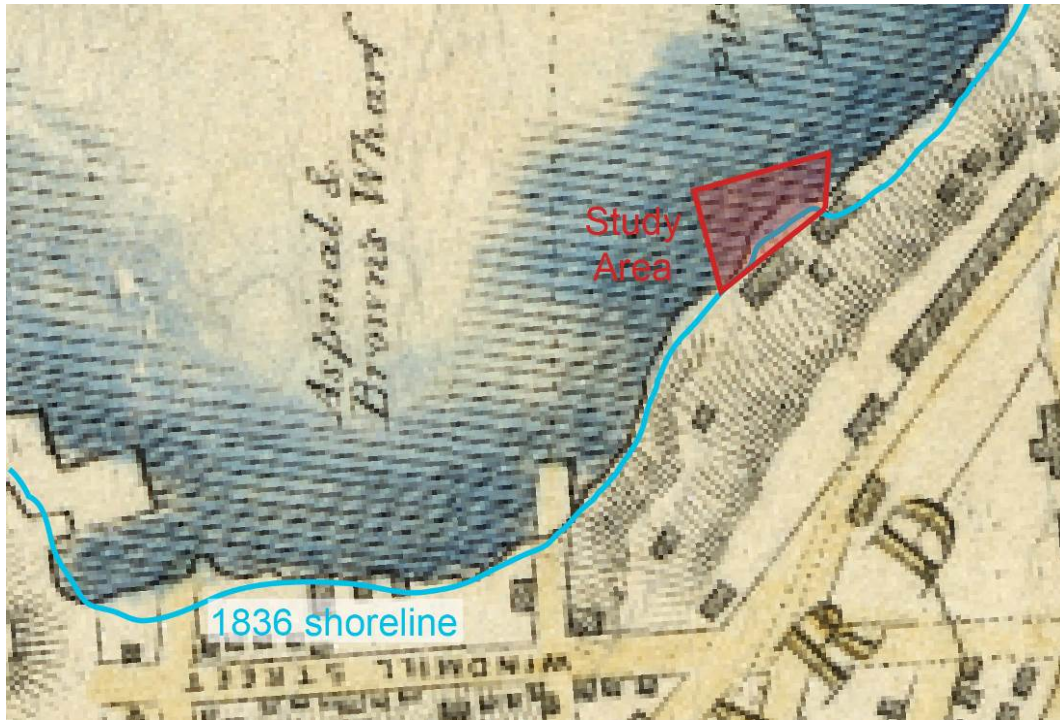


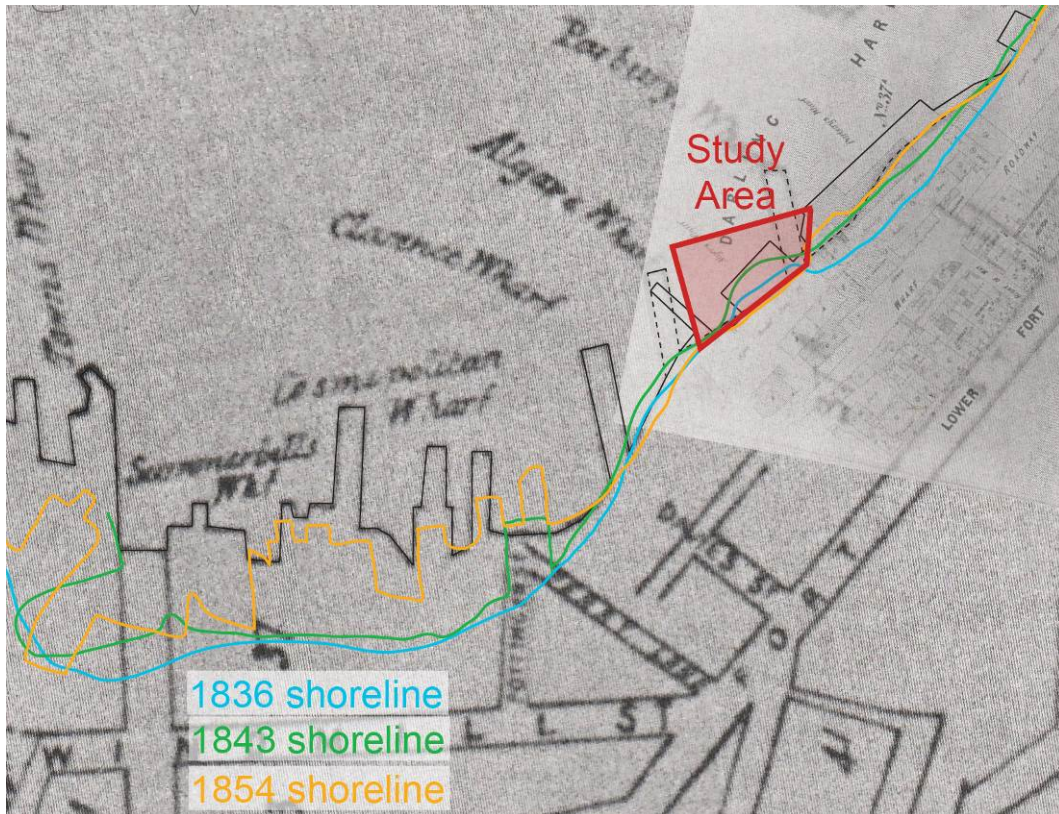
Figure 17: Study area in relation to the 1836 map of Walsh Bay (Figure 6).



**Figure 18: Study area and the 1836 shoreline in relation to the 1843 shoreline of Walsh Bay (Figure 7).**



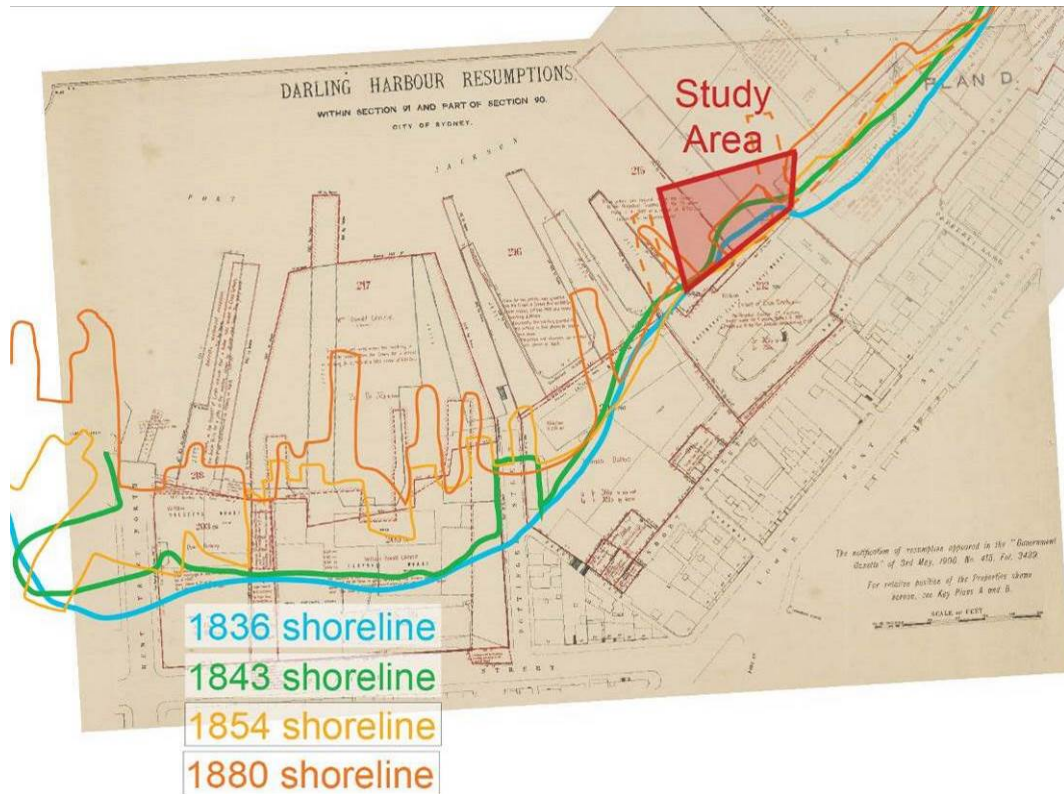
**Figure 19: Study area and the 1836 and 1843 shorelines (above) in relation to the 1854 shoreline of Walsh Bay (Figure 8).** Note that in 1854 the shoreline runs along the southern edge of the study area.



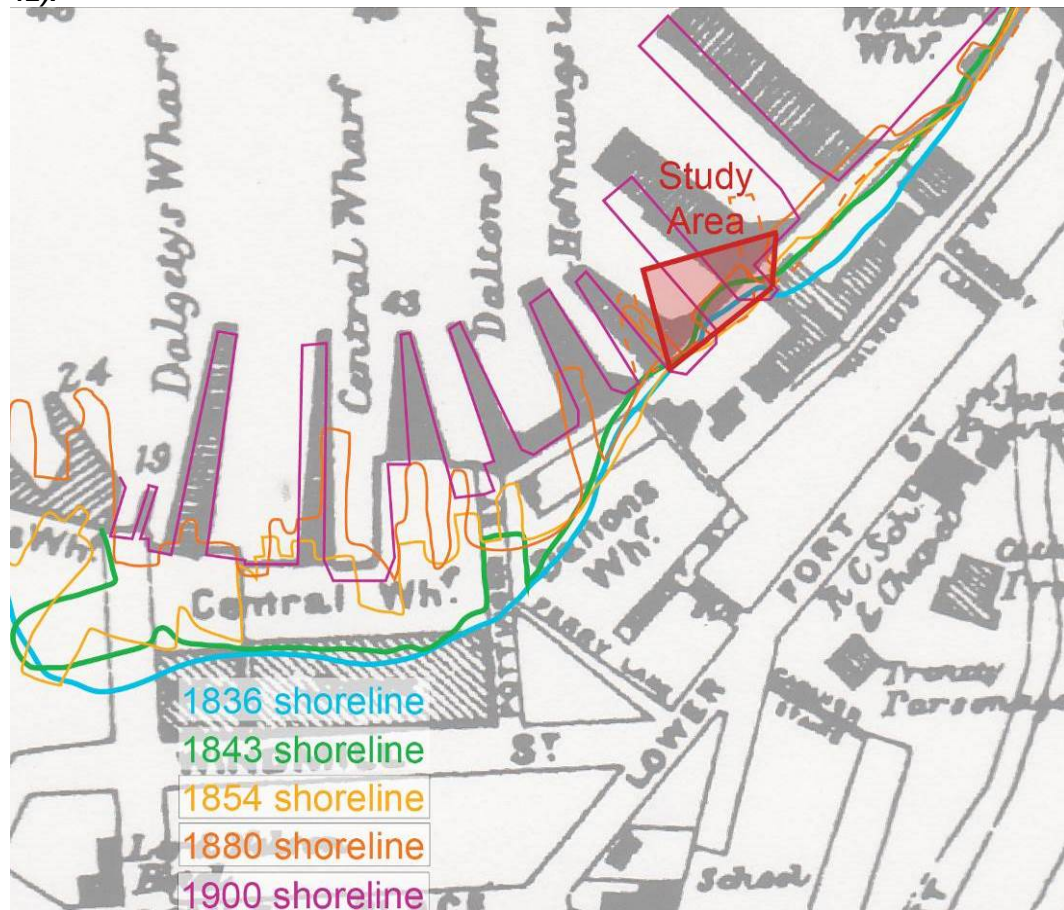
**Figure 20: Study area and the 1836, 1843 and 1854 shorelines (above) in relation to the 1880 shoreline of Walsh Bay (Figure 10 and Figure 11).** The 1880 shoreline is an overlay of an index map of Walsh Bay with a detailed map of the block containing the study area. Where the maps differ, the index map coastline is shown as a dashed line.

In 1890, Alger's Wharf was bought by Hoffnung and Co. and before 1900 it was rebuilt into a much longer wharf projecting into the harbour. The c.1910 map of the study area has a label reading "Hoffnung's late Alger's Wharf" which also shows this change in ownership (Figure 22).

The redevelopment of Walsh Bay by Sydney Harbour Trust resulted in the eventual removal of Hoffnung Wharf, then called Parbury's Wharf 3, in 1914 and the construction of the present Pier 2/3 and Wharf 4/5.



**Figure 21: Study and the 1836, 1843, 1854 and 1880 shorelines (above) in relation to the 1900 shoreline of Walsh Bay (Figure 12).**



**Figure 22: Study area and the 1836, 1843, 1854, 1880 and 1900 shorelines (above) in relation to the c.1910 shoreline of Walsh Bay.**

## 4 SITE INSPECTION

### 4.1 Objective

The purpose of the site inspection was to investigate anomalies identified in the bathymetric survey data and inspect the area where remains of previous wharves may be present. Underwater observations were also to be made of the type of seabed in order to assess the potential of remains not observed during the survey. The area surveyed is located between Pier 2/3 and Wharf 4/5 and shown in Figure 23. Detailed survey inspection data is presented in **Annex A**.

### 4.2 Dates and Personnel

The inspection was carried out on the 4<sup>th</sup> October, 2016, by staff of Cosmos Archaeology Pty Ltd and the commercial divers of Gray Diving Services Pty Ltd. Cosmos Coroneos (Director, Cosmos Archaeology Pty Ltd) and Luke Gallager (Gray Diving Services Pty Ltd) undertook the diving inspections with Danielle Wilkinson (Cosmos Archaeology Pty Ltd) and Adam Gunn (Gray Diving Services Pty Ltd) in support.

### 4.3 Weather and Tide Conditions

Sydney Harbour conditions are not greatly affected by the relatively minimal changes in tide but previous rainfall carrying silt from land can severely dampen visibility (Table 2). No rain had fallen for the three days previous to the inspection or on the day of the inspection (Table 3). Conditions were fine and sunny during the inspection, with direct sunlight reaching the majority of the site, creating positive conditions for visibility. It was a windy day however the inspection area was well protected by Pier 2/3 and Wharf 4/5 and did not affect the site inspection.

**Table 2: Tides for the 4<sup>th</sup> October, 2016.**<sup>46</sup>

04/10/2016	Time	0438	1059	1716	2317
	Height (m LAT)	0.43	1.58	0.43	1.39

**Table 3: Rain and wind conditions for the three days previous as well as for 4<sup>th</sup> October, 2016.**<sup>47</sup>

Date	Rain (mm)	Wind 0900 (km/h)	Wind 1500 (km/h)
01/10/2016	0	WNW 43	W 44
02/10/2016	0	NNW 20	NNE 31
03/10/2016	0	NNE 28	WNW 39
04/10/2016	0	WNW 17	WNW 43

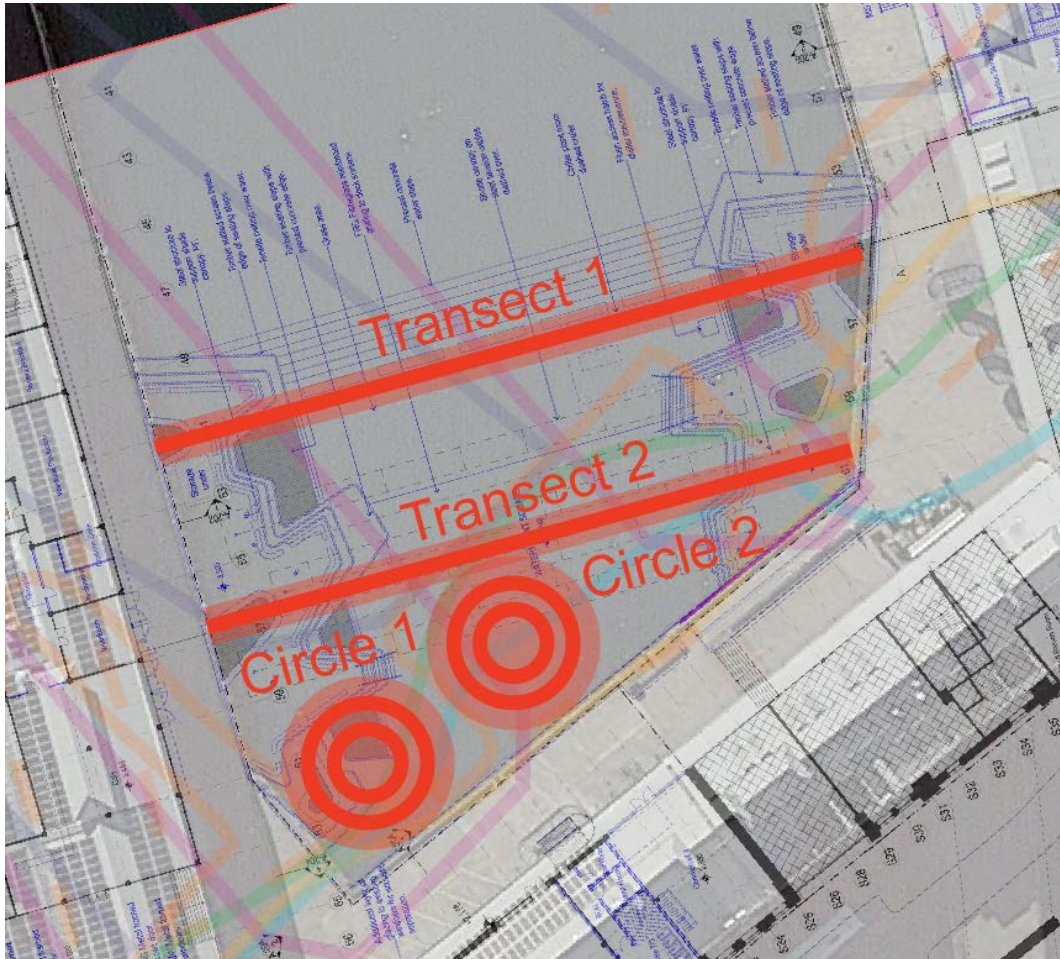
<sup>46</sup> **Bureau of Meteorology, 2016**, 'Tide Predictions for Australia, South Pacific and Antarctica – Sydney (Fort Denison), NSW', Australian Government, available <http://www.bom.gov.au/australia/tides/#/nsw-sydney-fort-denison>

<sup>47</sup> **Bureau of Meteorology, 2016**, 'Sydney Harbour, New South Wales, October 2016 Daily Weather Observations', available <http://www.bom.gov.au/climate/dwo/IDCJDW2163.latest.shtml>

#### 4.4 Conduct of Inspection

Four separate surveys were undertaken as part of this inspection. The first two were transect lines that crossed the width of the water body between Pier 3 and Wharf 4 followed by two circular searches in the south-west corner of the proposed waterfront square area (Figure 23).

The locations of these transects were positioned within the footprint of the proposed development to cover bathymetric anomalies and the locations of previous wharfs. Video footage was used to record these transects as well as observations communicated to those on board who compiled written notes.



**Figure 23: Locations of transects and circle searches on an aerial of the study area, with previous coastlines (see Figure 22) and the proposed development area faintly shown in the background (Base image: Google Earth).**

#### 4.5 Seabed Type

The seabed was consistent throughout the study area as a loose fine silt. This sediment is prone to being lifted into suspension with any form of turbidity. Unfortunately the process of surveying requires guide lines on the seabed and divers in close proximity to the sediment. These actions inevitably caused turbidity and resulted in considerably reduced visibility. Occasional marine flora was identified growing in the seabed but the large majority of the survey area was without natural features other than small holes which are the entrance to marine animal burrows, probably crabs.

## 4.6 Transect Results

### 4.6.1 Transect 1

This transect was 70 m in length and surveyed by Cos Coroneos from the west to east, recording by video. The transect was then surveyed east to west with verbal observations being recorded (Table 4).

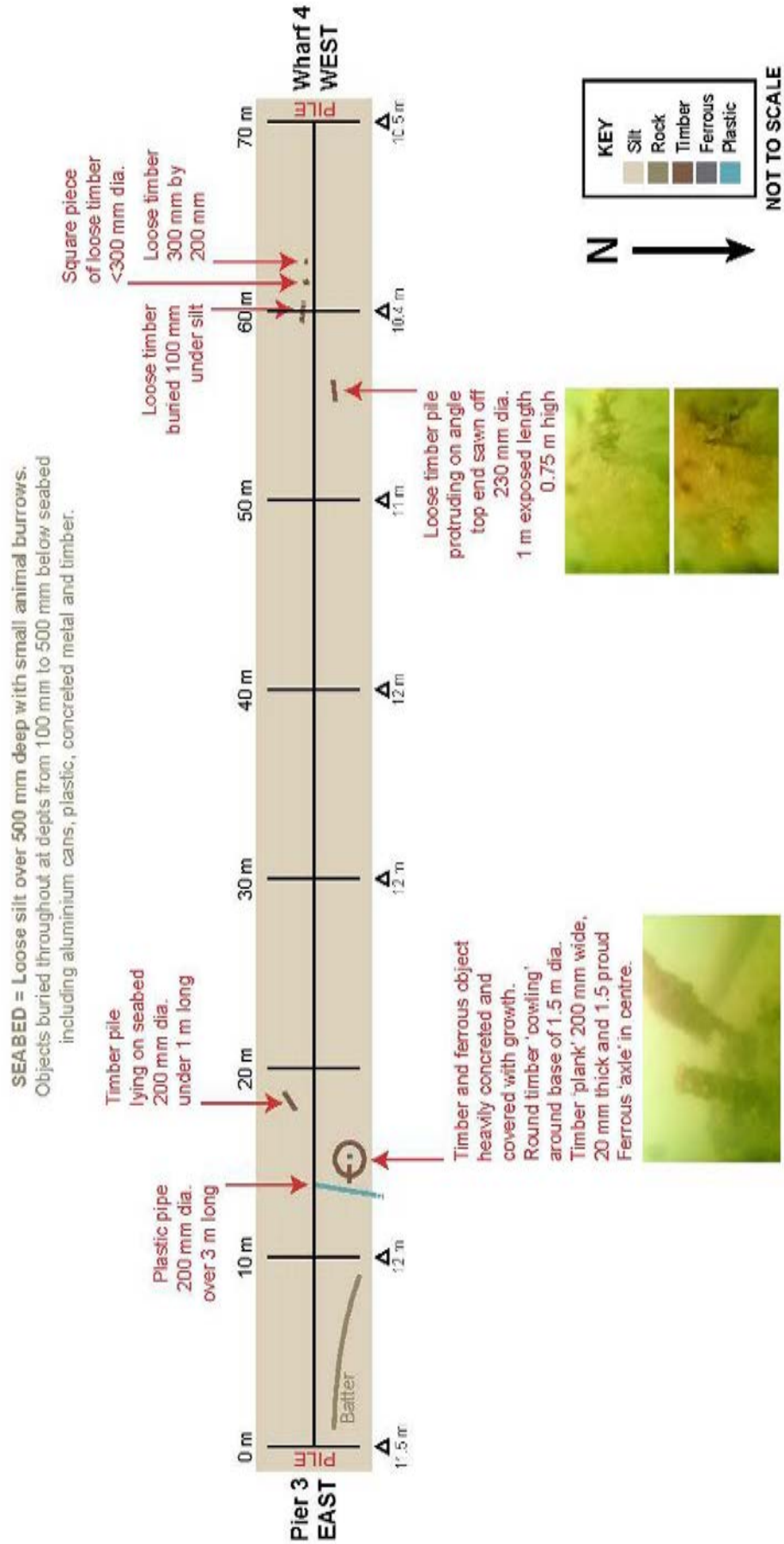
During the transect, the diver probed into the sediment with a 0.5 m range pole and/or his hand to test the depth of the loose silt and for any resistance from different sediment or buried objects. It was observed that almost 50% of these probes resulted in hitting buried items. Through touch he was able to identify glass bottles, aluminium cans and plastic items amongst the buried objects.

Features encountered along the transect included timber pieces: a loose or broken off timber pile of 200 mm diameter, another timber pile of 250 mm diameter and 750 mm exposed length with a bolt through it, a piece of loose buried timber and another two pieces of 300 mm by 200 mm timbers protruding at an angle (Figure 24). Despite these multiple timber targets, the condition of these finds indicated that they were relatively recent discards, likely present for under 50 years. A long piece of flexible plastic pipe was also identified running perpendicular to the transect line and of indeterminate length.

One interesting feature was an accumulation of items which may have formed a single structure. It consisted of one timber, 1.5 m high and protruding from the seabed at an angle, with a smaller 'axle' of 150 mm diameter parallel to it but of shorter length. Around both of these items was a round 'cowling' slightly prominent from the seabed. This 'cowling', approximately 1.5 m in diameter, was heavily encrusted and appeared to be made of wood. This feature could not be identified.

**Table 4: Dive profile for Transect 1 survey**

Dive	Diver	Start Time	End Time	Bottom Time	Visibility	Tasks Completed
1	Cosmos Coroneos	0930	1020	50 min	1-2 m under wharf, reduced to 0.5 m in open water	Survey transect west to east then east to west
2	Cosmos Coroneos	1050	1100	10 min	0.5 m	Re-inspect target with axle and 'cowling'



Cosmos Archaeology Pty Ltd

Figure 24: Digitised survey findings of Transect 1.

#### 4.6.2 *Transect 2*

This transect was 60 m in length and surveyed by Coroneos from west to east for 50 m. The dive was stopped at this point due to considerable hazards posed by protruding items that were entangling the diver. The survey was continued from east to west for 20 m to ensure overlap (Table 5).

Features identified on this transect included a 2 m by 1 m concrete block sitting 200 mm proud of the seabed, a piece of plastic conduit and a truck tyre (Figure 25). 50 m to the east along the transect was an object composed of two ferrous pipes, approximately 2 m long and parallel to each other, approximately 400 mm apart. This is possibly a ladder. Some heavily concreted ferrous objects were observed nearby, one of which appeared to be an axle. At the eastern end of the transect was a modern padded chair, a ferrous hollow rectangular object like a coaming, a ferrous pipe and a timber pile of 300 mm diameter that had fallen over or had been broken off. Again, this pile appeared relatively recent.

**Table 5: Dive profile for Transect 2 survey**

Dive	Diver	Start Time	End Time	Bottom Time	Visibility	Tasks Completed
3	Cosmos Coroneos	1120	1140	20 min	0.5 m	Survey transect west to east to 50 m
4	Cosmos Coroneos	1150	1205	15 min	0.5 m	Survey transect east to west to 20 m

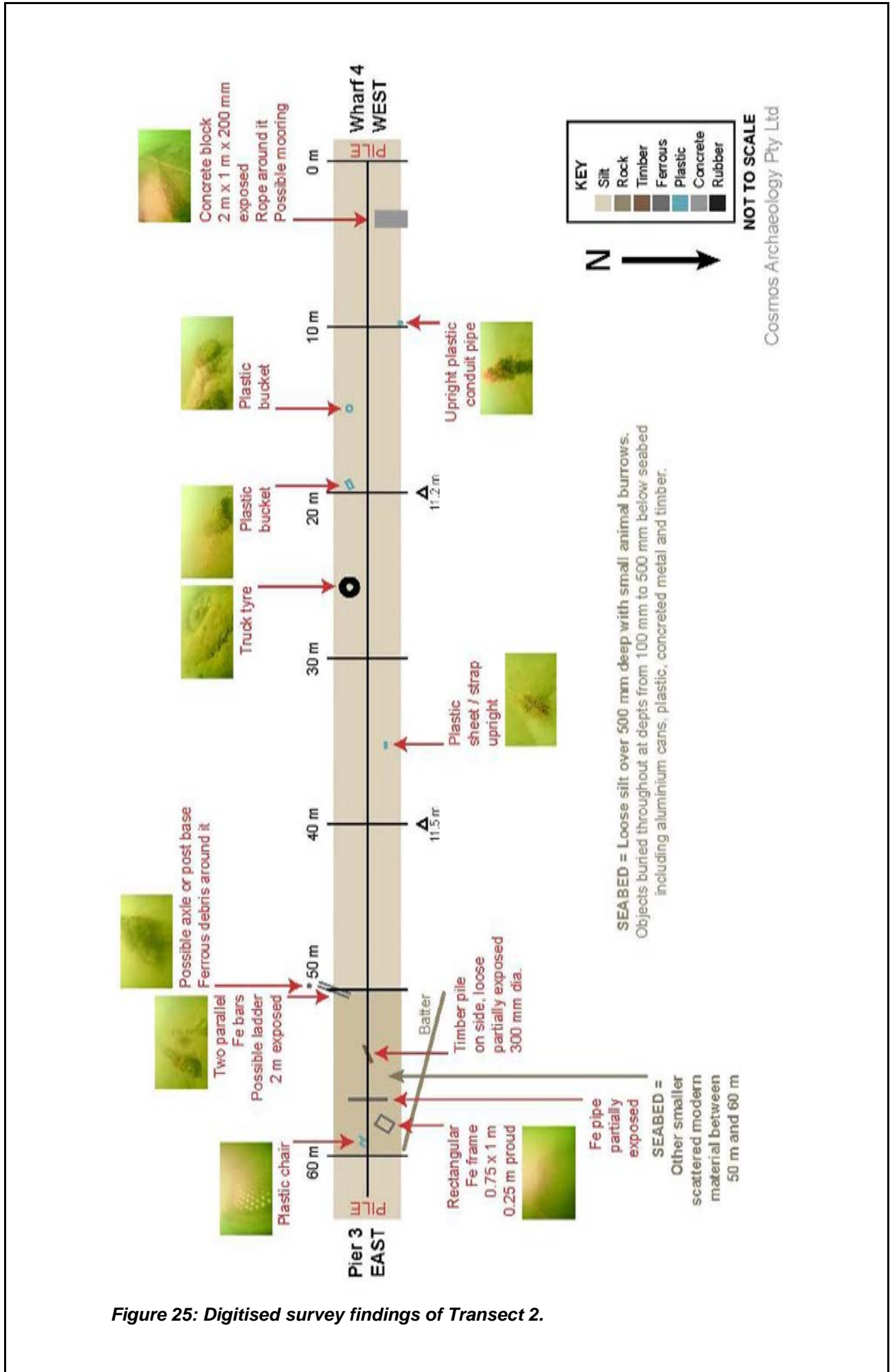


Figure 25: Digitised survey findings of Transect 2.

### 4.6.3 Circle Search 1

The first circle search was undertaken by Luke Gallager, a commercial diver (Table 6). A central point was placed using a weighted buoy. The diver attached a snag line to this central position and placed himself 5 m along the line from the centre. He then swam in a clockwise direction around the centre point, maintaining a distance of 5 m, reporting observations to the surface. Once completed, he let out another 4 m of snag line, placing himself 9 m from the centre, and repeated the survey in an anti-clockwise direction while reporting observations. In this manner, an approximately 12 m radius from the centre point was inspected.

While at the centre point the diver noted a loose timber pile, approximately 160 mm above of the seabed and 120 mm in diameter, 1 m to the north of the centre point. Another pile was identified 1.4 m to the north, 540 mm proud with a width tapering from 240 mm at the top to 200 mm at the base, leaning on an angle in the seabed (Figure 26).

Beginning from the southern extremity, the diver identified four tractor tyres on the seabed 7 m from the centre point. He also noted a yellow-painted ferrous object, a 6 m long rolled steel joist (RSJ) beam, two v-shaped beams and a besser block.

Towards the west was a heavily corroded ferrous pile, tapering from 180 mm diameter to 300 mm diameter and exposed for a length of 180 mm. There was also a ferrous structure of angle irons with slight marine growth. To the north-west was a tyre, 1 m in diameter, and a slab of concrete with the exposed portion measuring 2.5 m long and 450 mm wide, sitting 800 mm proud of the seabed. The batter leading up to the piles of the apron linking Pier 3 and Wharf 4 was also identified to the north-west. Towards the north were two mooring blocks, one 1x1 m square with 600 mm above the seabed and the other of a flat topped cone shape, 600 mm at its widest, 150 mm at its narrowest and 800 mm proud of the seabed.

Nine metres to the east of the centre point was a tractor tyre, a collection of round objects that were possibly paint tins, and a metal T-shaped item measuring 2 m long covered in marine growth. Heading towards the south was a mound of metal and cable, likely flexible steel wire rope (FSWR), covering a 1.5 m by 2 m area ranging in height above the seabed of between 100 mm and 300 mm. There was also a clump of twisted ferrous items covering an area of 3.5-4 m long and 2 m wide. The batter was noted to have ferrous debris including a lattice like object.

Towards the south a number of ferrous objects protruded up to 800 mm from the seabed, appearing to be associated with one or more buried structures. A particular concentration of debris measured 1.5 m by 1 m in size. One timber pile was identified next to an existing pile of the wharf, protruding 660 mm from the seabed. It is most likely associated with the existing wharf structure.

**Table 6: Dive profile for Circle 1 survey**

Dive	Diver	Start Time	End Time	Bottom Time	Visibility	Tasks Completed
5	Luke Gallager	1250	1320	30 min	3-4 m	Circle 1 survey

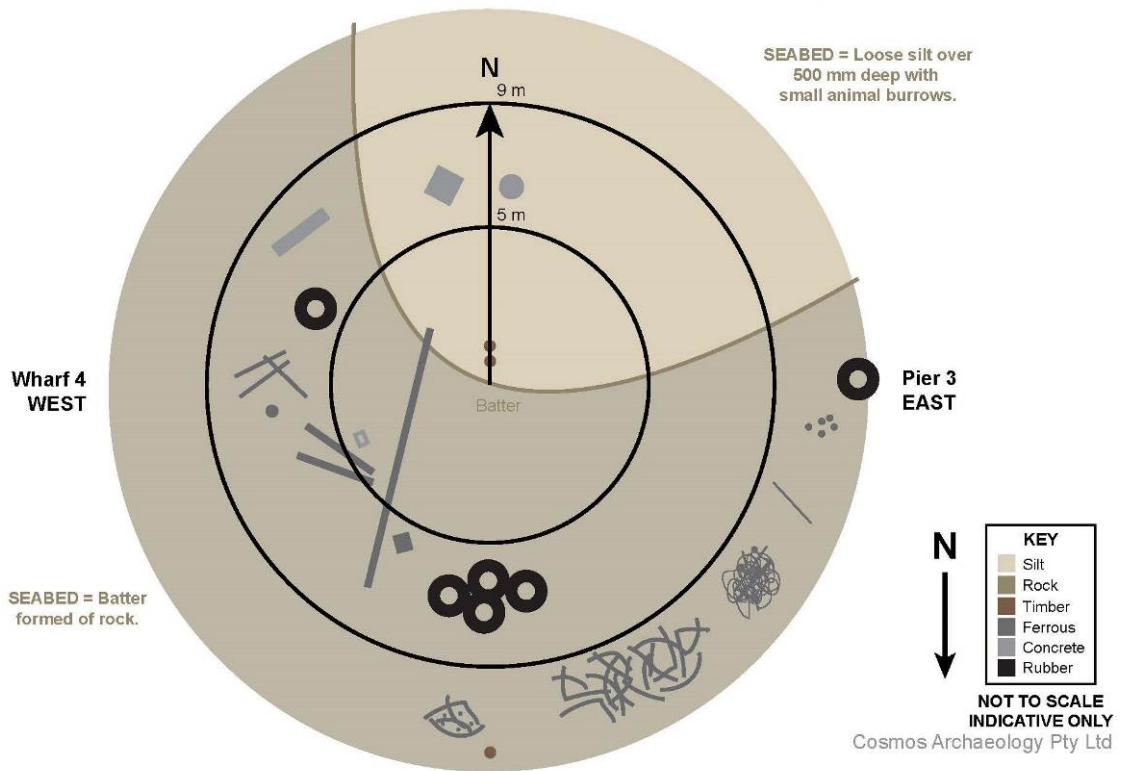


Figure 26. Digitised survey findings of Circle Search 1.

#### 4.6.4 Circle Search 2

Luke Gallager also undertook the second circle search, repeating the method described for Circle 1 (Table 7). This time the inner circle was conducted in an anti-clockwise direction and the outer circle in a clockwise direction.

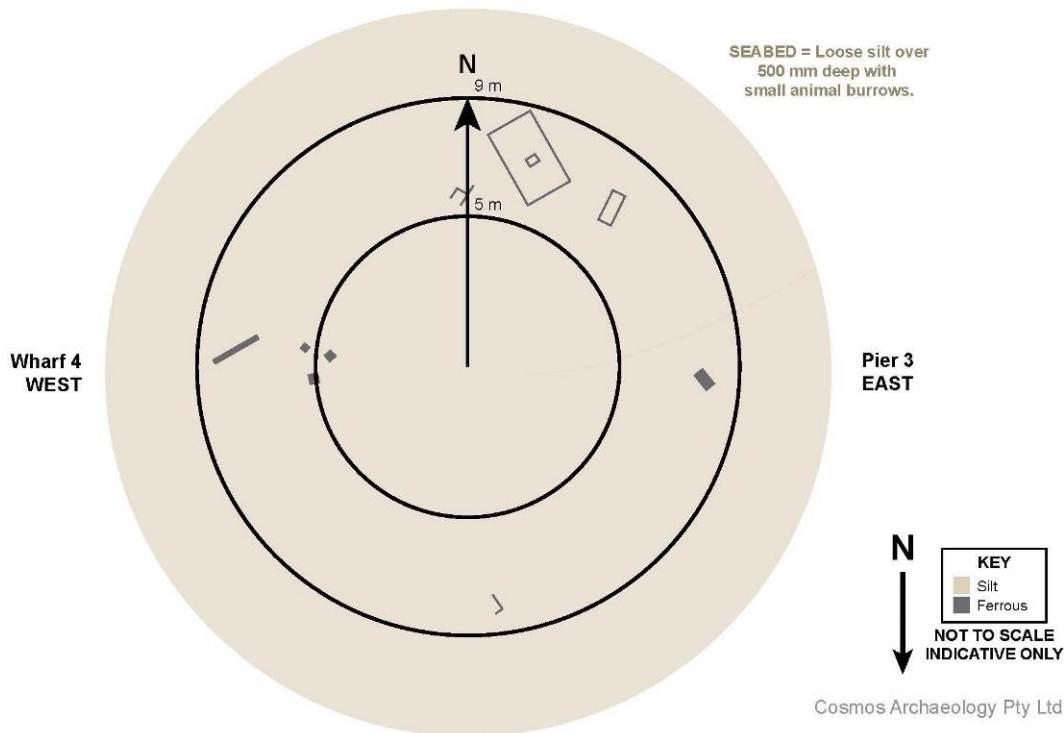
To the west was ferrous debris, including at least three items partially exposed. Further from the centre was a continuation of the ferrous debris with an item measuring 150 mm square by 2 m in length (Figure 27).

To the north was a chair sitting 300 mm proud of the seabed and a metal frame. The frame measured 2.5 m by 1.5 m and 600 mm above the seabed with an inner box of 300 mm by 500 mm and 300 mm proud. There was another ferrous box, 2 m long and 300 mm wide exposed, sitting 100 mm proud of the seabed.

In an easterly direction from the centre point was a large piece of metal, 200 mm proud, 30 mm thick and 500 by 300 mm exposed. To the south was a ferrous pipe with a 90 degree bend with a 150 mm diameter and 450 mm exposed length.

Table 7: Dive profile for Circle 2 survey

Dive	Diver	Start Time	End Time	Bottom Time	Visibility	Tasks Completed
6	Luke Gallager	1325	1355	30 min	3-4 m	Circle 2 survey



**Figure 27: Digitised survey findings of Circle Search 2.**

#### 4.7 Summary of Results and Archaeological Potential

The survey of the southern portion of the seabed between Pier 3 and Wharf 4 encountered moderate visibility which worsened to very limited when disturbed. The majority of finds included timber piles and timbers, both loose and fixed in the seabed. For the most part their condition indicated they had not been in the water for a long period of time and/or were associated with the existing Walsh Bay wharves. It is likely that these timbers are the result of repairs on Pier 2/3 and Wharf 4/5, specifically the replacement of fenders. The exception to this is the tapering and leaning pile observed in Circle Search 1. It is located beyond the apron of Wharf 4 and its tapering towards the base where it is exposed just above the seabed. The tapering could be a result of wear which commonly occurs at the base of the exposed length of the piles, suggesting that this pile is *in situ*. This would indicate that the pile is a dolphin pile associated with the existing Walsh Bay wharves or an exposed remnant of one of the 19<sup>th</sup> century to early 20<sup>th</sup> century wharves known to have been situated within the study area.

The large majority of the other finds were different forms of ferrous debris, again appearing to be of modern origin. The plastic pipe, plastic conduit, chair and truck tyres are certainly of modern origin, with the tyres likely used as improvised fenders on the wharf or on vessels.

The concentration of loose finds were located closer to Pier 3, Wharf 4 and the timber apron that links the two. This would suggest that the majority of these objects were discarded from the wharves and/or vessels that have been moored alongside.

The seabed was consistent throughout the surveys as a fine silty sediment. There has been a pattern of accretion of sediment between Pier 2/3 and Wharf 4/5 since dredging for large trading vessels is no longer required. This build-up in sediment has likely buried any remains associated with previous wharves. The looseness of the sediment would also allow for recent items to sink and also become buried. This is evidenced by the probing conducted during Transect 1, where there was some resistance from buried items in the sediment. Using his hand as a probe, the diver was able to identify modern debris such as glass bottles, aluminium cans and plastic.

## 5 ARCHAEOLOGICAL POTENTIAL

### 5.1 Introduction

The following section is a summary of the potential for underwater archaeological remains to exist within the study area along with a predicted level of integrity.

The historical background provided in **Section 2** concentrated on the changes to the shoreline and wharf structures across four phases of development. The predicted density of structural features and cultural deposits depends on the extent of land reclamation, demolition, dredging and successive construction. Underwater archaeological evidence will consist of remains of the wharf structures and cultural deposits. Remains of the tug *Undine* have also been identified within the study area.

### 5.2 Underwater Archaeological Remains

#### 5.2.1 Phase 1 – A ‘vacant’ shore from 1788 to the early 1820s

During this phase of maritime activity in Walsh Bay there is no evidence for the construction of wharf structures within the study area. It is possible that cultural deposits – related to fishing or waste disposal – may have been formed by coastal activities during this time but these would have been scattered along the entire stretch of Walsh Bay.

#### 5.2.2 Phase 2 – Beginnings of maritime commerce from the early 1820s to 1870

The first evidence of wharf structures within the study area is Pitman’s Wharf, built in 1829 and shown in an 1831 map of Walsh Bay. Although it changes ownership a number of times, eventually becoming Alger’s Wharf, the maps indicate that Pitman’s Wharf remained approximately the same size throughout this phase of maritime activity. However, it is likely that the original wharf was repaired or even replaced during this time. Pitman’s Wharf was likely a timber platform supported by timber piles.

Maintenance of the wharf structure may have resulted in the deliberate or accidental discard of damaged wharf elements into the water. There may also have been remnants of wharf piles retained in the seabed when replaced with newer piles. The timber used for wharf building was likely Turpentine or Red gum, and may have had copper sheathing.

The fact that Pitman’s Wharf retains a similar shape throughout this time is beneficial for the survival of cultural deposits. These deposits would have been formed deliberately, such as dumping rubbish, food and drink containers or broken equipment, or accidentally by dropping tools, ship’s fittings, cargo and other items. Such deposits can be expected to be scattered across the study area, concentrated in areas off the wharves and approximately 5 to 10 m away from the wharves on the other side of the moored vessels. Items may also have fallen through gaps in the wharves themselves and formed cultural deposits of smaller items. These items would become buried in the sediment around the wharf. Dredging and the future construction of Hoffnung’s Wharf may have impacted these earlier remains but it is unlikely to have completely removed them.

#### 5.2.3 Phase 3 – Bulk overseas export from 1870 to 1900

Pitman’s Wharf, later referred to as Alger’s Wharf, was removed and replaced with a much longer wharf, likely in the 1890s. The new wharf was owned by S. Hoffnung and

Co. until the early 20<sup>th</sup> century before it was bought by Parbury. The wharf operated throughout this phase of maritime activity and until 1913.

When the Alger's Wharf was demolished, the piles would most likely have been sawn-off close to the seabed (kneeling height) by divers. It is also possible that wharf superstructure, such as head stocks and tram rails, may have been deliberately placed on the seabed or accidentally discarded during the demolition. If the remains of timbers from Alger's Wharf survived and are buried through the accumulation of silt then these remains can be expected to be in excellent condition, however, they are likely to remain relatively deeply buried in the seabed as a result of continued sedimentation.

It appears that Hoffnung's Wharf was only used for approximately 23 years. Despite this short time, it was during a phase of intense maritime activity in Walsh Bay and Sydney Harbour. A large amount of material was imported and exported during this time. This would have resulted in relatively high-density cultural deposits accumulating beneath the wharf and from moored vessels. Again, maintenance of this wharf may have resulted in discarded timber elements or cut piles left in the seabed but these would be relatively deeply buried beneath continued sedimentation.

#### **5.2.4 Phase 4 – Government reconstruction from 1900 to present**

After the turn of the century, redevelopment by Sydney Harbour Trust did not start within the study area until 1913. This was when Hoffnung's Wharf, then called Parbury's Wharf 3, was demolished. Parbury's Wharf ran directly through the development area for Wharf 4/5. Demolition of Parbury's Wharf 3 would likely have been undertaken with more care in areas where vessels would need to berth.

The pattern of accidental or deliberate deposition of artefacts would have continued during this phase of maritime activity. These discarded items would be similar in type, including rubbish, boating equipment, cargo and personal items.

Again, possible remains of the wharf left by demolition may have included cut pile stumps and discarded timber elements from the wharf superstructure. If the remains of timbers from Parbury's Wharf 3 survived and are buried through the accumulation of silt then these remains can be expected to be in excellent condition but deeply buried beneath continued sedimentation.

Dredging is known to have taken place between Pier 2/3 and Wharf 4/5 since the 1920s which may have impacted remains of Pitman's Wharf and Hoffnung's Wharf, but not the remains that may be present beneath the current pier and wharf. After any initial capital dredging, any further dredging would have served the twin purposes of maintaining adequate depth for vessels to access the wharves and access the waterway outside of Walsh Bay as well as to remove surface debris that may foul vessel propellers. Dredging would have mostly focused on the berths alongside Pier 3 and Wharf 4 and less so towards the middle space between the berths. The timber apron that links the two wharves would have been used by vessels but probably with a shallower draft than those using Pier 3 and Wharf 4.

#### **5.2.5 Shipwrecks**

Five vessels are known to have been lost at Walsh Bay and Dawes Point. These are listed in the Australian National Shipwrecks Database and in Table 8.

**Table 8: List of shipwrecks identified in the Walsh Bay and Dawes Point areas.** <sup>48</sup>

Name (ID)	Date Lost	Where Lost	How Lost	Re-floated?
<i>Acme</i> (9)	1923	Walsh Bay	Sunk	Yes
<i>Birkenhead</i> (220)	1913	Dawes Point	Struck wharf and sunk	Possibly
<i>Cateaux Wattel</i> (318)	1860	Walsh Bay	Fire and foundered	No
pinnacle H M <i>Penguin</i> (1453)	1914	Dawes Point	Collision and sunk	No
<i>Undine</i> (1859)	1936	Walsh Bay	Explosion and fire	Possibly

*Acme* is known to have been re-floated and later dismantled, therefore, there is likely to be minimal remains associated with this vessel within Walsh Bay. No further information was available as to where this vessel sunk. *Acme* was a 14.8 m iron hulled screw steamer built by Foster and Minty at Balmain, Sydney Harbour, in 1892.

*Cateaux Wattel* foundered off Bett's Wharf which was located at the eastern end of Walsh Bay and therefore outside the study area.

*Undine* exploded whilst slipping its moorings at Walsh Bay Wharf 4 and was most likely salvaged as it would have been a hazard to shipping (see **Section 2.1.6**). It is possible that remains of this vessel that were not salvaged are situated within the study area.

*Birkenhead* was a 115 tonne wooden screw steamer built in 1888 by James G. Pashley in Balmain, Sydney Harbour. On 14<sup>th</sup> May, 1913, *Birkenhead* struck a pontoon in Walsh Bay smashing the pontoon and giving the vessel a large hole in the bow. From here it ran under full power to the Dawes Point Horse Ferry wharf where the crew escaped but the vessel sank within minutes. <sup>49</sup> The vessel was salvaged although the extent is unknown, possibly resulting in the entire vessel being re-floated. It is unlikely that there are any remains of the vessel caused by the collision within the study area, only possible damaged timbers from the pontoon.

The wooden screw steam pinnacle from HMS *Penguin* was travelling to Garden Island from Cockatoo Island when it collided with *Coombur* near Dawes point on the 9<sup>th</sup> of July, 1914. The vessel sunk and does not appear to have been re-floated or salvaged. However, this wreck is likely outside of the study area with a negligible possibility of remains to be found within the study area.

### 5.3 Summary

The history of Walsh Bay is associated with the development of the shipping industry and construction of wharves. As maritime trade grew and larger vessels were entering the harbour, larger wharves and facilities were required. This led to the demolition and redevelopment of wharves in Walsh Bay.

It is believed that any capital dredging that took place within the study area (Phase 4) impacted *in situ* remains associated with the earlier phases (1 to 3) but is unlikely to

<sup>48</sup> Australian Government Department of the Environment and Energy, c. 2016, 'Australian National Shipwreck Database', search in 'where lost' for 'Walsh Bay' and 'Dawes Point', available <https://dmzapp17p.ris.environment.gov.au/shipwreck/public/wreck/search.do>

<sup>49</sup> Anon., Wednesday 14 May 1913, 'Ferry Sinks – Off Dawes Point – Disaster to the Birkenhead – No Passengers Aboard – Narrow Escape of Crew', *Evening News*:9

have completely removed them. This is because Walsh Bay was relatively deep for shipping in the early 20<sup>th</sup> century and would not have required substantial deepening within the study area. Some deepening at the berths would have occurred as vessels became larger throughout the 20<sup>th</sup> century. This would have resulted in further impacts to the underwater archaeological remains associated with the earlier phases.

The following is a summary of the predicted density of identified underwater archaeological remains within the study area of waterfront square (Table 9).

**Table 9: Identified underwater archaeological remains within the study area.**

Phase	Identified Underwater Archaeological Remains	Predicted Density
Phase 1 – A ‘vacant’ shore from 1788 to the early 1820s	<ul style="list-style-type: none"> <li>Cultural deposits prior to wharf development</li> </ul>	Negligible – higher densities towards the southern part of the study area
Phase 2 – Beginnings of maritime commerce from the early 1820s to 1870	<ul style="list-style-type: none"> <li>Wharf elements from Pitman’s Wharf (later Alger’s Wharf)</li> <li>Cultural deposits from Pitman’s Wharf (later Alger’s Wharf) and/or moored vessels</li> </ul>	Low – higher densities within the footprint of Pitman’s Wharf decreasing with distance from the wharf. Also lower densities in the berths of Pier 3 and Wharf 4.
Phase 3 – Bulk overseas export from 1870 to 1900	<ul style="list-style-type: none"> <li>Wharf elements from Hoffnung’s Wharf (later Parbury’s Wharf 3)</li> <li>Cultural deposits from Hoffnung’s Wharf (later Parbury’s Wharf 3) and/or moored vessels</li> </ul>	Low to medium – higher densities within the footprint of Hoffnung’s Wharf decreasing with distance from the wharf. Also lower densities in the berths of Pier 3 and Wharf 4.
Phase 4 – Government reconstruction from 1900 to present	<ul style="list-style-type: none"> <li>Wharf elements from Pier 2/3 and Wharf 4/5 during the operational years of the wharves until the 1970s</li> <li>Cultural deposits from Pier 2/3 and Wharf 4/5 during the operational years of the wharves until the 1970s</li> </ul>	Medium – higher densities from the final operational years closer to Pier 3, Wharf 4 and the timber apron linking the two. Lower densities from early and middle years of operation due to dredging.
Shipwrecks	<ul style="list-style-type: none"> <li>Shipwreck material from the tug <i>Undine</i></li> </ul>	Low – higher towards Wharf 4 although the exact location of the wrecking event is not known.

## 6 ASSESSMENT OF HERITAGE VALUES

This section assesses the heritage values of the remains that are included within this Archaeological Assessment and Management Plan to establish a framework for managing those values. This is undertaken by firstly identifying the heritage significance of the remains and of the archaeological potential that exists on and below the seabed. After this, individual elements associated with each heritage item can be identified and labelled. The elements assessed below include:

- Remains of the tug *Undine*;
- Wharf elements and cultural deposits from the 19<sup>th</sup> century to early 20<sup>th</sup> century (including Pitman’s Wharf and Hoffnung’s Wharf), and;
- Cultural Deposits from the middle to late 20<sup>th</sup> century.

Cultural deposits from 1788 to the early 1820s has not been assessed due the predicted negligible density of these remains within the study area.

### 6.1 State Heritage 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*<sup>50</sup> (the *Burra Charter 1979*, most recently revised in 1999), the standard adopted by most heritage practitioners in Australia when assessing significance, defines cultural significance as;

**“Aesthetic, historic, scientific or social value for past, present or future generations”**

Australia ICOMOS Inc. (1999)

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 standard evaluation criteria:

- 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**;

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<sup>50</sup> **The Australia ICOMOS, 1999**, Charter for the conservation of places of cultural significance.

- 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.

## 6.2 Remains of the tug *Undine* – Evaluation of Cultural Significance

The following significance assessment applies to remains of *Undine* (lost 1936) which exploded while moored at Wharf No. 4 but was likely salvaged.

- 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);

Shipping and trade was essential for the development of Sydney in the 19<sup>th</sup> and 20<sup>th</sup> centuries. Trading vessels relied upon the services of tug boats to maintain efficient vessel movement within the Harbour. With increasingly larger vessels being accommodated in harbours and ports in the late 19<sup>th</sup> century a niche market was created for towing large vessels into the harbour. Competition between tug boat companies arose. The tug boat *Undine* forms part of the maritime history of Sydney Harbour as a tug boat that facilitated the movement of vessels. It was built in 1884 and had a working life of 52 years. At the time it wrecked the vessel was registered to J. and J. Daley, well known tug and water tender owners in Sydney. It was one of many boats used for this purpose and, therefore, is part of the course of Sydney’s cultural history.

*The remains of the tug Undine are considered to be of **Local Significance** under this 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);

*Undine* was built by Thomas Batty and Daniel Sheehy in 1888, the only vessel built by this pair. This was also the only vessel attributed to Batty although Sheehy was a well-known boat builder and shipwright in Sydney. Sheehy specialised in yachts, designing and constructing a number that were praised in *The Sydney Morning Herald*.<sup>51</sup> Although he was declared ‘the most successful yacht builder’ in 1865, *Undine* was not built until 1888 and was a different class of vessel to his usual specialty. It is possible that Sheehy made an exception to build the tug *Undine* with Batty, supported by the fact that Batty and then Sheehy owned the vessel. This may have been in response to the growing demand of tug boats due in the late 19<sup>th</sup> century due to the increasing size of vessels entering Sydney Harbour. The tug was registered to J. and J. Daley, who were locally well-known tug operators in Sydney, at the time it was wrecked.

*The remains of the tug Undine are considered to be of **Local Significance** under this criterion.*

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<sup>51</sup> *Op. Cit. Anon., Tuesday 21 March 1865*

- 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 remains of *Undine* are likely to have a capacity to demonstrate creative and/or technical achievement in relation to the construction of the vessel. As the only vessel built by the combined efforts of Batty and the yacht builder Sheehy, it is likely unique in its construction. Tug boats were generally built by private companies and hence were unlikely to be based on a standard design. Few detailed construction records exist of vessels constructed during this time, hence, remains of the vessel would offer a unique insight into the design and construction techniques used.

*The remains of the tug Undine are considered to be of **Local Significance** under this 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**;

During the working life of *Undine* it would have been associated specifically within maritime trade and vessel movement in Sydney Harbour. It has a general association with Sydney Harbour port workers. However, it does not have any special associations with a particular community or cultural group.

*The remains of the tug Undine are **not considered** to meet the requirements of this 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);

The tug *Undine* is an example of a working vessel on Sydney Harbour from the late 19<sup>th</sup> century. However, the incident of its explosion, wrecking and possible salvage/removal may not have left much in the way of remains on the seabed, especially considering the information that material was blown into wharves 3 and 4 during the explosion. What does remain has the potential to add to our knowledge of the vessel's method construction and materials. This is particularly relevant due to the unique circumstances of its builders. It was a joint project between Sheehy, a well-known yacht builder who was late in his career, and the unknown Batty who is not attributed to building any other vessels. The construction and materials used in this vessel may also contribute to our knowledge of the large demand for tug boats at this time.

*The remains of the tug Undine are considered to be of **Local Significance** under this 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);

There are at least 425 recorded wrecked vessels of timber construction built in New South Wales before 1900, with at least 90 of these built in Sydney. Due to the explosion of *Undine*, it is likely that any remains of the vessel are in pieces and scattered, resulting in a poor example of a shipwreck. It is likely that there are better preserved examples elsewhere of timber vessels from this period.

However, *Undine* is the only known vessel built by Batty and Sheehy. It may also be the only tug boat built by Sheehy late in his successful career as a yacht builder. In this regard, *Undine* is a unique vessel and does possess rare qualities.

*The remains of the tug Undine are considered to be of **Local Significance** under this 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.

Any remains of *Undine* will likely be scattered pieces as a result of the explosion that caused it to wreck. These remains will not be intact and will likely have been scattered further by dredging or maintenance to the wharf over time. As such, the wreck site is not likely to retain the principle characteristics of a tug boat.

*The remains of the tug Undine are **not considered** to meet the requirements of this criterion.*

#### STATEMENT OF SIGNIFICANCE

*Undine* was one of many working tug boats in Sydney Harbour towards the end of the 19<sup>th</sup> century and into the 20<sup>th</sup> century. It facilitated shipping and trade that was essential to the prosperity of Sydney at this time. It is the only vessel built by Thomas Batty and Daniel Sheehy, with the latter being a well-known boat builder who specialised in yachts. At the time of its explosion and wrecking, *Undine* was registered to J. and J. Daley, well-known tug operators in Sydney. The primary significance of the remains lies in the lack of records for *Undine*’s unique construction history and the technical insights that the remains may hold. It is assessed as being an item of Local heritage significance on account of its historical, associative, technical, informative and rare values.

### **6.3 Wharves and Cultural Deposits from the 19<sup>th</sup> Century to Early 20<sup>th</sup> Century – Evaluation of Cultural Significance**

The following significance assessment applies to Pitman’s Wharf, Hoffnung’s Wharf and identified cultural deposits formed by accidental or deliberate discarding from wharves and vessels during this period.

- 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);

Walsh Bay served as a major shipping and trade hub for Sydney from the 1830s until the 1980s. The successful unloading and loading of goods and passengers at the wharves in Walsh Bay contributed to the rise in the prosperity of Sydney throughout the 19<sup>th</sup> and 20<sup>th</sup> centuries. Pitman’s Wharf (later Bett’s Wharf, Shepard and Alger’s Wharf and then Alger’s Wharf) and Hoffnung’s Wharf (later Parbury’s Wharf 3) were both conspicuous and well-known wharves featuring heavily in the history of trade and commerce that took place at Walsh Bay during the 19<sup>th</sup> century.

*Wharves and cultural deposits from the 19<sup>th</sup> century are considered to be of **State Significance** under this 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);

The Pitman's and Hoffnung's Wharves have associations with a number of notable people from Sydney's early history. The ownership of the wharves were directly associated with wealthy shipping merchants.

Pitman's Wharf, constructed in 1829, was owned by a Mr Pitman who was one of the first merchants on the Sydney scene between Dawes Point and Millers Point. Not much information is known about his character. The wharf then changed hands to two pairs of owners, Betts and Panton to the east and Shepard and Alger's to the west. Betts and Panton were shipping agents established by John Panton and his brother-in-law John Betts. Panton later became a politician and Member of the New South Wales Legislative Council and a Member of the Queensland Legislative Council. Shepard and Alger's were also shipping agents with John Alger's becoming one of the most successful merchants in Sydney in the mid-19<sup>th</sup> century.

The wharf became known as Hoffnung's Wharf once it was extended in the 1890s. The company S. Hoffnung and Co. was a company established by the Polish merchant Sigmond Hoffnung and was a very prosperous company. Parbury was another of the successful merchant companies in Sydney. Lamb, Parbury and Co. was a family business operated by the Lamb family, famous as merchants and pastoralists in the mid to late 19<sup>th</sup> century. Parbury and Co. operated from Walsh Bay.

*Wharves and cultural deposits from the 19<sup>th</sup> century are considered to be of **Local Significance** under this 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 identified underwater archaeological remains of Pitman's Wharf and Hoffnung's Wharf are likely to demonstrate creative and/or technical achievement relating to the construction and maintenance of those wharves. Wharf construction in this area would have presented engineering difficulties including the deep silt deposits as was encountered by those who built the existing wharves. The technology and the resources of a government were not available to private merchants who constructed the 19<sup>th</sup> to early 20<sup>th</sup> century wharves. It is likely that some creative or innovative solutions were deployed to overcome such environmental constraints so as to build functioning and stable wharf structures.

Structural remains of the wharves and/or cultural deposits have no aesthetic value in their current condition as they are buried and inaccessible to the public.

*Wharves and cultural deposits from the 19<sup>th</sup> century are considered to be of **Local Significance** under this 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**;

The wharves at Walsh Bay were private holdings that worked independently of each other before the post-1900 wharf redevelopment under the Sydney Harbour Trust. While these wharves were an integral part of the goods transportation and waterside warehousing needs, there was no single particular community or cultural groups who were associated with the wharf other than the maritime community of Sydney generally.

*Wharves and cultural deposits from the 19<sup>th</sup> century are **not considered** to meet the requirements of this 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);

The historical information regarding the construction of wharves in Walsh Bay from the 19<sup>th</sup> century is limited to historical documentation. There are primary resources revealing the location and likely construction type of each wharf. The supposed poor condition of the 19<sup>th</sup> to early 20<sup>th</sup> century wharves also provided the Government with reason to re-shape the waterfront. Identified underwater archaeological remains under the current seabed would contribute to our understanding of materials, construction method and how the wharves were removed when new wharves were constructed. Study of the remains of these wharves may provide some insight into their true condition.

Artefacts associated with the 19<sup>th</sup> to early 20<sup>th</sup> century wharves are significant because they are representative of the trade and associated industries that took place in Walsh Bay. They are likely to provide insight into labour practices on the waterfront at this time. The stereotype of the hard drinking wharf labourer is a feature of the Australian waterfront. Drinking on the job may have been the norm rather than the exception. At Dalgety's bond store nearby it appears that "...no-one was ever strictly sober after ten o'clock in the forenoon".<sup>52</sup> This behaviour can be preserved in the underwater archaeological record as was observed in the excavation of the Long Jetty, Fremantle, Western Australia, where the large proportion of alcohol containers recovered reflected "...what was possibly an excessive consumption of drink at Fremantle, a port noted for its unsuitability and labour problems".<sup>53</sup>

*Wharves and cultural deposits from the 19<sup>th</sup> century are considered to be of **State Significance** under this 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);

Sydney's 19<sup>th</sup> century waterfront was once packed with private trading wharves. None of these structures exist intact. Most of them were dismantled in the early 20<sup>th</sup> century. The bulk of the remains of many of these structures are under reclamation. Therefore many such remains of 19<sup>th</sup> century trading wharves are both well preserved under reclamation but at the same time inaccessible unless exposed during foreshore development. Therefore it can be stated that the remains of 19<sup>th</sup> century trading wharves can be considered to be common, though the volume of these remains are steadily declining due to large scale foreshore development. The opportunity to have these remains adequately recorded and studied rarely arise.

*Wharves and cultural deposits from the 19<sup>th</sup> century are considered to be of **Local Significance** under this criterion.*

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<sup>52</sup> *Op. Cit. Fitzgerald, S., Keating, C., 1991:63*

<sup>53</sup> *Garrat, D., McCarthy, M., et al, 1995, An assessment of the submerged archaeological remains at the Albany Town Jetty, report prepared for LandCorp, Western Australia.*

- 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.

Pitman’s and Hoffnung’s Wharves were two of many of the wharves that dotted the Sydney foreshore in the 19<sup>th</sup> century. However, their value in demonstrating what the Sydney waterfront looked like 100 years ago is limited because the remains are under water, as well as being partially buried by silt and landfill.

*Wharves and cultural deposits from the 19<sup>th</sup> century are **not considered** to meet the requirements of this criterion.*

#### STATEMENT OF SIGNIFICANCE

The significance of the underwater archaeological remains associated with Pitman’s and Hoffnung’s Wharves lie in their association with some of the busiest wharves in Walsh Bay in one of the busiest parts of Sydney Harbour during the 19<sup>th</sup> century. Successful entrepreneurs owned these wharves and contributed to Sydney’s prosperity. The study of the underwater archaeological remains associated with the wharves would provide information on how they were constructed, the materials used and how they were maintained; information that is not readily available in the historical record. They are assessed as being of State heritage significance.

#### 6.4 Cultural Deposits from the Middle to Late 20<sup>th</sup> Century – Evaluation of Cultural Significance

The following significance assessment applies to Pier 2/3 and Wharf 4/5 and identified cultural deposits formed by accidental or deliberate discarding from wharves and vessels until the 1970s.

- 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);

Walsh Bay served as a major shipping and trade hub for Sydney from the 1830s until the 1980s. The successful unloading and loading of goods and passengers at the wharves in Walsh Bay contributed to the rise in the prosperity of Sydney throughout the 19<sup>th</sup> and 20<sup>th</sup> centuries. Pier 2/3 and Wharf 4/5 were constructed during the middle to late 20<sup>th</sup> century and were both conspicuous and well-known wharves featuring heavily in the history of trade and commerce that took place at Walsh Bay during the 20<sup>th</sup> century. This significance extends to the cultural deposits formed by activities that took place on and alongside the wharves.

*Cultural deposits from the middle to late 20<sup>th</sup> century are considered to be of **Local Significance** under this 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);

During the 20<sup>th</sup> century, Pier 2/3 and Wharf 4/5 were no longer managed by individual companies but by Sydney Harbour Trust. Therefore, Pier 2/3 and Wharf 4/5 and any associated cultural deposits did not have any special associations with a person or group of persons.

*Cultural deposits from the middle to late 20<sup>th</sup> century are **not considered** to meet the requirements of this 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);

Discarded elements of Pier 2/3 and Wharf 4/5 would not demonstrate any characteristics that are not already better shown by the standing structures present today.

Artefacts associated with the mid to late 20<sup>th</sup> century wharves are significant because they are representative of the trade and associated industries that took place in Walsh Bay as well as providing insight into labour practices on the waterfront during the 20<sup>th</sup> century.

*Cultural deposits from the middle to late 20<sup>th</sup> century are considered to be of **Local Significance** under this 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**;

The wharves at Walsh Bay during the mid to late 20<sup>th</sup> century were owned by the Sydney Harbour Trust who had heavily re-developed the Walsh Bay area and many other centres of maritime activity during this time. Cultural deposits formed by discard during activities on the wharves or beside them are also associated with Sydney Harbour Trust.

*Cultural deposits from the middle to late 20<sup>th</sup> century are considered to be of **Local Significance** under this 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);

The historical information regarding the construction of Pier 2/3 and Wharf 4/5 is extensive and includes detailed plans of the piling and wharves. Discarded elements under the current seabed would not contribute any further to our understanding of materials or construction methods.

*Cultural deposits from the middle to late 20<sup>th</sup> century are **not considered** to meet the requirements of this 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);

Pier 2/3 and Wharf 4/5 still stand today. Discarded elements of these structures would not have any aspects not already presented by the standing structures themselves.

*Cultural deposits from the middle to late 20<sup>th</sup> century are **not considered** to meet the requirements of this 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.

Again, Pier 2/3 and Wharf 4/5 are existing structures so any discarded elements would not demonstrate any characteristics not already shown by the structures themselves.

*Cultural deposits from the middle to late 20<sup>th</sup> century are **not considered** to meet the requirements of this criterion.*

#### STATEMENT OF SIGNIFICANCE

The significance of the underwater archaeological remains associated with Pier 2/3 and Wharf 4/5 lie solely in cultural deposits from the working life of the wharves prior to the 1970s. The study of the cultural deposits associated with the wharves would provide information on working life at the wharves not easily preserved in the historical record. They are assessed as being of Local heritage significance.

## 7 HERITAGE IMPACT

### 7.1 Proposed Development

Arts NSW is enhancing the arts precinct at Walsh Bay. This includes the creation of a major waterfront public square which will become an innovative external platform for collaborative performances, festivals, public art, cafes, restaurants, commercial and community activities.

The delineated area for this waterfront square is approximately the southern quarter of the area of water between Pier 2/3 and Wharf 4/5 (Figure 28).

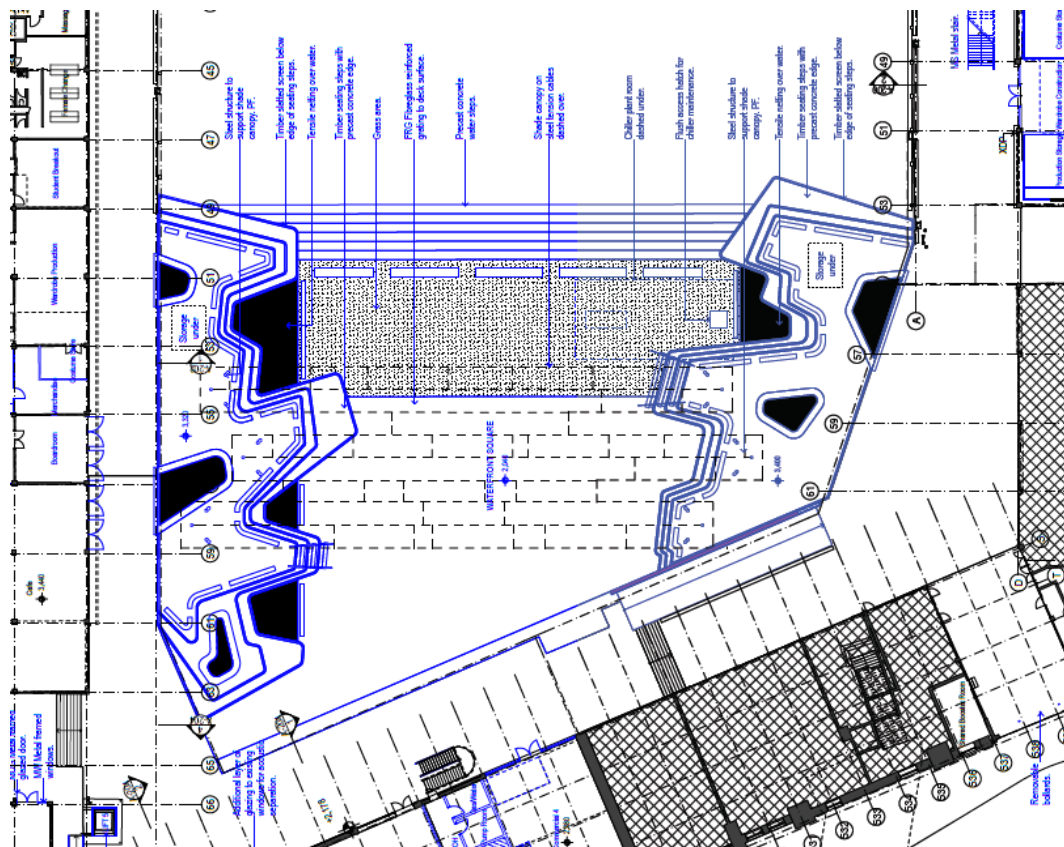


Figure 28: Section of draft plans showing the proposed design of the waterfront square area.<sup>54</sup>

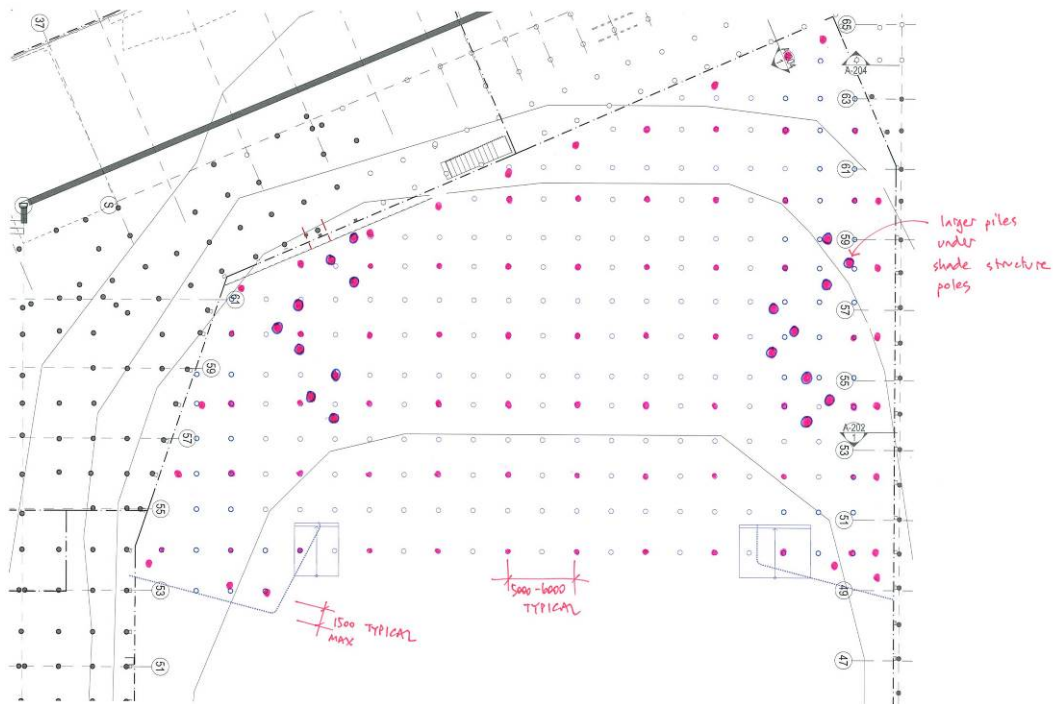
### 7.2 Predicted Impact on the Cultural Heritage Significance of the Identified Underwater Archaeological Remains

The detailed design for the piling of the waterfront square will be in part guided by this study. It would appear that the design and construction of the square will require the placement of piles in the seabed. It is understood that no dredging or reclamation will take place.

Indicative plans of piling, provided by Taylor Thomson Whitting and current at the time of this report, indicate 18 large-diameter piles and 79 small-diameter piles would be

<sup>54</sup> Tonkin Zulaikha Greer Architects, 28 October 2016, Walsh Bay Arts Precinct – Ground Floor Plan, draft for information only for Infrastructure NSW.

used to support the waterfront square platform structure (Figure 29). The large-diameter piles are arranged in six triangles of three piles, with three of these triangles on the eastern side and three on the west to support shade structure poles. The small-diameter piles are arranged in a grid-like formation spaced 5000 to 8000 mm apart, other than along the diagonal angles of the wharves.



**Figure 29: Indicative plan of pile locations, provided by Taylor Thomson Whitting.** North is to the bottom of the image.

The piles are likely to be screwed in steel caisson piles. These are formed of a steel tube with rock teeth fixed to the bottom that is drilled into the rock. It is likely that the seabed within the circumference of the pile will remain in place. The result of this piling is a direct impact on the seabed along the circumference of the pile as well as disturbance of the seabed within the centre of the pile and immediately surrounding it.

The impact of piling to the identified underwater archaeological remains depends upon the density, array and type of piling. The indicative locations of piles are relatively sparse and the screwed steel caisson piles further limits direct impacts to the seabed to around the circumference of the pile. Disturbances to the seabed will be caused by the piling method, limited to within the pile itself and within the immediate vicinity of the pile.

Small and loose relics, such as bottles, will most likely be slightly displaced by the piling, either being caught inside the pile or pushed away from it. In some cases the small and loose relics may be broken by the pile. Larger objects, such as timber planking or headstocks from earlier structures, would be broken apart if struck by one of the proposed piles. The pieces would be separated and slightly displaced but not destroyed. It is possible that some piles from an earlier structure will be intersected by the piling of the proposed development.

Based on the indicative information supplied concerning the method and extent of piling, it is assessed that the proposed works will have a limited impact to the seabed within the study area and a minor impact to the cultural heritage significance of the

underwater archaeological remains of wharf elements and cultural deposits, while also having a potential, albeit remote, possibility of moderate impact to the remains of the *Undine* (Table 10).

**Table 10: Potential impact to identified underwater archaeological remains.**

Identified Underwater Archaeological Remains	Likelihood of Impact	Potential Scale of Impact
<ul style="list-style-type: none"> <li>Cultural deposits prior to wharf development</li> </ul>	Very unlikely	Minor
<ul style="list-style-type: none"> <li>Wharf elements from Pitman's Wharf (later Alger's Wharf)</li> <li>Cultural deposits from Pitman's Wharf (later Alger's Wharf) and/or moored vessels</li> </ul>	Unlikely	Minor, with lessening scale of impact in the berths of Pier 3 and Wharf 4
<ul style="list-style-type: none"> <li>Wharf elements from Hoffnung's Wharf (later Parbury's Wharf 3)</li> <li>Cultural deposits from Hoffnung's Wharf (later Parbury's Wharf 3) and/or moored vessels</li> </ul>	Likely	Minor, with lessening scale of impact in the berths of Pier 3 and Wharf 4
<ul style="list-style-type: none"> <li>Wharf elements from Pier 2/3 and Wharf 4/5 during the operational years of the wharves until the 1970s</li> <li>Cultural deposits from Pier 2/3 and Wharf 4/5 during the operational years of the wharves until the 1970s</li> </ul>	Very likely	Minor
<ul style="list-style-type: none"> <li>Shipwreck material from the tug <i>Undine</i></li> </ul>	Remote	Moderate

### 7.3 Statutory Context

Any changes made to the study area that may impact on the cultural heritage values will need to be undertaken within a statutory framework deriving from two levels of government: local and state. Below is a summary of the relevant statutory provisions.

#### 7.3.1 Heritage Act 1977 (amended 1999)

The NSW *Heritage Act 1977* is the primary piece of State legislation affording protection to all items of 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 identified heritage at a level of State significance are listed on the NSW State Heritage Register and are afforded automatic protection against any activities that may damage an item or affect its heritage significance under the Act.

#### Relics 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.

Section 139 of the *Heritage Act* states that:

- 1) *A person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit.*
- 2) *A person must not disturb or excavate any land on which the person has discovered or exposed a relic except in accordance with an excavation permit.*

As all relics are protected under the *Heritage Act*, an Excavation Permit under Section 140 of the Act needs to be obtained prior to any works that would disturb or destroy them.

There is also an obligation under *The Heritage Act* to stop work and contact the Heritage Office if relics are unexpectedly disturbed or uncovered. Any relics located are required to be reported under the *NSW Heritage Act 1977*, Section 145.

Part 3C of the *Act* contains provisions for the protection of shipwrecks over 75 years old. This section is included in the Act to provide a link to and consistency with the (Commonwealth) *Historic Shipwrecks Act 1976*. In NSW the 'relics' provision takes precedence over Part 3C when it comes to determining the legal and protected status of a wreck and associated artefacts. This applies to known and potential relics present on or within the seabed even if the site(s) are not listed on the State Heritage Register.

If the proposed works are minor in nature and will have an assessed minimal impact to those identifiable or known archaeological deposits an Exception for a permit can apply. A statement of heritage impact would need to be submitted to the NSW Heritage Council describing the proposed excavation or disturbance of land and why it will have a minor impact on archaeological relics. This includes testing of land to verify the existence of relics without destroying or removing them. Or the statement would need to demonstrate that evidence relating to the history or nature of the site, such as its level of disturbance, indicates little likelihood of relics or no archaeological research potential.

The Walsh Bay Wharves fall within the Walsh Bay Wharves Precinct listing (Listing No. 00559, Gazette No 1546, Gazetted 02/04/1999). The Precinct includes the integrated port precinct of Walsh Bay comprising wharves, shore sheds, bond stores, bridges and roads. However, the SHR listing boundary for this site excludes the areas of water between the wharves (Figure 30).

This assessment has identified remains of the *Undine* (locally significant) and remains of wharves of cultural deposits from the 19<sup>th</sup> to early 20<sup>th</sup> century (State significant) within the study area. These remains are considered 'relics' under the Act and automatically afforded protection. However, the *Environmental Planning and Assessment Act 1979* (below, **Section 7.3.2**) 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). Hence, no permit is required for the disturbance of remains of the *Undine* or remains of wharves and cultural deposits from the 19<sup>th</sup> to early 20<sup>th</sup> century.

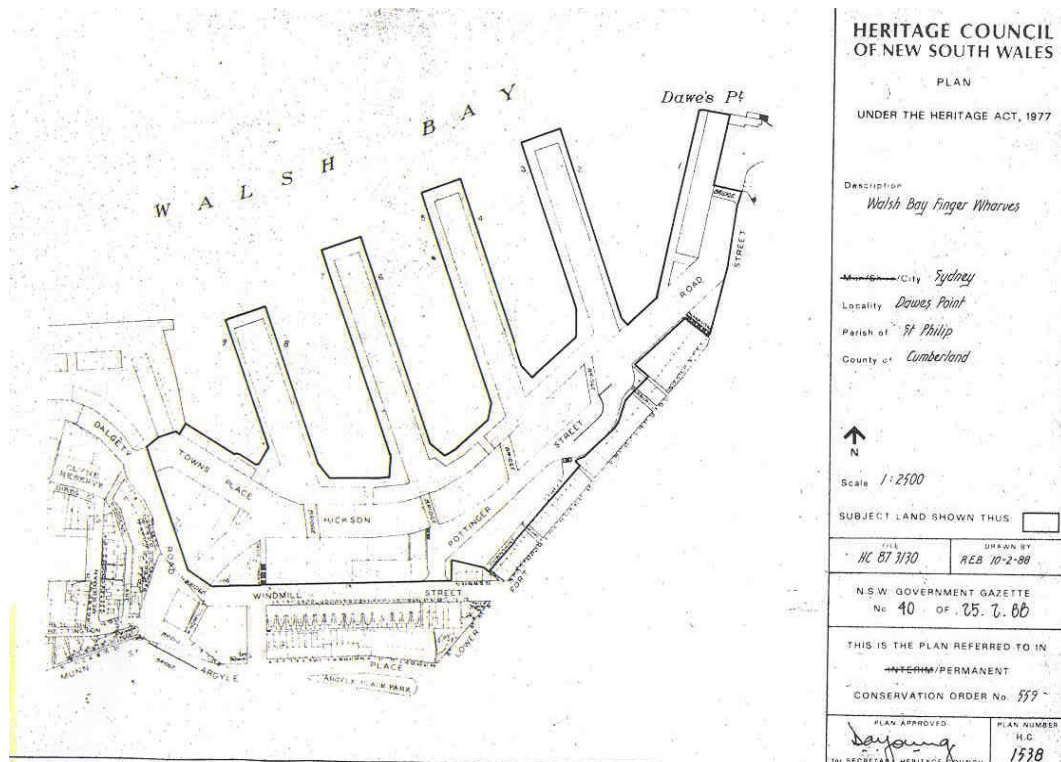


Figure 30: Plan of SHR item 00559 including the boundary of the subject land which excludes the study area.<sup>55</sup>

### 7.3.2 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* 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.

#### **Sydney Regional Environmental Plan No. 16 – Walsh Bay (2009)**

NSW Regional Environmental Plans (REPs) are plans drafted by the Department of Planning and apply to a nominated “region,” covering broad issues such as urban growth, commercial centres, extractive industries, recreational needs, rural lands and heritage and conservation. They provide the framework for detailed local planning by councils. The local council of the area in which development is proposed to be carried out is usually the consent authority for that development for the purposes of the SREP, unless the Department of Planning selects to substitute the Minister or Secretary of Planning as the consent authority in respect to particular forms of development.

Heritage consent is required for developments on land to which the Sydney Regional Environmental Plan (SREP) No. 16 – Walsh Bay applies. Consent for development will be granted if the development is generally consistent with the aims of this plan and the objectives of the zone within which the development is proposed to be carried out (Clause 12.3).

<sup>55</sup> Heritage Council of NSW, 1988, PCO Plan Number 559, available <http://www.environment.nsw.gov.au/heritageapp/HeritageItemImage.aspx?ID=5045067#ad-image-11>

Zone 2 is the Walsh Bay Waterway Zone and has the following objectives:

- (a) *To control the use of the waterway between the wharves to ensure that any activities associated with any development are compatible with the commercial shipping and navigational requirements in Sydney Harbour,*
- (b) *To ensure that the Harbour and the Harbour foreshore is recognised as a community asset; and,*
- (c) *To limit mooring facilities for private research vessels used by the lessees and tenants of the property in Zone 1.*

For this Zone, instances where development can occur without consent including for the installation of aids to navigation, maintenance dredging, maintenance of mooring facilities and mooring of vessels owned by the Maritime Services Board.

Development consent is required for boating or waterway access stairs, dredging, emergency vehicle access ways, floating restaurants or entertainment facilities, flora and fauna enclosures, mooring facilities, mooring or fishing and charter vessels, pontoons, public walkways, utility installations (other than gas holders and generating works).

The *Environmental Planning and Assessment Act 1979* states that the provisions of any Act, including REPs, that prohibit an activity without an authority do not apply to the carrying out of a State significant development that has been granted development consent (Section 89J). Hence, no specific development consent is required under the SREP No. 16 – Walsh Bay.

#### **Sydney Local Environmental Plan (2012)**

The Sydney Local Environmental Plan (LEP) constitutes an Environmental Planning instrument prepared at a State level in accordance with the *Environmental Planning and Assessment Act 1979* and provides statutory protection of heritage assets within the City of Sydney as declared by the Heritage Council.

The plan aims to make local planning provisions for land in the City of Sydney in accordance with the relevant standard environmental planning instruments under section 33A of the *Environmental Planning and Assessment Act 1979*.

Under Section 5.10 Heritage Conservation of the Sydney LEP, consent is required for development when:

- (a) *Demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance):*
  - (i) *A heritage item,*
  - (ii) *An Aboriginal object,*
  - (iii) *A building, work, relic or tree within a heritage conservation area,*
- (b) *Altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,*
- (c) *Disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,*
- (d) *Disturbing or excavating an Aboriginal place of heritage significance,*
- (e) *Erecting a building on land:*

- (i) *On which a heritage item is located or that is within a heritage conservation area, or*
  - (ii) *On which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,*
- (f) *Subdividing land:*
  - (i) *On which a heritage item is located or that is within a heritage conservation area, or*
  - (ii) *On which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.*

Consent is not required in some circumstances, such as if (Clause 5.10[3]):

- (a) *The applicant has notified the consent authority of the proposed development and the consent authority has advised the applicant in writing before any work is carried out that it is satisfied that the proposed development:*
  - (i) *Is of a minor nature or is for the maintenance of the heritage item, Aboriginal object, Aboriginal place of heritage significance or archaeological site or a building, work, relic, tree or place within the heritage conservation area, and*
  - (ii) *Would not adversely affect the heritage significance of the heritage item, Aboriginal object, Aboriginal place, archaeological site or heritage conservation area, or*
- (b) *the development is in a cemetery or burial ground and the proposed development:*
  - (i) *is the creation of a new grave or monument, or excavation of disturbance of land for the purpose of conserving or repairing monuments or grave markers, and*
  - (ii) *would not cause disturbance to human remains, relics, Aboriginal objects in the form of grave goods or to an Aboriginal place of heritage significance, or*
- (c) *the development is limited to the removal of a tree or other vegetation that the Council is satisfied is at risk to human life or property, or*
- (d) *the development is exempt development.*

Clauses 5.10(4) to 5.10(6) (inclusive) explain that the consent authority may require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned. After considering the heritage significance of a heritage item and the extent of change proposed to it, the consent authority may require the submission of a heritage conservation management plan before granting consent.

The subject site, the waterfront square, is not included within the boundary of the Sydney LEP and hence does not require consent from City of Sydney Council. The *Environmental Planning and Assessment Act 1979* also states that the provisions of any Act, including LEPs, that prohibit an activity without an authority do not apply to the carrying out of a State significant development that has been granted development consent (Section 89J).

## 8 MITIGATION AND MANAGEMENT

### 8.1 Objectives

Guidelines for the mitigation of impacts in relation to the proposed development and management of identified underwater archaeological remains within the waterfront square are prepared in consideration of the heritage significance of the identified underwater archaeological remains.

The objectives of these guidelines are to:

- Recognise and maintain the history of previous wharf structures and cultural deposits within the study area;
- Retain physical evidence of previous wharf structures and cultural deposits *in situ*;
- Provide advice for the location and construction of future works to minimise impacts to previous wharf structures and cultural deposits;
- Provide mitigation measures for future works if there is a potential impact to the remains of wharf structures and cultural deposits; and,
- Provide advice for the interpretation of previous wharf structures and cultural deposits linked to past activities in Walsh Bay as a whole.

### 8.2 Discussion

The development of the waterfront square has been presumed to impact – currently only limited to piling – on identified underwater archaeological remains which can provide information not available in the historic record. This includes wharf construction and the life of workers from the 19<sup>th</sup> century up until the 1970s. The significance of these remains was assessed as follows:

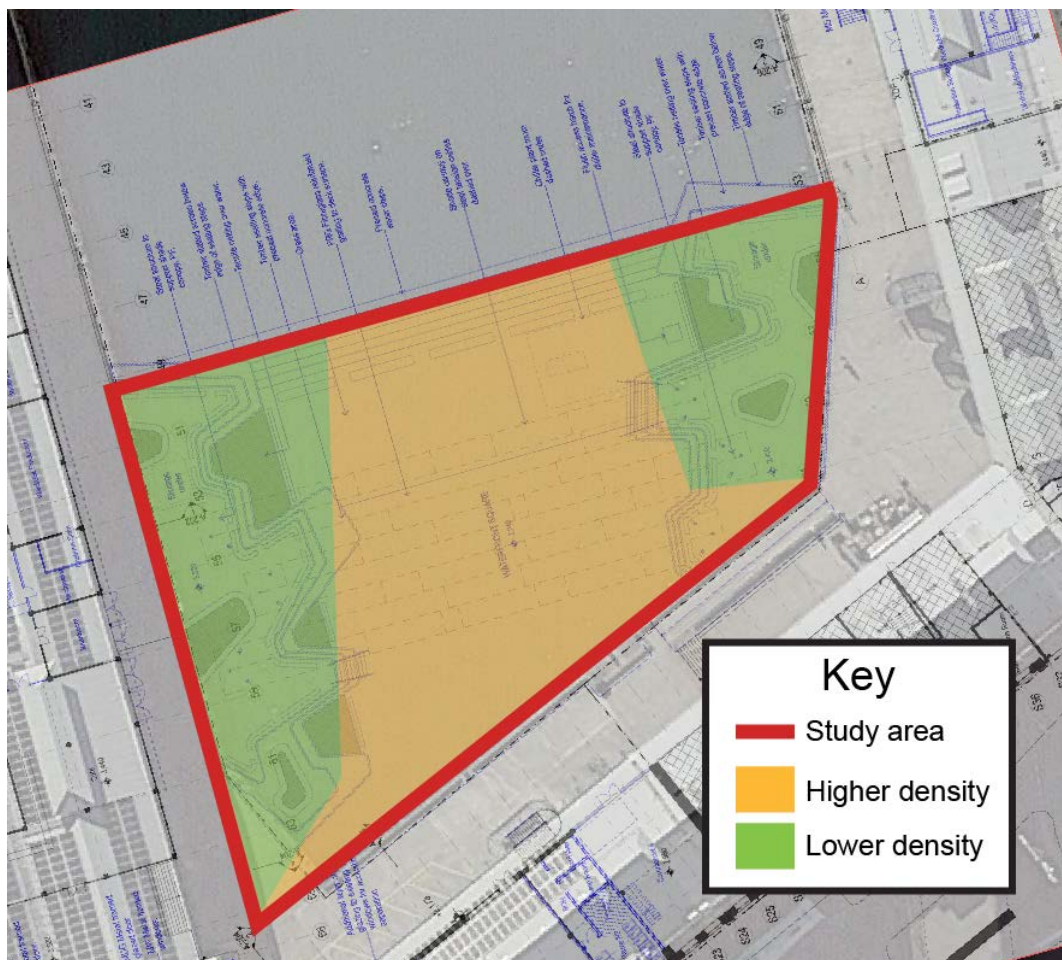
- Wharves and cultural deposits from the 19<sup>th</sup> century to early 20<sup>th</sup> century have been assessed as having State significance; and,
- Remains of the tug *Undine* and cultural deposits of the 1970s era have been assessed as having Local significance.

Both bathymetric survey data and an underwater inspection have not been able to conclusively locate any underwater archaeological remains associated with wharves and cultural deposits from the 19<sup>th</sup> century to early 20<sup>th</sup> century. It is almost certain that any such remains have been buried by accumulated silt. Intensive excavation and surveying would be required to identify the specific location of these remains. The densities of remains has been assessed as being low to medium, as shown in Table 11 and Figure 31.

**Table 11: Identified underwater archaeological remains and an indication of density.**

Identified Underwater Archaeological Remains	Predicted Density
<ul style="list-style-type: none"> <li>• Cultural deposits prior to wharf development</li> </ul>	Negligible – higher densities towards the southern part of the study area
<ul style="list-style-type: none"> <li>• Wharf elements from Pitman's Wharf (later Alger's Wharf)</li> <li>• Cultural deposits from Pitman's Wharf (later Alger's Wharf) and/or moored vessels</li> </ul>	Low – higher densities within the footprint of Pitman's Wharf decreasing with distance from the wharf. Also lower densities in the berths of Pier 3 and Wharf 4.

Identified Underwater Archaeological Remains	Predicted Density
<ul style="list-style-type: none"> <li>Wharf elements from Hoffnung's Wharf (later Parbury's Wharf 3)</li> <li>Cultural deposits from Hoffnung's Wharf (later Parbury's Wharf 3) and/or moored vessels</li> </ul>	Low to medium – higher densities within the footprint of Hoffnung's Wharf decreasing with distance from the wharf. Also lower densities in the berths of Pier 3 and Wharf 4.
<ul style="list-style-type: none"> <li>Wharf elements from Pier 2/3 and Wharf 4/5 during the operational years of the wharves until the 1970s</li> <li>Cultural deposits from Pier 2/3 and Wharf 4/5 during the operational years of the wharves until the 1970s</li> </ul>	Medium – higher densities from the final operational years closer to Pier 3, Wharf 4 and the timber apron linking the two. Lower densities from early and middle years of operation due to dredging.
<ul style="list-style-type: none"> <li>Shipwreck material from the tug <i>Undine</i></li> </ul>	Low – higher towards Wharf 4 although the exact location of the wrecking event is not known.



**Figure 31: Overlay of aerial and area of proposed waterfront square development showing the areas of predicted higher density and lower density underwater archaeological remains.**

Based on the available information of the proposed works, the proposed seabed disturbances – limited to relatively low density piling – has a potential minor impact to the cultural heritage significance of the identified underwater archaeological remains, even in areas where there is a predicted higher density of such remains. As such, it is believed that an intensive pre-construction programme of archaeological excavation is

not justified. Instead, an archaeological monitoring and recording programme is recommended to take place during the course of the piling and during any other direct impacts to the seabed for future developments. This option would include the recording of any underwater archaeological remains disturbed and raised by the piling works or other direct impacts in order to retain any information provided by the underwater archaeological remains in regards to wharf construction, maintenance, demolition and working life on the wharves in the 19<sup>th</sup> century up until the 1970s.

It has been assessed that the indicative plan for piling and impacts to the seabed for the proposed waterfront square would have a minor impact on the significance of identified underwater archaeological remains. As such, the proposed piling program is assessed as an acceptable impact. This impact would be reduced by an archaeological monitoring and recording programme.

### **8.3 Guidelines for Impact Management**

#### **8.3.1 For Detailed Design of Proposed Works**

- Limit the number and size of piles to reduce the physical footprint of the development upon the seabed;
- Dredging works should not take place if possible;
- Reclamation or deposition of sediment on the seabed is acceptable;
- A number of identified underwater archaeological remains have been identified in this Maritime Archaeological Assessment and Management Plan. When available, the detailed engineering subsurface works, including piling and any other services which may affect the sea floor in the waterfront square area, should be examined by a qualified maritime archaeologist in accordance with the Heritage Branch Guidelines to review the potential impact on the underwater archaeological remains identified in this report. An Archaeological Research Design and Method report should be prepared by a qualified maritime archaeologist in accordance with the Heritage Branch Guidelines prior to any construction works proceeding. This report will outline further work that may need to be undertaken such as, but not limited to:
  - Targeted remote sensing surveys;
  - Dive inspection(s) of a particular areas;
  - Archaeological excavation, and/or;
  - Archaeological monitoring during construction.
- There is no requirement to obtain permits under the *Environmental Planning and Assessment Act 1979* Section 89J (2) as it is a State significant development.

#### **8.3.2 For Mitigation during Development**

Mitigation measures are to be present in detail in the Archaeological Research Design and Method report to be implemented during the construction phase of the Development. The measures are likely to include but are not limited to:

- Contractors on site are to be given a Heritage Induction in order for them to be aware of the identified underwater archaeological remains within the works area identify possible relics;

- Engage a suitably qualified maritime archaeologist to monitor works if piling or other impacts to the seabed are to take place. Monitoring may be done on site or remotely if workers are fully briefed to identify possible relics;
- Engage a suitably qualified maritime archaeologist to be on site to monitor works if any dredging is to take place;
- Any cultural remains that may be relics should be recorded in detail by a suitably qualified maritime archaeologist, and;
- If a concentration of relics is discovered, works should stop and the archaeologist should have the opportunity to conduct a dive inspection of the area to record the site in detail prior to works commencing.

### **8.3.3 For Interpretation of Heritage**

- Historic plans of Walsh Bay showing old wharf structures would be useful in the interpretation the changing coastline of Walsh Bay due to changing shipping activity and demands; and,
- Any relics recovered as part of proposed developments could be preserved and displayed as part of the interpretation of past structure and activities in Walsh Bay.

## 9 CONCLUSION

This report satisfies the maritime archaeological Stage 2 SEARs and Stage 1 Condition B5 requirements the proposed waterfront square area development. Underwater archaeological remains were identified within the study area through historical research and an underwater diver survey. The assessed significance and predicted density of these remains are detailed in Table 12.

**Table 12: Summary of identified potential underwater archaeological remains, density and significance.**

Identified Underwater Archaeological Remains	Predicted Density	Significance
<ul style="list-style-type: none"> <li>Cultural deposits prior to wharf development</li> </ul>	Negligible – higher densities towards the southern part of the study area	Not assessed
<ul style="list-style-type: none"> <li>Wharf elements from Pitman's Wharf (later Alger's Wharf)</li> <li>Cultural deposits from Pitman's Wharf (later Alger's Wharf) and/or moored vessels</li> </ul>	Low – higher densities within the footprint of Pitman's Wharf decreasing with distance from the wharf. Also lower densities in the berths of Pier 3 and Wharf 4.	State significance
<ul style="list-style-type: none"> <li>Wharf elements from Hoffnung's Wharf (later Parbury's Wharf 3)</li> <li>Cultural deposits from Hoffnung's Wharf (later Parbury's Wharf 3) and/or moored vessels</li> </ul>	Low to medium – higher densities within the footprint of Hoffnung's Wharf decreasing with distance from the wharf. Also lower densities in the berths of Pier 3 and Wharf 4.	State significance
<ul style="list-style-type: none"> <li>Wharf elements from Pier 2/3 and Wharf 4/5 during the operational years of the wharves until the 1970s</li> <li>Cultural deposits from Pier 2/3 and Wharf 4/5 during the operational years of the wharves until the 1970s</li> </ul>	Medium – higher densities from the final operational years closer to Pier 3, Wharf 4 and the timber apron linking the two. Lower densities from early and middle years of operation due to dredging.	Local Significance
<ul style="list-style-type: none"> <li>Shipwreck material from the tug <i>Undine</i></li> </ul>	Low – higher towards Wharf 4 although the exact location of the wrecking event is not known.	Local significance

The objective of the provided mitigation and management guidelines for the identified underwater archaeological remains is to retain physical evidence of structures and cultural deposits *in situ*. For the purposes of the design of the Walsh Bay Arts Precinct, it is recommended that Tropman and Tropman liaise with the maritime archaeologists in finalising the design and ensure that minimal impacts occur to the seabed.

It has been assessed that the indicative plan for piling and impacts to the seabed for the proposed waterfront square would have a minor impact on the significance of identified underwater archaeological remains. As such, the proposed piling program is assessed as an acceptable impact.

Final design plans for all proposed works should be assessed by a suitably qualified maritime archaeologist in accordance with the Heritage Branch Guidelines to determine the potential impact on relics identified in this report. This assessment may recommend that further work be undertaken including but not limited to:

- Targeted remote sensing surveys;
- Dive inspection(s) of a particular areas;

- Archaeological excavation, and/or;
- Archaeological monitoring during construction.

There is no requirement to obtain permits under the *Environmental Planning and Assessment Act 1979* Section 89J (2) as it is a State significant development.

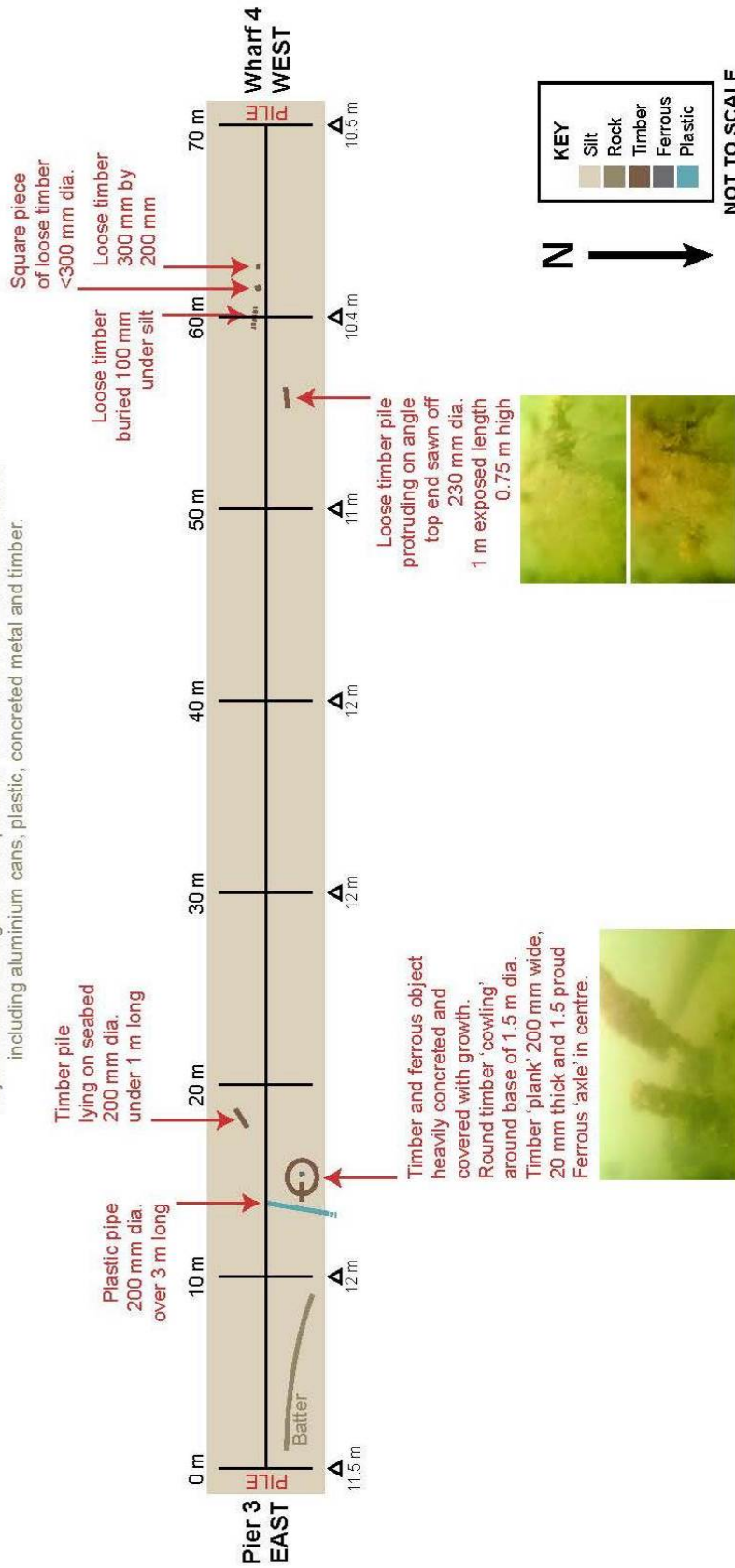
## **ANNEX A – DIVE SURVEY RESULTS**

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UNIT ID  DATE  LOCATION   
 START TIME  FINISH  TOTAL TIME (MIN)  RECORDER  SPACING

WATER VISIBILITY  SEABED VISIBILITY

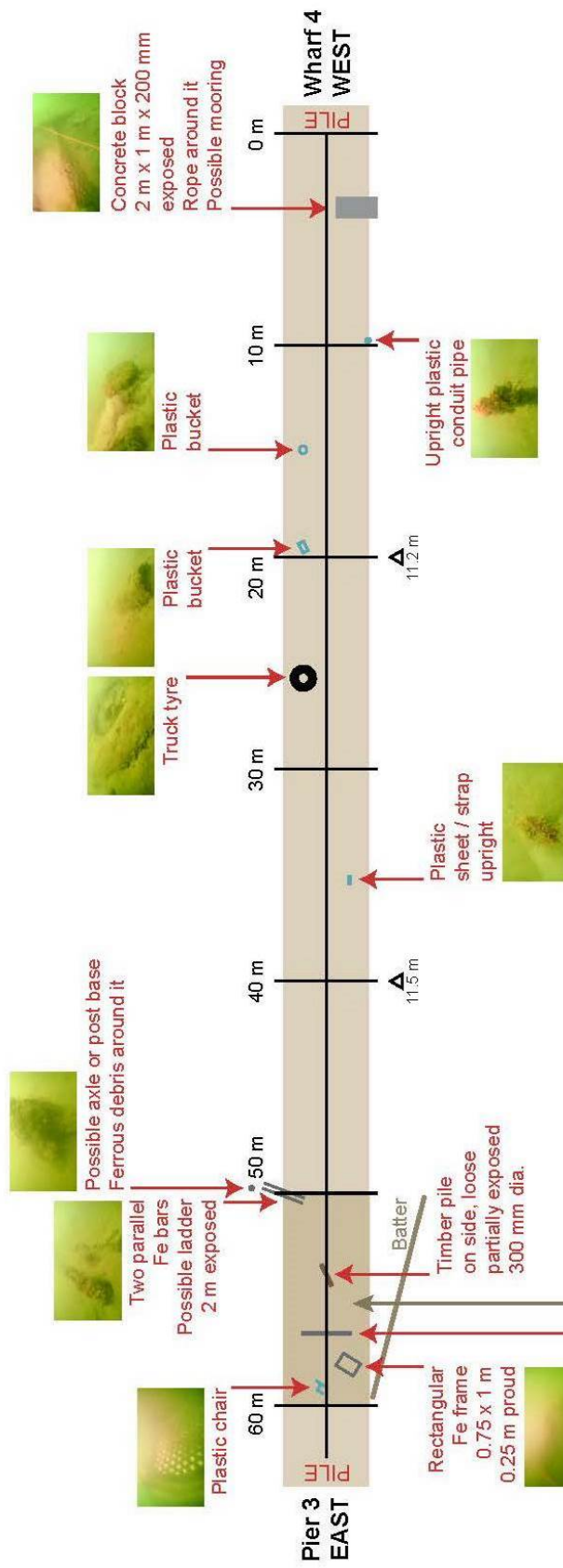
**SEABED** = Loose silt over 500 mm deep with small animal burrows.  
 Objects buried throughout at depths from 100 mm to 500 mm below seabed including aluminium cans, plastic, concreted metal and timber.



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UNIT ID  DATE  LOCATION   
 START TIME  FINISH  TOTAL TIME (MIN)  RECORDER  SPACING

WATER VISIBILITY  SEABED VISIBILITY



**KEY**

- Silt
- Rock
- Timber
- Ferrous
- Plastic
- Concrete
- Rubber



**SEABED = Loose silt over 500 mm deep with small animal burrows.**  
 Objects buried throughout at depths from 100 mm to 500 mm below seabed including aluminium cans, plastic, concreted metal and timber.

**SEABED =**  
 Other smaller scattered modern material between 50 m and 60 m

**NOT TO SCALE**

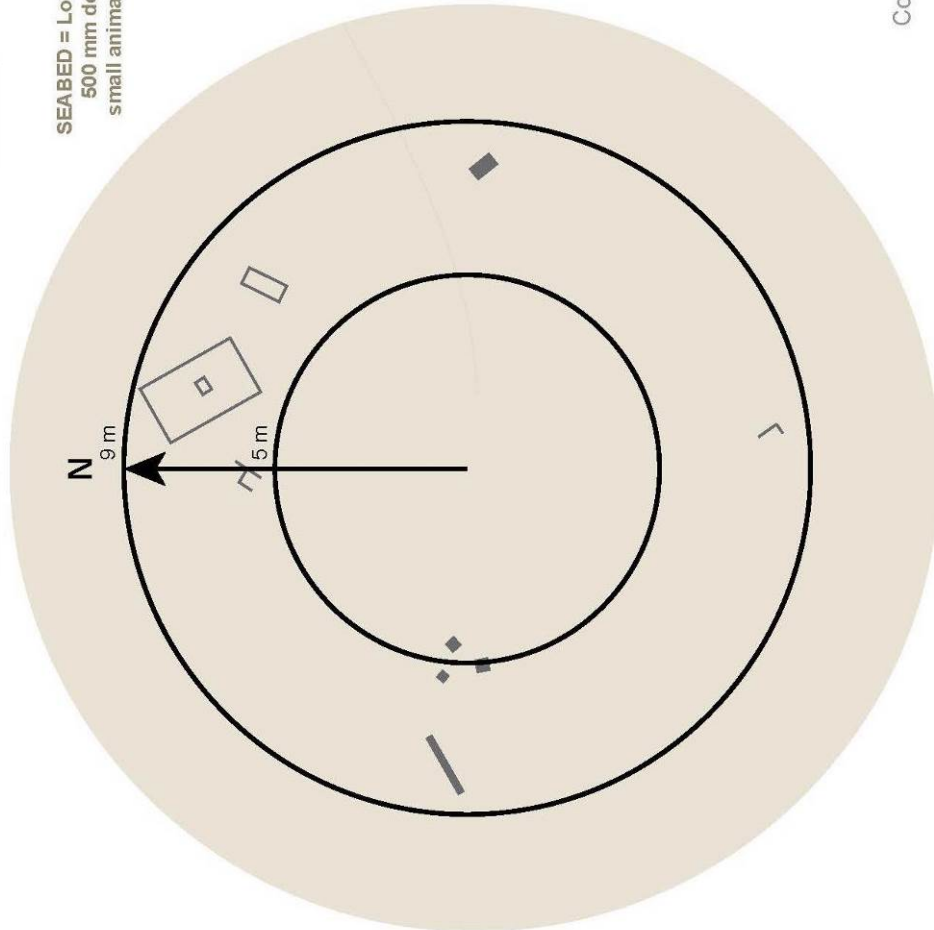
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UNIT ID  DATE  LOCATION   
 START TIME  FINISH  TOTAL TIME (MIN)  RECORDER  SPACING   
 WATER VISIBILITY  SEABED VISIBILITY



UNIT ID       DATE       LOCATION       SPACING   
 START TIME       FINISH       TOTAL TIME (MIN)       RECORDER   
 WATER VISIBILITY       SEABED VISIBILITY

SEABED = Loose silt over  
 500 mm deep with  
 small animal burrows.



**KEY**  
 Silt  
 Ferrous  
**NOT TO SCALE**  
**INDICATIVE ONLY**

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## REFERENCES

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### Maps and Plans

- Anon., 1822**, *Plan of the town and suburbs of Sydney, August, 1822*, National Library of Australia, available <http://nla.gov.au/nla.obj-229911701/view>
- Basire, J., 1836**, *Plan of Sydney with Pyrmont, New South Wales: The Latter the property of Edw. Macarthur Esquire, Divided into Allotments for Buildings, 1836*, reproduced in *Op. Cit. Ashton and Waterson, 2000, Sydney Takes Shape: A History in Maps*, Hema Maps Pty Ltd, Brisbane:23
- Dove, Percy H., 1880**, *Plans of Sydney Executed by H. Percy Dove Licensed Surveyor 1and2 Vickerys Chambers Pitt Street, Block 37A 38A*, available <http://www.photosau.com.au/CoSMaps/scripts/displayIndex.asp?Index=DP>
- Government Gazette, 1900**, *Darling Harbour resumptions, 3/5/1900*, No. 415, Folio 3439
- Harper, William, and Stewart, G. C., 1823**, *Plan of the allotments of grounds in Sydney*, State Library of New South Wales, Mitchell Map Collection M3 811.16/1823/1
- Hoddie, Lanner and Mitchell, 1831**, *Map of the Town of Sydney*, reproduced in **Ashton and Waterson, 2000**, *Sydney Takes Shape: A History in Maps*, Hema Maps Pty Ltd, Brisbane:21
- Lands Title, 1870**, *Survey map of Walsh Bay, Darling Harbour and Millers Point, annotated up to 1877*, Lands Title 53-574, Private Collection
- Wells, William Henry, c.1843**, *To the Worshipful the Mayor, Aldermen, Councillors and 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*, Mitchell Library, State Library of New South Wales, a3998001 / Z/M8 811.17/1843/2, available <http://dictionaryofsydney.org/map/24122>
- Woolcott and Clarke, 1854**, *Map of the City of Sydney with the environs of Balmain and Glebe, Chippendale, Redfern, Paddington and c.*, National library of Australia, MAP NK 3963, available <http://nla.gov.au/nla.obj-230681967/view>

### Newspaper Articles

- Anon., Tuesday 21 March 1865**, 'The Manufacturing Industry of New South Wales – II. Boat Building', *The Sydney Morning Herald*:5
- Anon., Wednesday 14 May 1913**, 'Ferry Sinks – Off Dawes Point – Disaster to the Birkenhead – No Passengers Aboard – Narrow Escape of Crew', *Evening News*:9
- Anon., Tuesday 29 December 1936**, 'Explosion. Tug Wrecked. Crew Hurlled Into Air. Vessel Sinks In Harbour', *The Sydney Morning Herald*:9.
- Betts and Panton, Wednesday 6 March 1844**, 'Imports', *The Sydney Morning Herald*:2
- F.B., Saturday 19 December 1829**, 'Mr. Pitman's New Wharf', *The Sydney Gazette and New South Wales Advertiser*:3
- Shepard and Algiers, Monday 30 June 1851**, 'First packet for Melbourne' and 'For Geelong and Melbourne', *The Sydney Morning Herald*:1
- "Old Chum", Wednesday 31 December 1902**, 'Old Sydney', *Sydney Sportsman*:3

### Other Primary Sources

- Sydney Harbour Trust, 1911**, *Sydney Harbour Trust Annual Report 1911*
- Sydney Harbour Trust, 1912**, *Sydney Harbour Trust Annual Report 1912*
- Sydney Harbour Trust, 1913**, *Sydney Harbour Trust Annual Report 1913*

**Sydney Harbour Trust, 1914**, *Sydney Harbour Trust Annual Report 1914*

**Sydney Harbour Trust, 1915**, *Sydney Harbour Trust Annual Report 1915*

## Reports

**Cosmos P. Coroneos, September 1997**, *Walsh Bay Redevelopment Maritime Archaeological Assessment of Wharves 6/7 and 8/9*, report for Walsh Bay Properties Pty Ltd.

**Cosmos Archaeology Pty Ltd, February 2000**, *Re-Development of Pier 8/9, Walsh Bay, Maritime Archaeological Investigation*, report for Tropman and Tropman Architects.

**Cosmos Archaeology Pty Ltd, May 2000**, *Demolition of Pier 6/7, Walsh Bay, Maritime Archaeological Inspection*, report for Tropman and Tropman.

**Cosmos Archaeology Pty Ltd, January 2002**, *Re-Development of Pier 2/3, Walsh Bay, Maritime Archaeological Assessment*, report for Tropman and Tropman Architects.

**Cosmos Archaeology Pty Ltd, February 2002**, *Re-Development of Pier 2/3, Walsh Bay, Maritime Archaeological Inspection of Copper Sheathed Piles*, report for Tropman and Tropman Architects.

**Cosmos Archaeology Pty Ltd, June 2005**, *New Piling Works, Towns Place North, Walsh Bay, Maritime Archaeological Impact Assessment*, report for Tropman and Tropman Architects.

**Fitzgerald, S., Keating, C., 1991**, *The urban Millers Point village*, Hale and Iremonger Pty Limited, Sydney

**Garrat, D., McCarthy, M., et al, 1995**, *An assessment of the submerged archaeological remains at the Albany Town Jetty*, report prepared for LandCorp, Western Australia

**National Trust of Australia, n.d.**, *Heritage study of 19<sup>th</sup> and early 20<sup>th</sup> century trading wharves in Sydney Harbour*, NSW branch of National Trust Australia.

**Tonkin Zulaikha Greer Architects, 28 October 2016**, *Walsh Bay Arts Precinct – Ground Floor Plan*, draft for information only for Infrastructure NSW.

## Secondary Sources

**Australian Government Department of the Environment and Energy, c. 2016**, 'Australian National Shipwreck Database', search in 'where lost' for 'Walsh Bay' and 'Dawes Point', available <https://dmzapp17p.ris.environment.gov.au/shipwreck/public/wreck/search.do>

**Bergman, G. F. J, 1972**, 'Hoffnung, Sigmond (1830-1904)', *Australian Dictionary of Biography*, available <http://adb.anu.edu.au/biography/hoffnung-sigmond-3779>

**Bureau of Meteorology, 2016**, 'Tide Predictions for Australia, South Pacific and Antarctica – Sydney (Fort Denison), NSW', Australian Government, available <http://www.bom.gov.au/australia/tides/#!/nsw-sydney-fort-denison>

**Bureau of Meteorology, 2016**, 'Sydney Harbour, New South Wales, October 2016 Daily Weather Observations', available <http://www.bom.gov.au/climate/dwo/IDCJDW2163.latest.shtml>

**Flapan, Mori, 2008**, 'List of New South Wales Ship Builders and Boat Builders from the Register of Australian and New Zealand Vessels', available [http://www.boatregister.net/NSW\\_Builders.htm](http://www.boatregister.net/NSW_Builders.htm)

**Morton, A.W., 1991**, *History of the Garrison Church: Holy Trinity, Sydney*, in **Fitzgerald, S., Keating, C., 1991**:24

**Parliament of New South Wales, n.d.**, 'Mr John Panton (1815-1866)', Members, available [https://www.parliament.nsw.gov.au/members/Pages/profiles/panton\\_john.aspx](https://www.parliament.nsw.gov.au/members/Pages/profiles/panton_john.aspx)

## Statutory Information

**Australia ICOMOS, 1999**, Charter for the conservation of places of cultural significance.

**Heritage Council of NSW, 1988**, PCO Plan Number 559, available

<http://www.environment.nsw.gov.au/heritageapp/HeritageItemImage.aspx?ID=5045067#ad-image-11>

**City of Sydney, 2016**, 'Planning controls map', powered by Esri, available

[http://www.cityofsydney.nsw.gov.au/development/planning-controls/planning-controls-map#pca\\_walsh\\_bay](http://www.cityofsydney.nsw.gov.au/development/planning-controls/planning-controls-map#pca_walsh_bay)

**NSW Office of Environment and Heritage, 1999**, 'Walsh Bay Wharves Precinct' listing on the State Heritage Register, available

<http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5045067>