

Metro West – The Bays

FINAL Revised Archaeological
Research Design and Excavation
Methodology

Report to AFJV / Sydney Metro

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EXECUTIVE SUMMARY

Project overview

Sydney is expanding and the NSW Government is working hard to deliver an integrated transport system that meets the needs of customers now and in the future.

Sydney Metro is Australia's biggest public transport program. Sydney Metro West (the project) is a new 24-kilometre metro line that will connect Greater Parramatta with the Sydney CBD. Confirmed stations include Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD). This infrastructure investment will double the rail capacity of the Greater Parramatta to Sydney CBD corridor with a travel time target between the two centres of about 20 minutes.

Sydney Metro West was assessed as a staged infrastructure application under section 5.20 of the Environmental *Planning & Assessment Act 1979* (EP&A Act).

The Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process, application number SSI-10038), was approved by the Minister for Planning and Public Places on 11 March 2021.

As part of the project determination, Conditions of Approval (CoA) were issued which mandated that a Revised Archaeological Research Design and Excavation Methodology (ARDEM) was prepared to manage archaeological remains at the Bays (CoA D25). This ARDEM is to be prepared by an approved Excavation Director (CoA D7) and must include methodologies to investigate below-ground heritage listed items at The Bays construction site (CoA D6). This ARDEM has been prepared to meet these CoA.

Revised archaeological assessment

Additional historical and archival research to prepare a detailed site-specific history of The Bays construction site, in accordance with CoA D25, has identified the following potential non-Aboriginal archaeological items at the construction site.

Historical Phase	Archaeological Item	Archaeological Potential	Archaeological Significance
Phase 1 (1800 – 1910)	Reclamation Fills	<ul style="list-style-type: none"> Bulk fill materials – High Potential Undocumented industrial and maritime rubbish or equipment – Low Potential 	<ul style="list-style-type: none"> Bulk fill materials – Local Significance Undocumented industrial and maritime rubbish or equipment – Local to State Significance depending on the nature of the individual items
	First White Bay Hotel and associated structures	Low	Local
	Timber Yard	Low	Not Significant
	Rubble Ballast Dyke	Moderate	Local
Phase 2 (1910 – 1950)	Roundhouse, turntable and locomotive siding (Section 8.5)	Moderate	Local
	Railway Infrastructure (Section 8.6)	High	Not Significant
	White Bay Steel Works (Section 8.7)	Low	Local
	Coal Loading and Ash Handling Facilities of the White Bay Power Station (Section 8.8)	Low	Local / State if in good state of intactness
	No. 9 Shed (Section 8.9)	Low	Not Significant
	US Army Warehouses and RAAF Mess Hall (Section 8.10)	Low	Local
	Circulating Water Conduit (Section 8.11)	High	State
	Beattie Street Stormwater Canal (Section 8.12)	High	Local
Phase 3 (1950 – 1970)	Balmain Coal Loader (Section 8.13)	Moderate	Not Significant

Archaeological management recommendations

This assessment has identified a number of low and moderate potential archaeological remains of local significance throughout the construction footprint. General archaeological management methodologies are provided in this report, which would be adapted as appropriate to specific construction scopes of work with the preparation of Work Method Statements (WMS’).

The following archaeological investigation programs are proposed:

- Archaeological excavation with Non-Destructive Digging (NDD) to identify the location and fabric of the White Bay Power Station Circulating Water System Canals and the Beattie Street Stormwater Canal. Excavation would be conducted with small test excavation areas along the alignments of both items within the construction site and accurately surveyed information provided to design and contractor teams, in accordance with CoA D26.
- A program of test excavation to identify the location, intactness and significance of the former locomotive turntable, roundhouse and stores, with salvage excavation to be conducted for any potential significant archaeological remains which may be impacted by the proposed works
- A program of test excavation at sequentially benched vertical heights within the station box bulk excavation area would be conducted to understand the stratigraphic nature of the reclamation fill. Archaeological monitoring would be conducted for initial shallow excavation of the station box, followed by a robust unexpected finds management program for contractor crews as the station box excavation continues at depth. Any intact and significant remains identified within station box excavation works would be archaeologically salvaged.
- Archaeological monitoring of shallow excavation (i.e., non-bulk excavation) works would be conducted in any area where potential archaeological items have been predicted.

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1.0 INTRODUCTION

1.1 Sydney Metro West

Sydney is expanding and the NSW Government is working hard to deliver an integrated transport system that meets the needs of customers now and in the future.

Sydney Metro is Australia's biggest public transport program. Sydney Metro West (the project) is a new 24-kilometre metro line that will connect Greater Parramatta with the Sydney CBD. Confirmed stations include Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD). This infrastructure investment will double the rail capacity of the Greater Parramatta to Sydney CBD corridor with a travel time target between the two centres of about 20 minutes.

The delivery of Sydney Metro West is critical to keeping Sydney moving and is identified in a number of key strategic planning documents including the Greater Sydney Region Plan: A Metropolis of Three Cities – connecting people (Greater Sydney Commission, 2018a), Building Momentum: State Infrastructure Strategy 2018-2038 (Infrastructure NSW, 2018) and Future Transport Strategy 2056 (Transport for NSW, 2018).

Sydney Metro West was assessed as a staged infrastructure application under section 5.20 of the Environmental *Planning & Assessment Act 1979* (EP&A Act).

The Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process, application number SSI-10038), was approved by the Minister for Planning and Public Places on 11 March 2021.

The main elements of Sydney Metro West are shown in Figure 1.



Figure 1: Sydney Metro West

1.1.1 Conditions of Approval for archaeology at The Bays

The Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process, application number SSI-10038), was approved by the Minister for Planning and Public Places on 11 March 2021.

As part of that approval on 11 March 2021 Conditions of Approval (CoA) were issued for the management of predicted non-Aboriginal archaeological remains. This report addresses relevant CoA for the project where they are pertinent for non-Aboriginal archaeological management at the site of the Bays. These relevant CoA and a short response to each are described below.

Excavation and Archaeology CoA D25:

Before the commencement of any excavation at Parramatta and The Bays metro station construction sites, a revised Archaeological Research Design and Excavation Methodology(s) must be prepared in accordance with Heritage Council of NSW guidelines and with reference to the detailed design of Stage 1 construction of the CSSI to guide archaeological excavation. The revised Archaeological Research Design and Excavation Methodology(s) must be prepared by the Excavation Director (approved under Condition D27 below) and must include:

- (a) site specific research for the Parramatta and The Bays metro station construction sites which is conducted by a professional historian to clearly articulate the historical development of the allotments to assist with the reassessment of potential and significance;*
- (b) comparative analysis from archaeological investigations in Parramatta (including theses, publications and grey literature reports);*
- (c) preparation of research questions based on the additional site-specific research required by this condition, and relevant research agendas from previously excavated early historical occupation in Parramatta including recovered artefact assemblages; and*
- (d) a reconsideration of archaeological methods to manage the sites based on this additional assessment.*

The revised Archaeological Research Design and Excavation Methodology(s) must apply to both Parramatta and The Bays metro station construction sites and be prepared in consultation with Heritage NSW and Place Management NSW (in respect of The Bays) and submitted to the Planning Secretary for approval.

The revised Archaeological Research Design and Excavation Methodology(s) must be implemented throughout the archaeological excavation programs.

Note: Nothing in these conditions prevents the Archaeological Research Design and Excavation Methodology to be separate procedures.

This report includes site specific research for The Bays metro station prepared by professional historians. This revised archaeological research design has been prepared with Dr Iain Stuart, Excavation Director for The Bays Metro construction site. Revised research questions and

investigative agendas have been prepared based on this additional historical research, including a detailed excavation methodology. This report is consistent with the requirements of CoA D25.

Condition (b) of CoA D25 is not relevant for this archaeological research for The Bays construction site.

This report was provided to Place Management NSW (PMNSW) and their response received on 19 October 2021. They provided the following comments:

Landowners Consent from PMNSW must be obtained for any works effecting the SHR heritage curtilage of White Bay Power Station

It is understood that consultation would be conducted throughout the works between Sydney Metro and Place Management NSW.

Works to the associated inlet/outlet water canal outside the WBPS heritage curtilage must be agreed to in conjunction with PMNSW if they disrupt or impede water flow between Rozelle Bay and White Bay through the canal running through White Bay Power Station.

A methodology for physically inspecting the water circulating conduit system is provided in Section 7.4.1 of this report. This methodology includes consultation with PMNSW for any proposed works to the water circulating system.

Excavation and Archaeology CoA D26:

The revised Archaeological Research Design and Excavation Methodology(s) must include provision for early physical investigation of areas of impact identified as likely to contain State significant archaeology or subterranean Heritage items in the research design to inform excavation in these areas. This must include the Parramatta and The Bays metro station sites, including Parramatta Convict Drain, Parramatta Sand Body, White Bay Power Station (inlet) Canal and Beattie Street Stormwater Channel.

Investigative methodologies for physical investigation of areas of impact have been provided in this report in Section 7.0. This includes provisions for the physical investigation of the White Bay Power Station (inlet) Canal and Beattie Street Stormwater Channel. Methodologies for investigating these sub-surface items are provided in Section 7.4.1 of this report.

Excavation and Archaeology CoA D27:

Before commencement of archaeological excavation, the Proponent must nominate a suitably qualified Excavation Director, who complies with Heritage Council of NSW's Criteria for Assessment of Excavation Director (September 2019), to oversee and advise on matters associated with historical archaeology for the approval of the Planning Secretary, in consultation with Heritage NSW. The Excavation Director must be present to oversee excavation, advise on archaeological issues, advise on the duration and extent of oversight required during archaeological excavations consistent with the approved Archaeological Research Design and Excavation Methodology(s) required under Condition D25 of

this schedule. Aboriginal archaeological excavations must be conducted by a suitably qualified person in accordance with the requirements of the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010). More than one Excavation Director may be engaged for Stage 1 of the CSSI to exercise the functions required under the conditions of this approval.

Dr Iain Stuart has been nominated as Excavation Director for archaeological investigation of non-Aboriginal archaeological resources at The Bays construction site in accordance with this CoA.

Aboriginal archaeological investigations would be conducted by a suitably qualified person in accordance with this CoA, which is outlined in Section 7.9 of this report.

Excavation and Archaeology CoA D28:

Following completion of archaeological excavation programs, a Final Excavation Report and an Aboriginal Cultural Heritage Excavation Report must be prepared that includes further detailed and site-specific historical research undertaken to enhance the final reporting, and results of archaeological excavations. The report must include details of any significant artefacts recovered (salvaged), where they are located and details of their ongoing conservation. The Final Excavation Report must document significant results and artefacts which may be re-used in future stages of the CSSI. The Final Excavation Report must be prepared in accordance with guidelines and standards required by Heritage Council of NSW.

Archaeological excavation reports would be prepared for any archaeological investigation at The Bays construction site. Post excavation reporting methodologies, including proposed timeframes, are provided in Section 7.11.

Excavation and Archaeology CoA D29:

The Final Excavation Report and Aboriginal Cultural Heritage Excavation Report must be submitted to the Planning Secretary, Heritage NSW and the Relevant Council for information no later than 24 months after the completion of the archaeological excavation.

Archaeological excavation reports would be prepared for any archaeological investigation at The Bays construction site. Post excavation reporting methodologies, including proposed timeframes, are provided in Section 7.11.

1.1.2 Previous assessments for the project

Previous historical and archaeological assessments have been prepared for the project. These assessments have been referenced throughout this report as required. Assessments relating to the Stage 1 planning approval at the Bays are:

- *Sydney Metro West, Westmead to The Bays and Sydney CBD, Environmental Impact Statement Concept and Stage 1 – Technical Paper 3 Non-Aboriginal Heritage¹*

¹ Artefact April 2020. Report prepared for Sydney Metro

- Sydney Metro West, Westmead to The Bays and Sydney CBD, Response to Submissions – Appendix F Non-Aboriginal Archaeological Research Design²
- Sydney Metro West Power Enabling Works – The Bays Station Construction Site Revised Historical Archaeological Research Design & Excavation Methodology³

1.2 The Bays construction site

1.2.1 Site location

The Bays construction site is located at the western end of White Bay in the suburb of Rozelle, NSW. The construction site located in the Inner West Local Government Area (LGA). The site is bounded by Roberts Street in the north, the White Bay Power Station in the west, sandstone cuttings to the north of Victoria Road in the south and by White Bay to the east. The location of the construction site is shown in Figure 2.

1.2.2 Heritage listings

There are several heritage-listed items located within the construction site at the Bays. Heritage listed items at the construction site have also been assessed for their archaeological values in this report. These items are shown in Table 1 and their locations illustrated in Figure 3.

Table 1: Heritage listed items located within The Bays construction site

Item	Significance	Listings	Assessment
White Bay Power Station	State	<ul style="list-style-type: none"> • State Heritage Register (SHR) no. 01015 • Urban Growth NSW Development Corporation s170 heritage inventory register, SHI no. 4500460 • Sydney Regional Environmental Plan (SREP) No. 26 City West Part 3 No. 11 	Physical fabric located outside of construction footprint (excluding water circulating system discussed for outlet/inlet canals below).
White Bay Power Station (outlet) Canal	State	Port Authority of NSW s170 heritage inventory register SHI no. 4560026	Heritage values of the canal are discussed in this report (Section 8.11)
White Bay Power Station (inlet) Canal	State	Port Authority of NSW s170 heritage inventory register SHI no. 4560062	Heritage values of the canal are discussed in this report (Section 8.11)
Beattie Street Stormwater Channel No. 15	Local	Sydney Water s170 heritage inventory register SHI no. 4570329	Heritage values of the canal are discussed in this report (Section 8.12)

² Artefact October 2020. Report prepared for Sydney Metro

³ GML July 2021. Report prepared for Quickway

1.3 Archaeological Research Design methodology

This archaeological research design has been developed using additional archival research into the site specific history of the Bays construction site. This has involved examining historical plans, records and photographs that relate to this area for both its nineteenth and twentieth century histories.

This expanded site specific research has provided a revised detailed assessment of the potential likelihood for archaeological remains to be located within the Bays construction site and an updated discussion of the heritage significance of any remains. This historical research has informed a revised research investigative agenda for archaeological management at the Bays construction site. Based on this revised assessment of significance and updated research agenda, a detailed excavation management methodology has been provided.

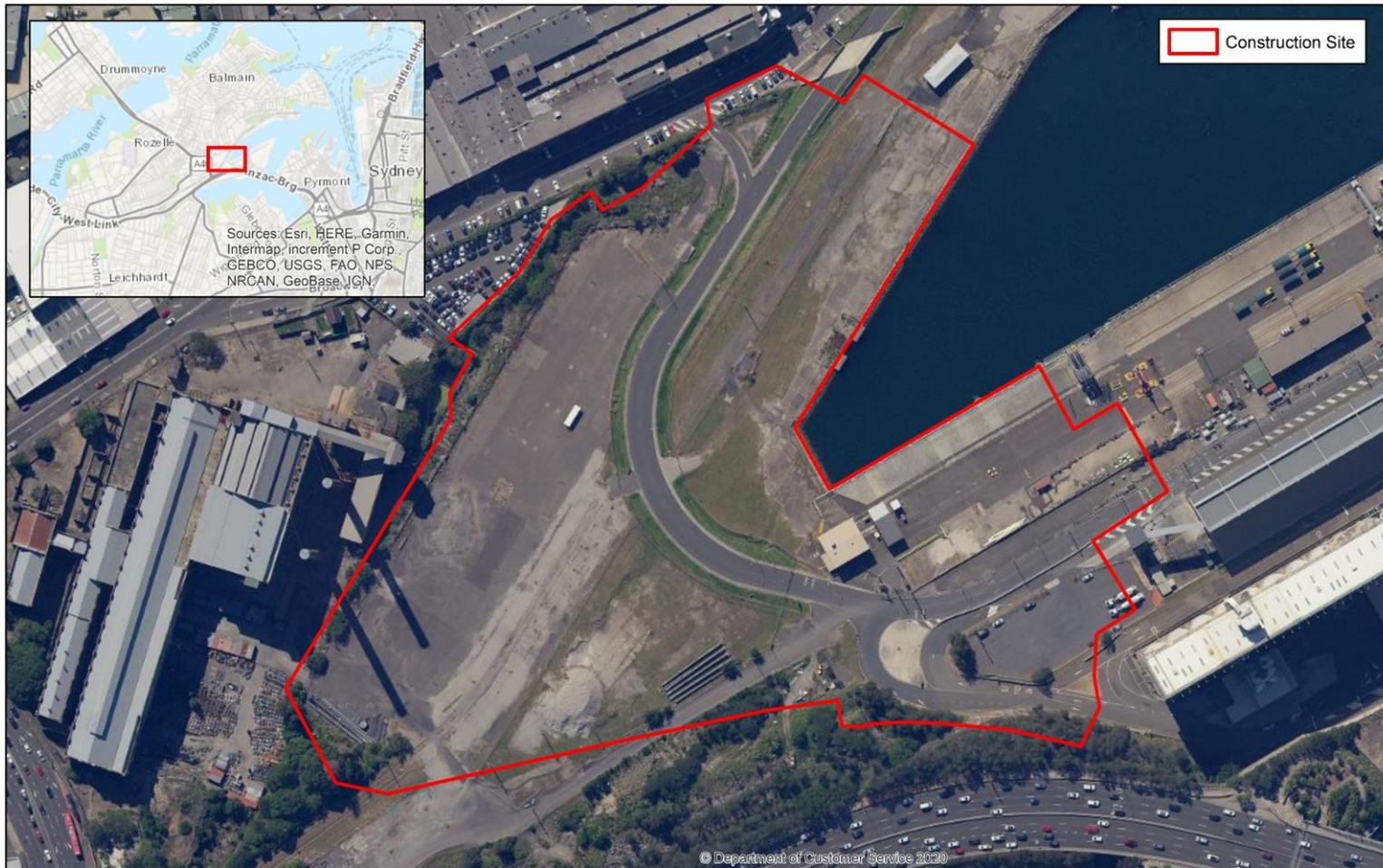
1.4 Report limitations

This Archaeological Methodology and Research Design has been prepared to provide an assessment of Non-Aboriginal (Historical) archaeological heritage values only.

Due to Covid-19 restrictions, non-digitised resources in archival repositories which require personal access were not visited. Archival resources which could not be accessed for this research is described in the Historical Context discussion in this report. These resources would be accessed once visiting access to archives is no longer restricted and provided in supplementary reporting if required.

1.5 Authorship and acknowledgements

This archaeological research design and excavation methodology report was prepared by Dr Iain Stuart (Excavation Director, Principal) and Duncan Jones (Principal). Dr Martina Muller (Historian, Senior Heritage Consultant) and Dr Iain Stuart undertook archival and historical research. Samuel Sammut (Heritage Consultant) assisted with GIS historical mapping and historical research for this report. Management input and review was provided by Dr Sandra Wallace (Managing Director).



Document Path: D:\GIS\GIS_Mapping\21102_Bays_Metro_Ard\MXD\Study_area_heritage_items



Location of Construction Site

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:2,000
SIZE A4
DATE 15/09/2021



Meters



Figure 2: Location of The Bays construction site



Document Path: D:\GIS\GIS_Mapping\21102_Bays_Metro_ARD\MXD\Study_area_heritage_items



Heritage Listed Items

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:2,500
SIZE A4
DATE 27/10/2021

0 15 30 60 90 120 Meters



Figure 3: Heritage listed items within The Bays construction site

2.0 HISTORICAL CONTEXT

2.1 Introduction

This section presents a history of the study area. The aim of the research in the broadest sense is to determine the sequence of historical events that occurred on the site and their context. The emphasis in this history is on events that would create, modify, and remove archaeological evidence.

In order to better understand the course or pattern of the study area's history; the historical evidence has been organised into discrete periods or phases of time. This site history is then considered in the light of the Australian and NSW State historical themes in order to place the site history into broader contexts of the course or pattern of Australian or NSW's history.⁴

A detailed discussion of historic themes relevant for this assessment is provided in Section 6.1.

2.2 Land-use overview

A summary of the historical use of the study area discussed in this chapter is provided in Table 2 below.

Table 2: Overview of historic land use phases

Phase	Date	Use of site
Phase 1	1800 – 1910	William Balmain Estate, land clearing, subdivision, construction of the Glebe Island causeway and Abattoir, successive reclamation fill events within White Bay, construction and use of First White Bay Hotel on edge of site
Phase 2	1910 – 1950	Construction of White Bay Power Station, establishment of grain island terminal and permanent wharf facilities, development of locomotive facilities and railhead, reduction of Glebe Island topography, use of White Bay of wartime storage and wharfage
Phase 3	1950 – 1970	Development of coal shipping and handling, expansion of White Bay Power Station, use of site for handling and loading of bulk goods
Phase 4	1970 - Present	Decommissioning of power station and decrease in the sue of the site for bulk goods wharfage.

2.3 Phase 1: Early occupation and land reclamation (1800 – 1910)

2.3.1 Summary of early development of the wider area

The Bays Station construction site on the southwestern end of White Bay is located partly within the area of a grant of 550 acres made to William Balmain in 1800, largely encompassing the eastern portion of the Balmain peninsula as well as much of the suburb that is today known as Rozelle.⁵

⁴ C.f. New South Wales Heritage Office. Assessing Historical Importance a Guide to State Heritage Register : Criterion A. Heritage Office (Parramatta, N.S.W.: 2006)

⁵ Wendy Thorp, "Thematic History White Bay, Glebe Island, Central Railway to Eveleigh Heritage Study. Draft Report Prepared for the Department of Planning," May 1990, 9.

The study area also includes land known as Glebe Island, which remained in Government ownership until the early 1840s, before the western portion was subdivided for sale.⁶ White Bay was noted as ‘Orphan School Creek’ on an early parish map. The name was in use until at least late 1850, when discussions began about building a “causeway across the Orphan Creek”, linking Glebe Island with the mainland at Balmain, and replacing an earlier connection that was subject to flooding at high water.⁷

The surrounding area was largely taken up by early grants. One year before Balmain had received his grant in 1800, George Johnston had been given a large grant in Annandale, with the adjoining bay subsequently named Johnstons Bay.⁸ Richard Johnston received a grant of 440 acres in The Glebe, while subsequent grants in the vicinity included those made to John Piper in 1811 and a 50-acre grant made to Francis Lloyd in 1819, both to the west of Balmain’s grant. The Balmain Estate however did not include Glebe Island.

The early land grants were subdivided throughout the late 1820s, with wealthy and prominent members of Sydney society buying up property along the Johnston’s Bay foreshore. These subdivisions, and the utilisation of the waterfront, led to the establishment of a number of industries within the bay during the 1830s. By the early 1840s, a boiling-down works run by W. Bell Allen was constructed at Blackwattle Bay. Bensusan and Musson established a copper smelting works on Johnston’s Bay at Annandale, while abattoirs were constructed at Glebe Island during the 1850s. During the 1860s, the future site of White Bay Power station was subdivided for housing, with dwellings remaining in place until the power station development during the early twentieth century. The connection between Glebe Island and Balmain was also formalised by a causeway. The close of the nineteenth century saw extensive land reclamation programs at Glebe Island which significantly altered the natural landscape.

The White Bay shoreline originally extended much further southwest, nearly joining with Rozelle Bay to make Glebe Island almost an island.⁹ However, reclamation of the headwaters from the late nineteenth century altered the landscape considerably. The approaches to the Anzac Bridge are laid on the built-up causeway to Glebe Island which now separates White Bay and Rozelle Bay, while much of the wharfage around the bay is located on reclaimed land.¹⁰ The geographical relationship between White Bay, its long water frontage, and its close proximity to Sydney CBD was paramount in its development. Road transport to Sydney was often uncertain, expensive and time consuming, while watercraft offered quick, reliable and relatively cheap transportation to carry both passengers and merchandise to and from the area.¹¹

⁶ “Advertising,” *Sydney Herald*, July 5, 1841, 3, <http://nla.gov.au/nla.news-article28652577>.

⁷ “LEGISLATIVE COUNCIL.,” *Sydney Morning Herald*, September 26, 1850, 2, <http://nla.gov.au/nla.news-article12921359>.

⁸ Thorp, “Thematic History White Bay, Glebe Island, Central Railway to Eveleigh Heritage Study. Draft Report Prepared for the Department of Planning,” 9.

⁹ Glebe Island seems to be been linked to Balmain via mudflats and rocks which was built up as a causeway in the 1840s

¹⁰ Graham Spindler, 2011. ‘historical Notes and Background’. Accessed 4 April 2019, <http://www.walkingcoastalsydney.com.au/brochures/documents/HC2011Day4HistoricalNotesApril2011.pdf>

¹¹ Wendy Thorp, 1990. *Thematic History: White Bay, Glebe Island Heritage Study*. Department of Planning, Sydney, p. 9.



Figure 4: Detail of Parish of Petersham map, date unknown. White Bay is noted as Orphan School Creek. Source: NSW LRS, HLRV¹²

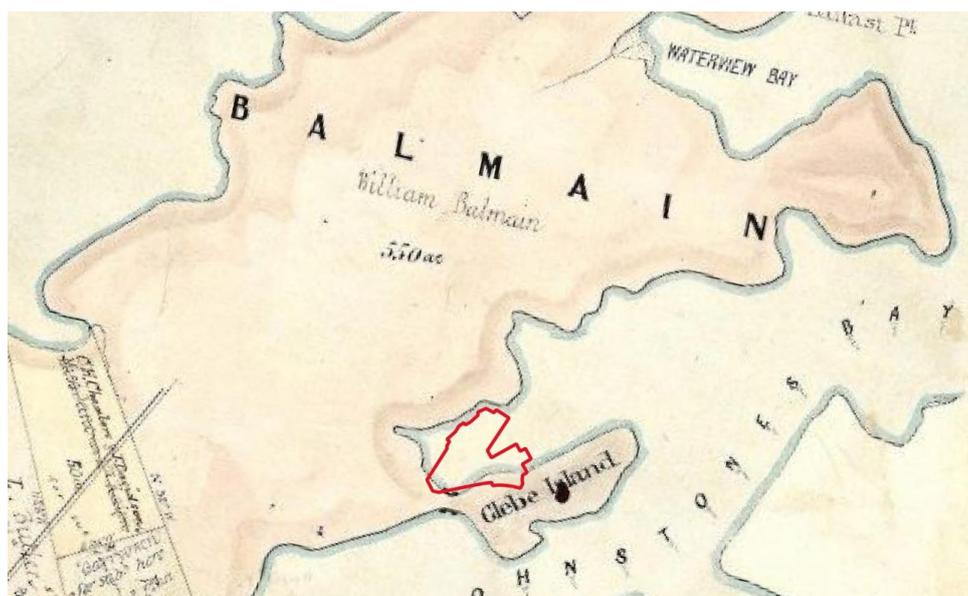


Figure 5: Detail of Parish of Petersham map, date unknown, showing the approximate location subject site outlined in red, within the area of William Balmain's 1800 grant of 550 acres. Source: NSW LRS, HLRV¹³

¹² Land Registry Services, date unknown. 'Parish of Petersham Map'. Accessed online: <http://hlrv.nswlrs.com.au/pixel.htm#>

¹³ Land Registry Services, date unknown. 'Parish of Petersham Map'. Accessed online: <http://hlrv.nswlrs.com.au/pixel.htm#>

2.3.2 Early development of Glebe Island (1840 – 1910)

2.3.2.1 1840s Government Subdivision Sale

Glebe Island, to the southeast of the bay, was originally a rocky outcrop that was “accessible from the Balmain shoreline only at low tide until a causeway was laid in the 1840s.”¹⁴ The island had not been part of Balmain’s grant made in 1800. It is said to have been offered to Reverend Richard Johnson as part of a Church and Glebe grant in 1790, but he refused it.¹⁵ Part of the island was subdivided and offered by the Government for sale in July 1841.¹⁶ A plan prepared by William H. Wells, surveyor, for the auction sale in July 1841 shows that the area offered for sale occupied the western portion of Glebe Island, and contained a regular street grid with streets named ‘Ferry’, ‘Glebe’ and ‘Johnstone’ (Figure 6). The connection between Glebe Island and Balmain was shown as a rocky area that was “covered at high water”. The advertisement for the sale stated

*Commanding as it does all boating facilities- open to every kind of trade or occupation-particularly the granite or ballast, having an immense circular extent of water frontage sheltered from heavy weather and disastrous gales of wind,-it is not too much to say that there is not any spot about Sydney so worthy of inspection, or one which warrants the purchaser in obtaining ns many lots as he can of this Island, on the day of Sale.*¹⁷

This claim suggests that the auctioneer Mr Stubbs saw the island as being useful for quarrying and it may be that some quarrying had already occurred. The accompanying plan Figure 7, shows that there was a tenuous tidal causeway linking the island to Balmain.

Although Reynolds suggested that the subdivision did not eventuate,¹⁸ allotments were reportedly sold in early 1842, to Mrs Buttenshaw and John Marsh, respectively.¹⁹ The following month it was reported that an allotment had been purchased by “one Hatfield, and subdivided into smaller allotments, with frontage to the projected road”, with the road part of Marsh’s property.²⁰

Four allotments were offered for sale in February 1844.²¹ A plan prepared by W. H. Wells, surveyor, dated 11 July 1844, shows the subdivided Glebe Island, again with proposed or built roads (Figure 6). Only one structure appears to be noted on that plan, annotated as ‘Want’, likely noting the name of the owner, with those allotments sold being located on the western side of the island. Other allotments were noted as being owned by people named Marsh, Cooper, Brazier, Pashley, Russell, McHugh, Talbot and Williams. Mrs Buttenshaw was not noted on the plan, while John Marsh appears to have owned a number of allotments.

In March 1845, the “romantic Marine Villa” named ‘Mule Gunya, Glebe Island’, was offered for lease or sale, “with the out-houses replete with every convenience and garden, etc.”²² Applications were to be made to the “Superintendent, at the Wharf Cottage, on the southern side of the island.”²³ This

¹⁴ Peter Reynolds, “Glebe Island | The Dictionary of Sydney,” accessed July 20, 2021, https://dictionaryofsydney.org/entry/glebe_island.

¹⁵ Wendy Thorp, “Historical Analysis. Glebe Island and the Silos, Sydney. A Report Prepared for Wayne McPhee and Associates Pty Ltd,” July 1994, 3.

¹⁶ “Advertising,” July 5, 1841, 3.

¹⁷ ‘Advertising’. Sydney Herald. 5 July 1841.3

¹⁸ Reynolds, “Glebe Island | The Dictionary of Sydney.”

¹⁹ “INSOLVENT ESTATES.,” *Sydney Herald*, February 10, 1842, 2, <http://nla.gov.au/nla.news-article12873643>.

²⁰ “MEETINGS OF CREDITORS.,” *Colonial Observer*, March 16, 1842, 188, <http://nla.gov.au/nla.news-article226359656>.

²¹ “PROCLAMATION.,” *New South Wales Government Gazette*, February 13, 1844, 281, <http://nla.gov.au/nla.news-article230146293>.

²² “Advertising,” *Sydney Morning Herald*, March 3, 1845, 3, <http://nla.gov.au/nla.news-article12877782>.

²³ “Advertising,” 3.

suggests that houses and other, simpler structures, as well as roads may have been built in the privately owned western portion of Glebe Island during the 1840s.

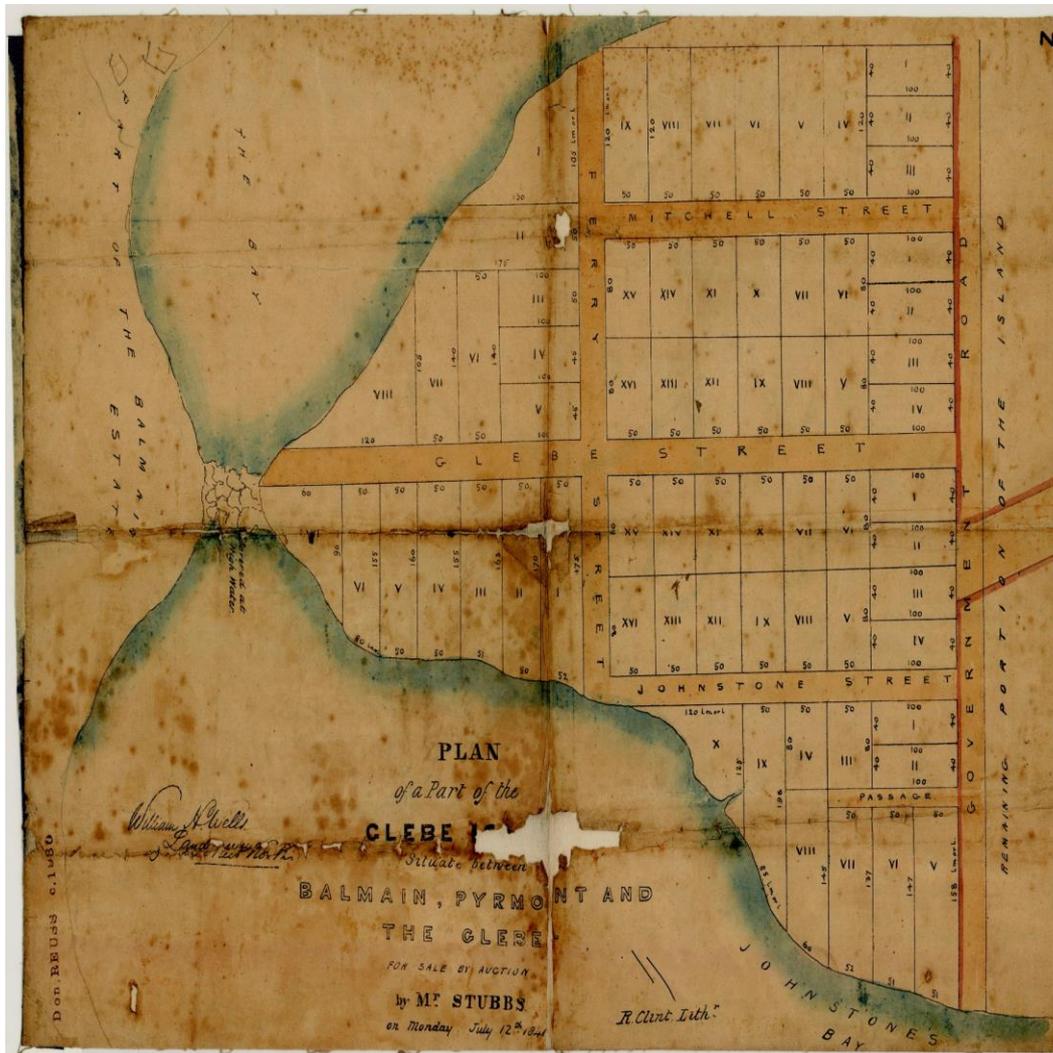


Figure 6: Plan of a part of Glebe Island, offered for subdivision sale on 12 July 1841, showing names of new streets and proposed subdivision. The connection between Glebe Island and Balmain is shown as a rocky area that was “covered at high water”. Source: SLNSW, Z/M2 811.1821/1841/2²⁴

²⁴ “Plan of a Part of Glebe Island Situated between Balmain, Pyrmont and The Glebe for Sale by Auction by Mr. Stubbs, on Monday July 12th 1841 | SLNSW Collection Viewer” ([Sydney] ; R. Clint, Litho., 1841), https://digital-stream.sl.nsw.gov.au/ie_viewer.php?is_mobile=false&is_rtl=false&dps_dvs=162669204019~359&dps_pid=IE3712212.

(originally Lot 1); Allotment No. 6, granted to Ellen Buttenshaw, 1a 2r 16p (originally Lot 2); Allotment No. 12, granted to John Marsh, 2a 20p (originally Lot 11). However, the government was not able to resume the land without compensation to the original owners, ordering them to choose government appointed arbitrators who assessed the value of their land.³²

By January 1851, it was reported that “on this worthless barren island, six or seven allotments had been sold by the government [during the 1840s]; and, before commencing the slaughter house erections, it was necessary that these allotments should be re-purchased from the holders at valuations to be fixed by arbiters mutually chosen by the parties.”³³ It appears the government was quite unhappy about the exorbitant prices approved by the arbiters for “a few feet of the worst ground, in the worst situation of the colony.”³⁴ It would appear that John Marsh, who owned a large portion of the land, made a particular profit out of the sale.³⁵

In September 1850 at the latest, discussions had begun about how to connect Glebe Island with the mainland. A “causeway across the Orphan Creek”, linking Glebe Island with Balmain, was raised as an option, as well as linking the island with Glebe Point Road.³⁶ It was decided that the causeway would be constructed first, with the connection to Glebe being part of a later stage. On 1 October 1850, an *Act for the establishment of a Public Abattoir, or Place for the Slaughtering of Cattle, for the City of Sydney*, to be located at Glebe Island, was assented to.³⁷

In July 1853, the Legislative Council approved the urgent construction of permanent wooden structures on Glebe Island, for temporary use as a slaughter house and later use, upon completion of the permanent stone buildings, as stables.³⁸ Tenders “for the erection of Slaughter Houses and Yards, for the Public Abattoir, on Glebe Island” were sought by the Colonial Architect’s Office on 16 April 1855.³⁹ While the design of the abattoir has generally been attributed to Edmund Blackett, Colonial Architect,⁴⁰ the *Sydney Morning Herald* of 28 August 1860 reported that the design had actually been prepared by Blackett’s engineer and foreman (from 1851) and successor as Colonial Architect (1854-1855), William Weaver.⁴¹ With the tender given to William Randle, builder, on 22 May 1855, work commenced that same year.⁴²

Randle was required to complete the works within eight months, for the sum of £13,250. By May 1857, that budget had been blown up to £34,762 and works came to a halt without the abattoir being completed.⁴³ An engraving dated 1857 shows the abattoir still under construction (Figure 8). A list of work performed by Randle until that date included: construction of buildings, forming the road, and fencing (all within the original contract); and, extra work on the buildings, forming of an embankment,

³² “THE THEATRE.,” *People’s Advocate and New South Wales Vindicator*, August 3, 1850, 4, <http://nla.gov.au/nla.news-article251538344>.

³³ “THE AUSTRALIAN SOCIETY.,” *Maitland Mercury and Hunter River General Advertiser*, January 4, 1851, 3, <http://nla.gov.au/nla.news-article686981>.

³⁴ *Ibid.*

³⁵ “METEOROLOGY.,” *Sydney Morning Herald*, October 11, 1848, 2, <http://nla.gov.au/nla.news-article12904481>.

³⁶ “LEGISLATIVE COUNCIL.,” 2.

³⁷ “No. XXXVI. An Act for the Establishment of a Public Abattoir, or Place for the Slaughtering of Cattle, for the City of Sydney. [Assented to, 1st October, 1850.],” *New South Wales Government Gazette*, October 18, 1850, 139, <http://nla.gov.au/nla.news-article230045130>.

³⁸ “The Sydney Morning Herald.,” *Sydney Morning Herald*, July 22, 1853, 2, <http://nla.gov.au/nla.news-article12947478>; “Legislative Council.,” *Maitland Mercury and Hunter River General Advertiser*, July 27, 1853, 4, <http://nla.gov.au/nla.news-article670623>.

³⁹ “TO BUILDERS AND OTHERS.,” *New South Wales Government Gazette*, April 24, 1855, 1177, <http://nla.gov.au/nla.news-article229755416>.

⁴⁰ Reynolds, “Glebe Island | The Dictionary of Sydney.”

⁴¹ “THE GLEBE ISLAND ABATTOIRS.,” *Sydney Morning Herald*, August 28, 1860, 5, <http://nla.gov.au/nla.news-article13045034>; “Weaver, William | The Dictionary of Sydney,” accessed July 21, 2021, https://dictionaryofsydney.org/person/weaver_william#ref-uuid=f659ef04-1695-45dd-8667-0db8be3df607.

⁴² “ABATTOIRS- GLEBE ISLAND.,” *Sydney Morning Herald*, May 18, 1857, 3, <http://nla.gov.au/nla.news-article12995698>.

⁴³ “ABATTOIRS- GLEBE ISLAND.,” 3.

and forming of a dam (all outside the original contract). It was noted that there were “no other reports or survye in the office of the Colonial Architect connected with this subject, expect those by Mr. Weaver”,⁴⁴ who had left the Colonial Architect’s office already in 1855.

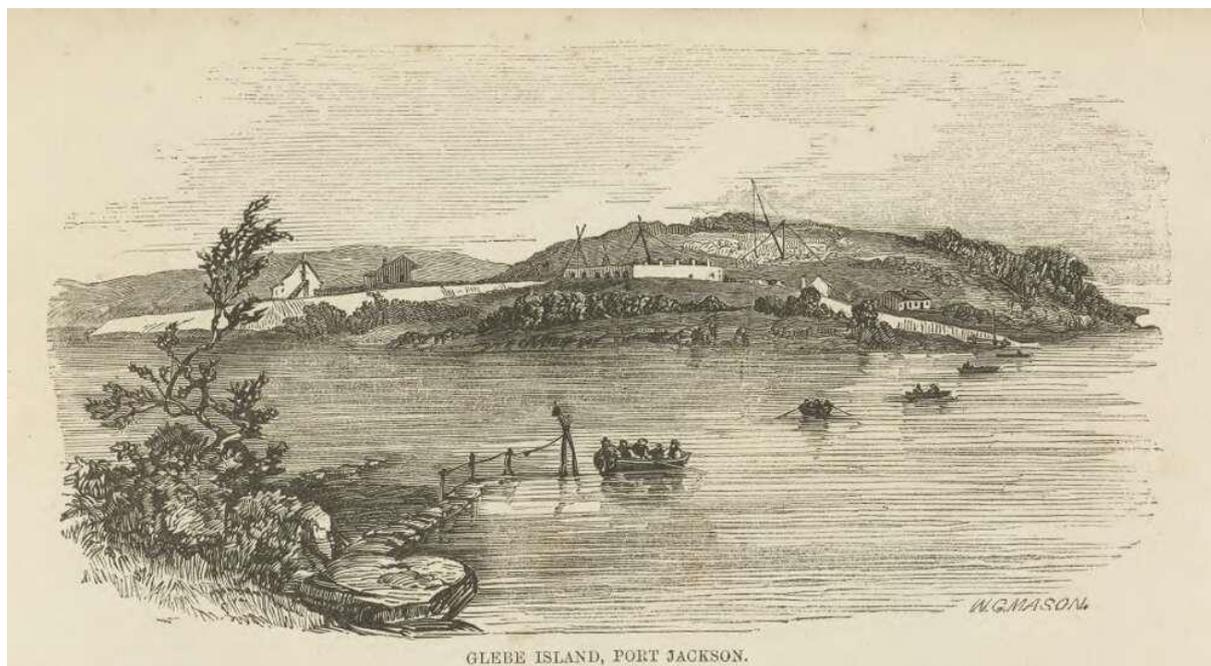


Figure 8: 1857 engraving showing the abattoir on Glebe Island under construction. The view is likely from Pyrmont, showing boats ferrying people across the bay to the jetty. Source: NLA, PIC Volume 6A#S1231⁴⁵

Work subsequently proceeded in October 1858, when tenders were sought for “culverts, etc, road to Glebe Island.”⁴⁶ It was not until 4 January 1859 that tenders were sought from “persons willing to contract for the performance of certain works required for completion of the Abattoir, Glebe Island.”⁴⁷ Three separate tenders were sought, for the erection of the Superintendent’s residence, construction of the main drain, construction of surface and underground drains, and pitch-paving of the slaughter houses. In December 1859, tenders were received by the Engineer in Chief for Harbour and Rivers from ship-builders “for building two Punts for the Glebe Island Abattoirs.”⁴⁸ The abattoir had been completed in around August 1859, but it remained unused until after 27 August 1860, when a fifteen month lease of the stalls was offered by public auction.⁴⁹

A formed road now led across the swamp between Balmain and the peninsula, along which the cattle and sheep were driven to the abattoir.⁵⁰ This was located on the southern side of the road and consisted of two parallel ranges of stone buildings, one each for cattle and sheep, respectively (see Figure 9). The range for the sheep contained a rear verandah where the carcasses were hung after dressing. A stockyard was located to the rear of the cattle range. Each range had access to fresh and salt water for washing the carcasses and flushing the floors.

⁴⁴ “ABATTOIRS- GLEBE ISLAND.,” 3.

⁴⁵ “Glebe Island, Port Jackson [Picture],” Trove, accessed July 22, 2021, <https://nla.gov.au/nla.obj-138447398>.

⁴⁶ “Advertising,” *Sydney Morning Herald*, October 23, 1858, 10, <http://nla.gov.au/nla.news-article13020298>.

⁴⁷ “TO BUILDERS AND OTHERS.,” *New South Wales Government Gazette*, January 7, 1859, 37, <http://nla.gov.au/nla.news-article228714122>.

⁴⁸ “TO SHIP-BUILDERS.,” *New South Wales Government Gazette*, December 13, 1859, 2734, <http://nla.gov.au/nla.news-article228603819>.

⁴⁹ “THE GLEBE ISLAND ABATTOIRS.,” August 28, 1860, 5.

⁵⁰ “THE GLEBE ISLAND ABATTOIRS.,” 5.

A well-formed road with a steep incline led from the slaughterhouses to the wharf on the south-eastern side. Two punts brought the meat carts with the carcasses from there to nearby Pyrmont.⁵¹ The punts were operated by a “steam-engine of ten horse power, stationed on the island, and which sets in motion four drums, around which are coiled the ropes, that pass through the punts.”⁵² One trip took five minutes, and one punt was able to transport six meat carts, with both punts eventually operating simultaneously from either end.

As well as the work constructing the abattoir a causeway is reported to have been constructed to link Glebe Island with Balmain although it is probably more accurate to state that the existing causeway was reconstructed to take a greater degree of traffic to the abattoirs.⁵³

A Crown Plan surveyed on 16 October 1860 (Figure 9) shows the location of the various structures of the abattoir, including the Sub-Inspectors residence near the wharf, on the southern side of the island. To the east of the punts, the site of the future bridge to Pyrmont was noted. A further jetty was located to the west of the punt. More importantly, however, there were also several structures on the Balmain side, north-east of the road from Balmain to the abattoir. They included the stables and adjacent fenced in yards – likely the c1853 timber structures used as the temporary slaughterhouses - and two other buildings, one of which contained two external boilers. These were likely the boiling down establishments, as noted as a special lease on the amended Crown Plan (Figure 10) and mentioned in 1883 as a great nuisance for the Balmain side, “especially when steam was being blown off.”⁵⁴ The building is shown in a watercolour drawing dated 1862 (Figure 11). Another fenced in area further to the east was likely used to contain pigs.

The water frontage around the eastern portion of Glebe Island was noted on the 1860 plan as “Thick Tea Tree Scrub, Gum and Oak” in the north, and “Timbered with Gum and Oak saplings” in the south.

The Crown Plans (Figure 9 and Figure 10) show that by 1860 Glebe Island was largely untouched by quarrying. However, annotations on the plan (Figure 10) indicate that leases for the purposes of quarrying were at least being contemplated.⁵⁵ The foreshore was later sub-divided into twelve allotments, offered for lease sale on 17th November 1860 but none were bid for. The lots were offered again on the 123 August 1865 but also were not bid for. These lots were advertised as special leases for Quarries for three years and available immediately.⁵⁶ Later an annotation was placed on the plan that the lots were not to be leased. It is clear though that quarrying began around this time.

Allotment 11 on Glebe Island also contained a right of way reserved for the Colonial Architect's Department. The outline of a quarry was also noted as a later addition to the site, in the area to the east of the Sub-Inspector's residence. By then, a fenced in area for pigs had been added to the east of the boiling down works further north. A timber bridge connecting Glebe Island with Pyrmont, known as 'Blackbutt Bridge', had been opened in 1861.⁵⁷ This contained a manual lift-span to allow ships to pass through, and remained standing until 1903, until it was replaced by the second Glebe Island Bridge in 1903.

⁵¹ “THE GLEBE ISLAND ABATTOIRS.,” 5.

⁵² “THE GLEBE ISLAND ABATTOIRS.,” 5.

⁵³ ‘THE ABATTOIRS.’ Sydney Morning Herald. 13 October 1859. <http://nla.gov.au/nla.news-article13031868>.

⁵⁴ “The Glebe Island Abattoirs.,” *Evening News*, February 27, 1883, 3, <http://nla.gov.au/nla.news-article107232016>.

⁵⁵ At this time Glebe Island being crown land was available for Special Purpose leases which covered activities such as building jetties, erecting sawmills and quarrying.

⁵⁶ ‘Government Gazette Notices’. New South Wales Government Gazette. 8 August 1865. <http://nla.gov.au/nla.news-article225251074>.

⁵⁷ Mark Dunn, “Glebe Island Bridge | The Dictionary of Sydney,” accessed July 23, 2021, https://dictionaryofsydney.org/entry/glebe_island_bridge.



Figure 9: "Plan of Glebe Island showing the Abattoirs and Improvements," 1860. Source: NSW LRS, Crown Plan 826-690





Figure 11: “Glebe Island Slaughter Houses,” 1862, by H. Grant Lloyd, looking across the causeway from Balmain to the abattoir on the right, and the boiling down works on the left.
Source: State Library of NSW, DL PX 42

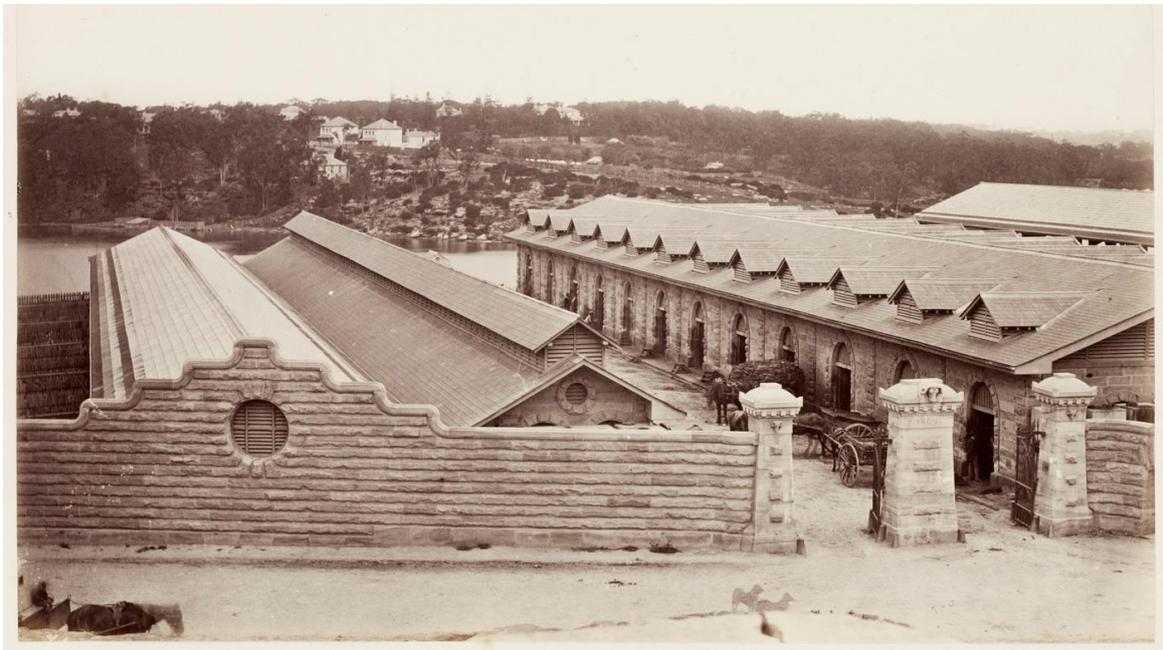


Figure 12: Glebe Island Abattoir, 1870, photograph by Charles Pickering. Source: SLNSW, SPF/664⁵⁸

2.3.2.3 Desiccating House and Refrigeration Works (1880-82)

Additions and alterations were indeed carried out during subsequent years,⁵⁹ and a desiccating house and refrigeration works were added by the Government from 1880. These additions are shown in Figure 14 and Figure 15. The desiccating house, on the south side of the island, was completed by December 1880, under Colonial Architect James Barnet, converting the blood of offal into a dry powder using steam.⁶⁰ At the same time, construction of a tank for the refrigeration works, located on the north side, was imminent. The tank was “scooped out of the solid freestone,”⁶¹ held over a million

⁵⁸ “Abattoirs Glebe Island, Sydney, Oct 1870 / [Attributed to Charles Pickering],” accessed July 23, 2021, <https://search.sl.nsw.gov.au/permalink/f/1cvjue2/ADLIB110317676>.

⁵⁹ “Advertising,” *Empire*, March 25, 1867, 8, <http://nla.gov.au/nla.news-article60837992>.

⁶⁰ “Glebe Island Desiccating House.,” *Australian Town and Country Journal*, December 18, 1880, 14, <http://nla.gov.au/nla.news-article70950880>.

⁶¹ “THE GLEBE ISLAND ABATTOIRS AND THE GOVERNMENT CHILLING ROOM.,” *Sydney Daily Telegraph*, October 1, 1881, 6, <http://nla.gov.au/nla.news-article238314049>.

gallons of sea water and was filled by a Tangye pump which threw “17,000 gallons per hour 100 feet high.”⁶²

By March 1882, the refrigerating room, including its Bell-Coleman refrigerating machinery, 108 feet chimney and Galloway boilers, was ready for use.⁶³ The grounds for the delivery room, fully iron-clad and shipped from England, had been prepared, and there were urgent plans for new tramways connecting the abattoir with the refrigerating room, as well as for asphaltting of the causeway.

At the same time, there were increasing calls from Balmain and Glebe residents for the closure of the abattoir due to poor management, unsanitary conditions and an unbearable smell.⁶⁴ The 1883 Royal Commission into *Noxious and Offensive Trades* found that at the facility, blood was converted into fertilizer, waste materials were boiled down, blood and offal were dumped into the harbour and cattle, sheep and pigs were driven through the surrounding suburban streets. Despite the severe conditions and a local push for the abattoir’s relocation, the Commission recommended improvements rather than closure.

The area of the refrigeration works contained several other buildings, including a cottage and two stables by 1892, as shown on a survey plan dated 16 September 1892 (Figure 13). Sheep pens were also located nearby, while further to the north-east, two sheds, a crane and boiling down works were located near a jetty.

By January 1896, the refrigeration works appear to already have been out of use, with the machinery taken down and the rooms used for temporary stores by exporters.⁶⁵ By that time, there were 68 slaughtering houses in Sydney, and out of 89,000 cattle slaughtered, Glebe Island was responsible for 81,262, “of 1,324,538 sheep killed, only half-a-million were put through outside of the abattoir; while of pigs slaughtered in the metropolitan area, Glebe Island accounts for 59,000 out of 62,675” (figures for 1895).⁶⁶ However, it was increasingly difficult to sell the blood manure and the stores were reportedly full.

⁶² “THE GLEBE ISLAND ABATTOIRS.,” *Sydney Daily Telegraph*, March 28, 1882, 3, <http://nla.gov.au/nla.news-article238464069>.

⁶³ “THE GLEBE ISLAND ABATTOIRS.,” *Sydney Daily Telegraph*, March 31, 1882, 3, <http://nla.gov.au/nla.news-article238468559>; “SETTING OF ‘GALLOWAY BOILERS’ FOR THE REFRIGERATING MACHINERY, GLEBE ISLAND ABATTOIR.,” *New South Wales Government Gazette*, April 26, 1881, 2375, <http://nla.gov.au/nla.news-article224295272>; “THE GLEBE ISLAND ABATTOIRS AND THE GOVERNMENT CHILLING ROOM.,” 6.

⁶⁴ Max Solling, “Glebe’s Industrial History,” *Glebe Society Bulletin* 3 (May 2006): 5–6, https://www.glebesociety.org.au/wp-content/uploads/bulletins/2006_03.pdf.

⁶⁵ “THE ABATTOIR QUESTION IN SYDNEY.,” *Brisbane Courier*, January 3, 1896, 6, <http://nla.gov.au/nla.news-article3616022>.

⁶⁶ “THE ABATTOIR QUESTION IN SYDNEY.,” 6.

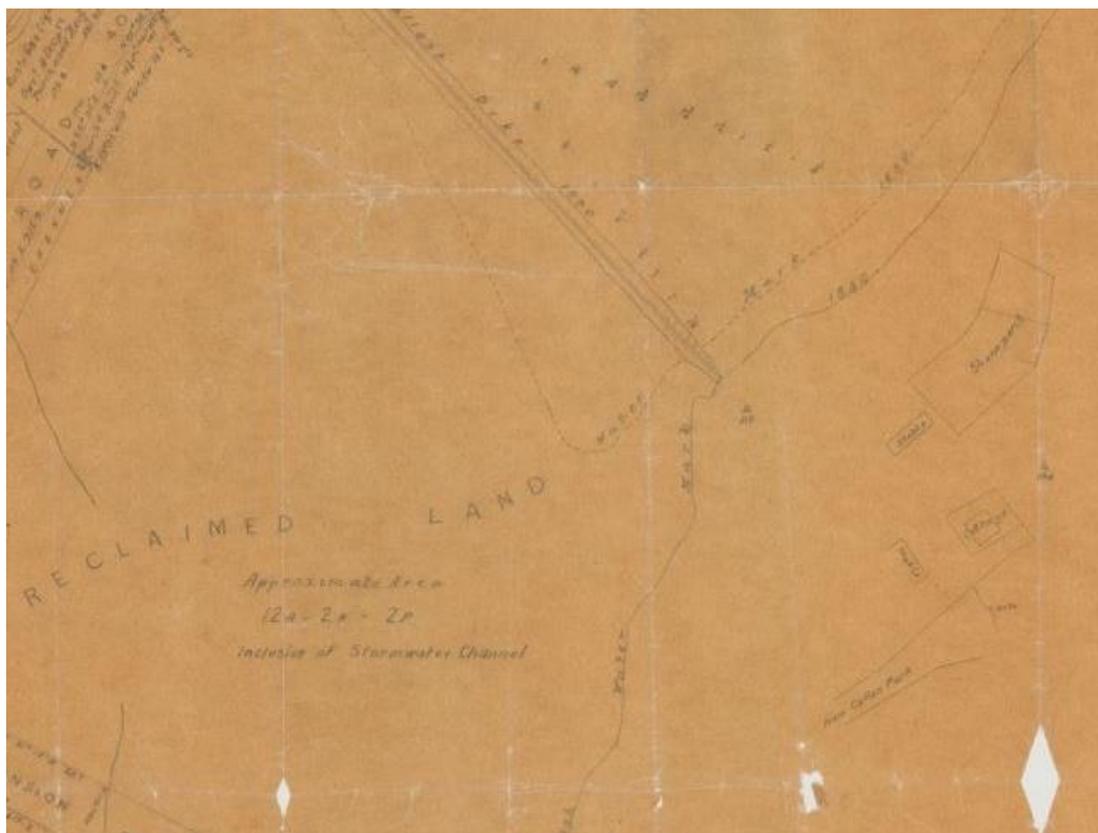


Figure 13: Detail from plan for 'White Bay Shewing Reclaimed Land', reduction from a survey dated 16 September 1892, showing a cottage, stables and sheep pens near the refrigeration works on Glebe Island. Source: SLNSW, Rozelle Subdivision Plans, Z/SP/R17/44⁶⁷

2.3.2.4 Cattle Shipping Wharf (1899)

In 1899 tenders were called for a cattle shipping wharf at the western side of Glebe Island, and Cecil Dutton's tender was accepted as the lowest out of six.⁶⁸ The location of the shipping wharf is shown in a Crown Plan prepared in 1899, entitled "Glebe Island Proposed Wharfage Accommodation" (Figure 14). A photograph of the Cattle Shipping Wharf is included as (Figure 15). The plan also shows "new cattle yards" to the east of the cattle shipping wharf, and the remains of the old jetty further to the east.

2.3.2.5 Transformation of Glebe Island

The 1890s brought into play a number of plans for Glebe Island. As discussed above, there was increasing community concern about the presence of the abattoirs so close to the residential and commercial areas of Sydney and pressure was brought to bear to relocate them to Homebush. At the same time there was considerable discussion and a Parliamentary Committee into the idea of a City Railway and new terminus station. Some of these proposals discussed an alternative freight route to Darling Harbour via the White Bay-Glebe Island area.⁶⁹ A further proposal was to develop Long Nose Point at Balmain into a coal loading facility and link it to the railway system via a line through Balmain.

⁶⁷ "White Bay, Shewing Reclaimed Land, Z/SP/R17/44, [Rozelle Subdivision Plans] [Cartographic Material]," Collection - State Library of NSW, accessed July 28, 2021, <https://collection.sl.nsw.gov.au/record/74VvqwDRpWQy/1B4L8yvRdab8K>.

⁶⁸ "TENDERS FOR PUBLIC WORKS.," *New South Wales Government Gazette*, June 9, 1899, 4488, <http://nla.gov.au/nla.news-article220943310>; "TENDERS OPENED.," *Daily Telegraph*, June 13, 1899, 8, <http://nla.gov.au/nla.news-article239541812>; "Government Gazette Tenders and Contracts," *New South Wales Government Gazette*, July 4, 1899, 5066, <http://nla.gov.au/nla.news-article221002713>.

⁶⁹ E.g. 'CITY RAILWAY COMMISSION.' *Sydney Morning Herald*. 8 July 1890. <http://nla.gov.au/nla.news-article13785501>.

This would provide an export facility for coal from the Western Coal mines.⁷⁰ From the seaward side there was pressure for more wharves and unloading facilities to cope with Sydney's expanding trade and Glebe Island and White Bay were seen as good candidates for new facilities.

Figure 14 was prepared in 1899 to show how the proposed wharfs would be set out and the depth of water. The foreshore in this area was annotated with 'filling', suggesting creation of a level surface by resuming the land to the low water mark. Further east along the shoreline, the remains of an "old [ship]wreck, ribs shewing above water," were noted, and another jetty was located further east of the wreck site. '

Several leases for quarrying were noted in pencil along the eastern portion of the island, likely as later annotations in relation to the 1910s wharfage. The 1899 plan shows several areas as "excavated," while other areas were flagged for 'filling', including near the Glebe Island Bridge, where a new alignment for the Abattoir Road was noted. The refrigeration works were noted as 'store', and there were several buildings located nearby, including a cottage.

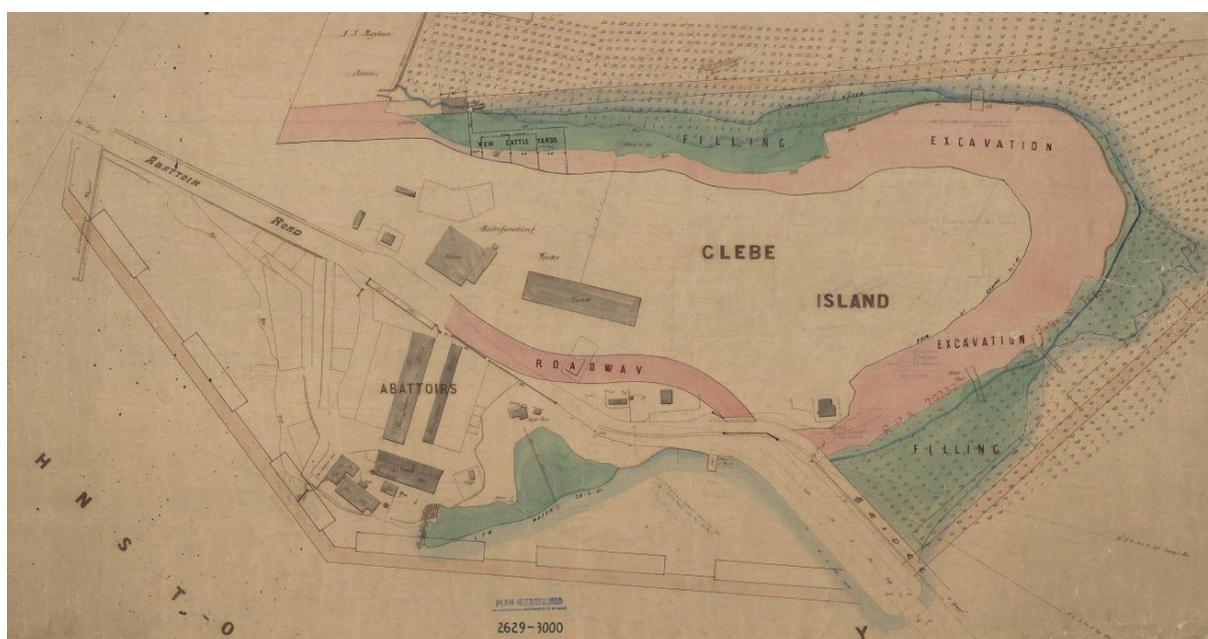


Figure 14: Plan for proposed wharfage accommodation at Glebe Island, dated March 1899, showing the Glebe Island Abattoirs after extensions, including the refrigeration works and cattle wharf. Excavation areas are shaded pink, and infill areas are shaded green. The realignment of Abattoir is also noted in pink. Source: NSW LRS, Crown Plan 2629-3000

⁷⁰ 'CITY RAILWAY COMMISSION.' Sydney Morning Herald. 8 July 1890. <http://nla.gov.au/nla.news-article13785501>.

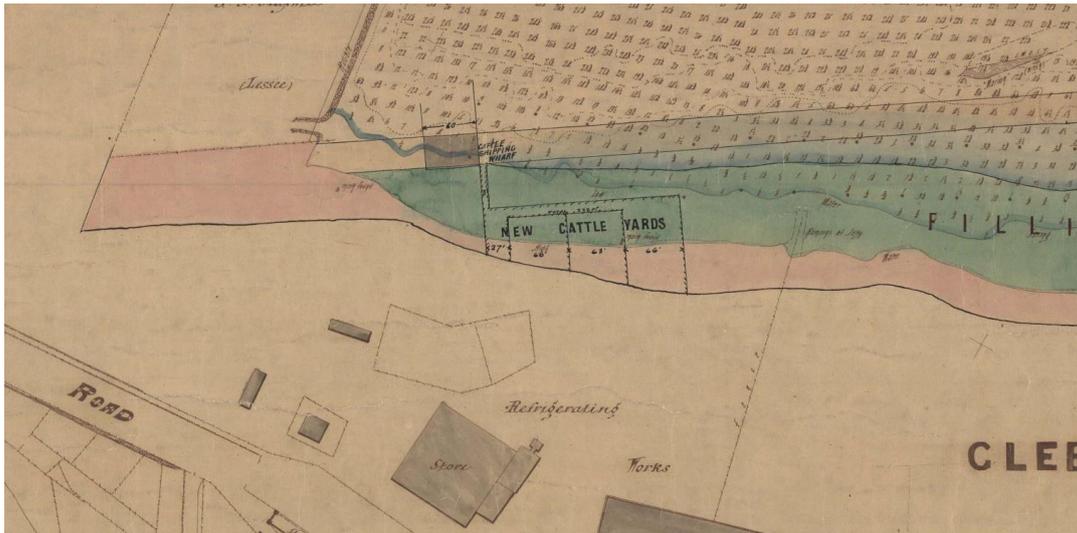


Figure 15: Detail from 1899 Crown Plan, showing the Cattle Wharf and adjacent “new cattle yards” at White Bay. A fence is noted, leading from the vast tank of the refrigeration works to the “remains of jetty” beyond the high water mark. Source: NSW LRS, Crown Plan 2629-3000

This coincided with proposals put forward to the Public Works Committee of “cutting down of Glebe Island, the reclamation of the foreshore, and the erection of wharves round the island,” as part of which the Crown Plan in Figure 14 and Figure 15 was likely prepared.⁷¹ The proposal was to increase Sydney’s overcrowded wharfage areas and involved reusing materials from the excavations for land reclamation at Glebe Island.⁷² At the same time, plans were made for replacement of the old Glebe Island Bridge with a new steel swing bridge, involving reclamation works on the south side of the island. The old Glebe Island Bridge had collapsed in 1899 and the new bridge was constructed in 1903.⁷³

2.3.2.6 New Glebe Island Bridge (1903) and Tramway (1910)

By May 1903, a new road had been laid from the new bridge, leading in “graceful curves and on easy grades” to the top of the hill, where the new road was “merged into the old one, the latter being retained as a means of access through a steel overbridge in the causeway to the reclamation on the north of the bridge, which has been formed by cutting down part of the island, thus providing an area of 13 acres of flat land with 2800ft of deep-water frontage, which can (when required) be readily connected with the railway system of the State by a short line to Petersham.”⁷⁴ The new Glebe Island Bridge was officially opened on 1 July 1903.⁷⁵

By 1903, secret overflows were still being dumped into Blackwattle Bay which was at times described as ‘blood red’.⁷⁶ Construction of a new abattoir at Homebush was authorised in 1906. In 1916, the Glebe Island Abattoir, which was described as ‘a noxious nuisance ... a source of serious loss to the

⁷¹ “PUBLIC WORKS COMMITTEE.,” *Daily Telegraph*, December 18, 1899, 2, <http://nla.gov.au/nla.news-article237202050>.

⁷² “GLEBE ISLAND IMPROVEMENTS.,” *Daily Telegraph*, December 1, 1899, 3, <http://nla.gov.au/nla.news-article237190539>.

⁷³ Dunn, “Glebe Island Bridge | The Dictionary of Sydney.”

⁷⁴ “Glebe Island Bridge,” Collection - State Library of NSW, 3, accessed July 21, 2021, <https://collection.sl.nsw.gov.au/record/YRIDrBdn>.

⁷⁵ “Glebe Island Bridge.,” *Balmain Observer and Western Suburbs Advertiser*, June 20, 1903, 5, <http://nla.gov.au/nla.news-article132360423>. Glebe Island Bridge was upgraded in 1933 and remained in use until 1995, when it was replaced by Anzac Bridge, constructed a little further to the west as part of freeway developments for westbound traffic, see Reynolds, “Glebe Island | The Dictionary of Sydney.”

⁷⁶ Solling, “Glebe’s Industrial History,” 6.

government ... and hopelessly out of repair', was closed and the operations transferred to Homebush.⁷⁷ The Glebe Island Abattoir remained standing until 1926, when it was finally demolished.

A tramway across Glebe Island had been built in 1910, extending from the Pyrmont line in Harris Street across Glebe Island Bridge, and joining the line to Drummoyne and Ryde in Weston Road, Rozelle.⁷⁸ Tenders had been called in November 1909, and by December 1910 the trams were in use.⁷⁹ Travellers expressed "considerable discontent" about the "intense dustiness of the Glebe Island trip" and objected "to an alleged malodorous atmosphere near the abattoirs."⁸⁰



Figure 16: Glebe Island swing bridge with Glebe Island Abattoir in the left background, c1903–10. The chimney of the refrigeration works is visible in the right background. The photograph was taken before the tramway was built. Source: Museum of Applied Arts & Sciences, 85/1286-1641⁸¹

2.3.3 Early Development of White Bay (1850s – 1910s)

2.3.3.1 Subdivisions and Land Sales

The area at the head of White Bay was originally part of the Balmain Estate, granted to William Balmain in 1800.⁸² While much of the Balmain Estate had been subdivided and sold earlier, the area at the head of White Bay was only sold as part of the "great sale of the whole of the residue" of the Balmain Estate on 2 April 1862.⁸³ It was located on Section 19 of the subdivision, advertised as containing "water frontage to White Bay, immediately opposite the Glebe Island Abattoirs."⁸⁴ A plan of the Balmain Estate dated 1852 shows that area and its proposed subdivision, noting it as "Marsh covered at Spring Tide", and suggesting that a building had been constructed by 1852 near Crescent

⁷⁷ *Ibid.*; cf. "THE HOMEBUSH ABATTOIRS.," *Daily Telegraph*, August 5, 1916, 11, <http://nla.gov.au/nla.news-article239212851>.

⁷⁸ "THE TRAM OVER GLEBE ISLAND.," *Daily Telegraph*, July 12, 1910, 6, <http://nla.gov.au/nla.news-article237998921>.

⁷⁹ "A NEW TRAM TO BALMAIN.," *Daily Telegraph*, November 4, 1909, 4, <http://nla.gov.au/nla.news-article238234971>.

⁸⁰ "GLEBE ISLAND TRAM.," *Evening News*, December 13, 1910, 14, <http://nla.gov.au/nla.news-article117964974>.

⁸¹ Author unknown, c1903-1915. 'Glass plate negative of Sydney's Glebe Island swing bridge with Glebe Island abattoir in the background'. Accessed online 8 July 2019, <https://collection.maas.museum/object/495200>

⁸² Thorp, "Thematic History White Bay, Glebe Island, Central Railway to Eveleigh Heritage Study. Draft Report Prepared for the Department of Planning," 9.

⁸³ "Advertising," *Sydney Morning Herald*, March 5, 1862, 7, <http://nla.gov.au/nla.news-article13225339>.

⁸⁴ "Advertising," 7.

Street on allotment 2, as the only building in the immediate area (Figure 17). A further building was located on allotment 4 further north. The plan shows the situation prior to 1867, when Crescent Street, from Parsons Street to Abattoir Street, was aligned.⁸⁵



Figure 17: Plan of Balmain Estate, 1852. Source: NLA, Map F535⁸⁶

There are numbers drawn in White Bay and these are likely to depth soundings although it is not stated on the map. It is assumed that they are in feet. Assuming a tidal range of 3.3feet (2m) it seems likely that the bay at this time was still covered with water even at low tide.

A later plan of Balmain from 1861 shows the same area (Figure 18).⁸⁷ This plan again shows building on Lots 2 and 4 of Section 19 but notably nothing on the site of the first White Bay Hotel. The plan shows the site immediately prior to the sale of the remaining lots in the Balmain Estate in 1862

A plan transmitted to the Surveyor General on 28 October 1874 (Figure 19) shows that the large corner site bounded by Abattoir Road in the south, Crescent Street in the west (later known as Weston Street), and White Bay in the east, was occupied by Robert Symonds (at that time noted as R. Symons) and his White Bay Hotel. Although the *Sydney Sands Directory* only noted “Simons, Robert, publican, Wide Bay Hotel” [sic] for the first time in 1866, Symonds was already mentioned in the *Sydney Morning Herald* as the publican of the White Bay Hotel, Balmain, by April 1859.⁸⁸ It is possible that this was an earlier hotel of that name, located in a different area of Balmain, or that Symonds had established the hotel at the site prior to the official subdivision sale in 1862.

⁸⁵ “ALIGNMENT OF CERTAIN STREETS, BALMAIN MUNICIPALITY.,” *New South Wales Government Gazette*, May 31, 1867, 1317, <http://nla.gov.au/nla.news-article225476118>.

⁸⁶ “Plan of Balmain Estate 1852 [Cartographic Material],” Trove, accessed July 28, 2021, <https://nla.gov.au/nla.obj-229968954>.

⁸⁷ ‘Plan of the Town and Municipality of Balmain, County of Cumberland, New South Wales’. 1861. <https://collection.sl.nsw.gov.au/record/74VKOI2raVGO/dvM4QJeJMzgdQ>.

⁸⁸ “ANNUAL LICENSING MEETING.,” *Sydney Morning Herald*, April 19, 1859, 3, <http://nla.gov.au/nla.news-article13023934>.



Figure 18 Detail from Plan of Balmain Estate 1852 (source State Library)

The 1874 plan shows that much of White Bay was low lying mud flats exposed at low tide. This is a different situation from the earlier plans especially Figure 17 which shows 3-4 foot of water at presumably high tide. In 1874 the low tide mark is 230m from high water mark in the south and 290m in the north.

The mud flats to the east of Crescent Street were crisscrossed by water channels connected to a creek in the north and the bay in the east. While the low water mark was located in quite some distance away from the properties on the eastern side of Crescent Street, the original high-water mark ran up to the rear corner of the White Bay Hotel. The high-water mark in 1874, however, was noted a little further to the east, extending past the 'Boundary of Allotments as sold in the Balmain Estate' in a straight line. This evidence suggests that some filling or land reclamation had been undertaken between the 1862 subdivision sale and 1874.

The source of the sediment is of interest. It seems unlikely that it was erosion from the lots to the west and although the catchment of what has become the Beattie Street drain is quite long it is also narrow and steep sided there is no evidence of a typical alluvial fan on the mudflats. Deliberate filling is a possibility especially as the low water mark is suspiciously straight in Figure 19.



Figure 19: Plan showing proposed reclamation at White Bay dated 1874, showing the location of Robert Symonds' White Bay Hotel and property, with high- and low-water marks noted. The plan contains various later annotations (in red and pencil). Source: NSW LRS, Crown Plan 18-574

A plan dated 1880 (Figure 20) shows that additional buildings had been constructed by that time, and several areas had been fenced in. The White Bay Hotel, a stone building, occupied the corner of Abattoir Road and Weston Road, and to its northeast there were brick stables and a weatherboard shed, with the latter noted as 'old'. Additional weatherboard stables were located further east along Abattoir Road, still on Symonds' land but closer to the bay, in a separately fenced in area.

Further up Crescent Street was Padstow House, a brick residence with a front verandah. This was Robert Symonds' house, which was located within large, fenced in grounds that extended all the way to the bay. When Robert Symonds died in 1882, he was noted as living at Padstow House, Balmain,⁸⁹ and in 1886, Mrs. Symons was still noted at the residence.⁹⁰ A weatherboard coach house was located on the northern boundary line of Symonds' residential property, which also contained an 'old' weatherboard bath house in the area of an old drain or watercourse, jutting in from the foreshore which was delineated by a loose stone and sand embankment along the mean high-water line. A paling fence ran a little further out along the embankment, suggesting that the reclaimed land, particularly along the foreshore, was still subject to tidal changes.

A Public Works Department survey dated 1888 (Figure 21) shows additional outbuildings at the site of the White Bay Hotel and the Padstow House property, while the bathhouse was noted as a 'shed'.

⁸⁹ "ECCLESIASTICAL JURISDICTION.," *New South Wales Government Gazette*, May 5, 1882, 2507, <http://nla.gov.au/nla.news-article221703405>.

⁹⁰ "ROWING AND SAILING NOTES.," *Australian Town and Country Journal*, November 13, 1886, 40, <http://nla.gov.au/nla.news-article71069685>.

The block on the western side of Weston Road, bounded by Barnes Street in the west, also contained several buildings by that time.

The field book sketches prepared by the surveyor in November 1888 (Figure 22) show further details regarding the structures at the White Bay Hotel site. Apart from the stone hotel on the corner of Crescent Street and Abattoir Road, the immediate area of the hotel contained the brick stables, which included a water closet (WC), and there was a small timber WC adjacent to the stables. Further north, the old weatherboard shed included in the final survey was not shown, while two new structures ran perpendicular off the shed, along the fence line, involving a timber shed and an iron/timber structure. Another small brick building was located between these and the hotel. The stables near the bay were still noted, followed by another small timber structure. Further to the north of these, beyond the fence line and near the water mark, was another timber WC and two timber sheds.



Figure 20: Detail from plan surveyed in mid-1880, showing Robert Symonds' property which contained his White Bay Hotel at the corner of Abattoir Road and Crescent Street, and his residence, Padstow House, further north on Crescent Street. Various stables and sheds were located on the property, as well as an old boat house near the mean high-water mark. Just north of Abattoir Road, to the east of the hotel, were weatherboard stables, and a stone wall marked the base of the road embankment. Source: NSW LRS, CP 106-574

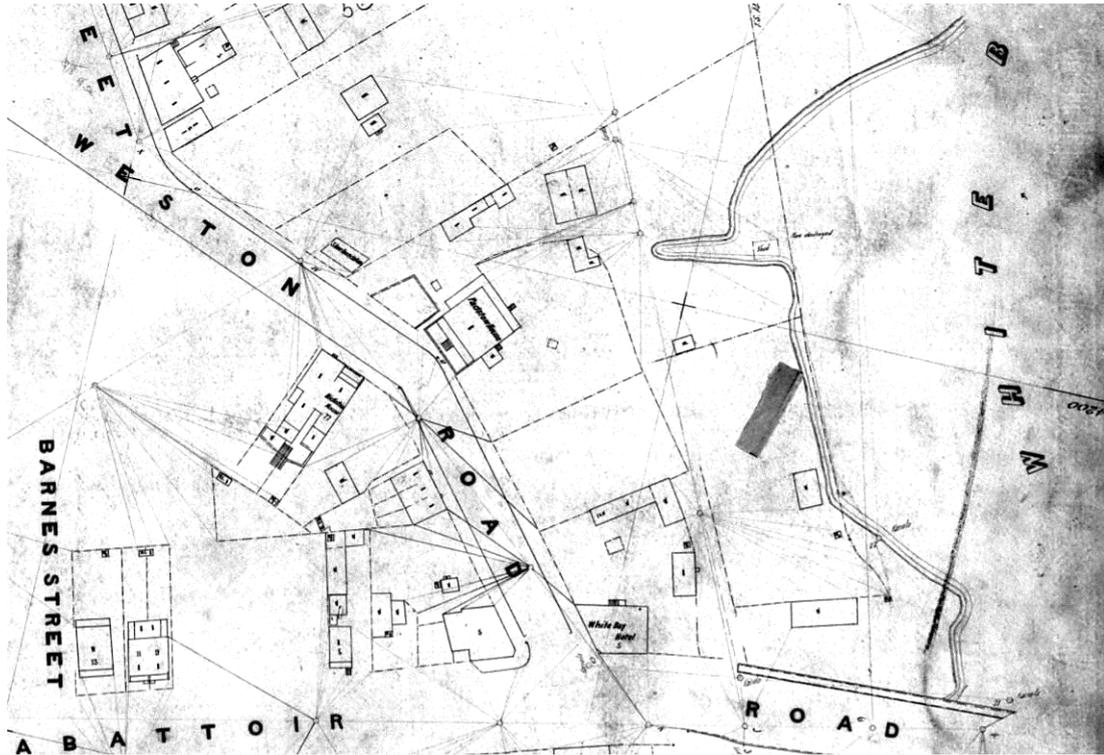


Figure 21: Detail from Public Works Department survey, 1888, showing various outbuildings on Symonds' property as well as buildings on the western side of Weston Road. Source: Sydney Water Archives, PWDS 1544-S394, Balmain Sheet No. 51

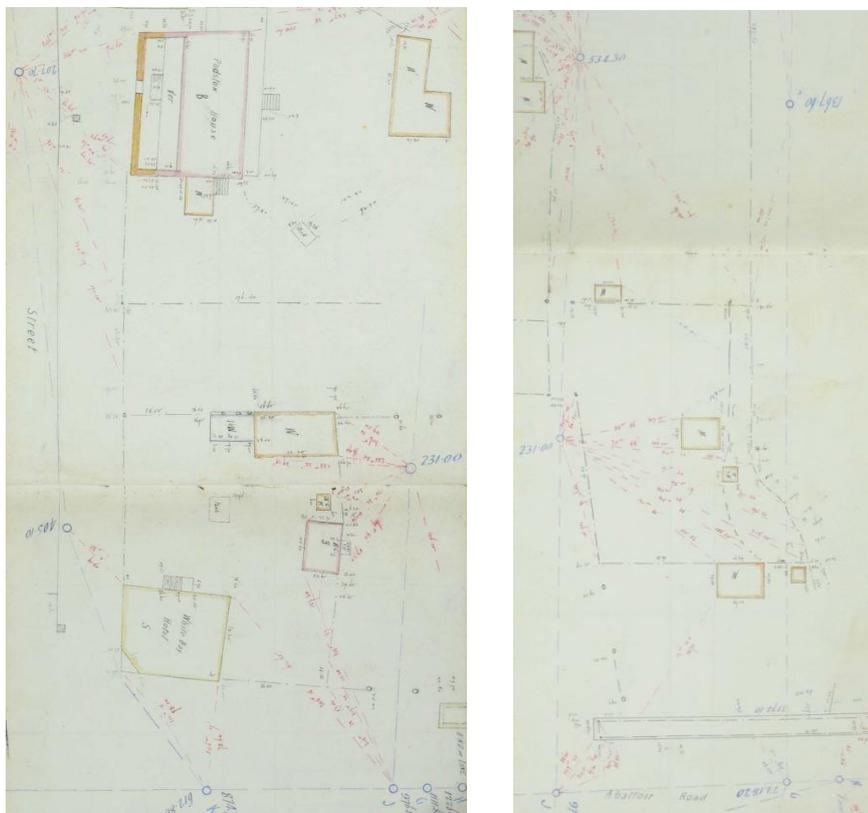


Figure 22: Detail from field books for the survey in Figure 21, November 1888, showing the White Bay Hotel at bottom left, and outbuildings to the rear (east, on right). The pages do not match up exactly, and some structures were omitted. Source: Sydney Water Archives, PWDS 1544-S394, Balmain Sheet No. 51, Field Book No 1471.

2.3.3.2 Land reclamation for reserve and wharfage (1890s)

By October 1888, the “owners of property abutting on the bay” had “decided to give up their water frontage rights to the Crown”, under the condition that a new road was formed between their sites and the new reserve.⁹¹ The previous month a public meeting had been held at the Balmain Town Hall, to discuss the reclaiming of White Bay and the potential formation of a public recreation ground.⁹² It was noted that “many young men had signed the requisition who were interested in football and cricket, and who would have all the advantages of a capital recreation ground if the Bay was reclaimed.”⁹³

In December 1890, tenders were being invited by the Works Department for the construction of the Beattie Street to White Bay stormwater channel, for drainage of the creek between Beattie Street and White Bay.⁹⁴ At the same time, a ballast dyke was built across the bay. Both the channel and the dyke are shown on a plan dated 1892 that shows the area of approximately 12 acres 2 roods and 2 perches (inclusive of the stormwater channel) to be reclaimed ().⁹⁵ By that time, Mrs Symonds was still noted as the owner of Lot 1 in Section 19, containing the White Bay Hotel. The new road, formed as an extension of Mullens Street, ran just outside the eastern boundaries of her property. It was not until winter that same year, 1892, that plans were finally being prepared for the stormwater channel at White Bay.⁹⁶

However, the work of filling seems to have commenced before the start of 1890 as a newspaper report described workers complaints. From this report it seems the Public Works Department dredges were constantly at work in the harbor, and they discharged the sand/silt into punts which transported the sediment to works sites at Snails Bay and to White Bay where was discharged and dispersed by workmen.⁹⁷ The work was described as very nearly complete in November 1890.⁹⁸

Work was still continuing in December 1891 when it was reported that the steam barge, the Neptune, which was been altered to a suction dredge for use in Sydney harbor, had reclaimed large areas at White's Bay and Long Cove. The dredge dumped the sediment alongside the suction pipe of the sand pump and pumped on shore. It was claimed that as much as 2500 tons per day was pumped ashore.⁹⁹

In November 1892, the Government wharfinger, Captain Jackson, “paid an official visit to the White Bay reclamation, Balmain,” to report on potential establishment of wharfage facilities for the timber trade of Balmain.¹⁰⁰ The site was seen as suitable for conversion into a bondage and storage yard for timber, particularly given “that a large number of the most important timber yards and sawmills in the electorate were situated around the reclamation, and the cargo would be landed with great natural facilities.”¹⁰¹ The area closest to Glebe Island was seen as the most ideal area to establish a jetty. The tender of G. Walters and Company, for the construction of a timber jetty at White Bay, was accepted by the Public Works Department in November 1894. The “Wharf at White Bay” was

⁹¹ “WHITE BAY RECLAMATION.,” *Balmain Observer and Western Suburbs Advertiser*, October 13, 1888, 4, <http://nla.gov.au/nla.news-article132307105>.

⁹² “White Bay Reclamation.,” *Balmain Observer and Western Suburbs Advertiser*, September 29, 1888, 3, <http://nla.gov.au/nla.news-article132304810>.

⁹³ “White Bay Reclamation.,” 3.

⁹⁴ “SUMMARY.,” *Australian Star*, December 13, 1890, 4, <http://nla.gov.au/nla.news-article227469978>.

⁹⁵ “White Bay, Shewing Reclaimed Land, Z/SP/R17/44, [Rozelle Subdivision Plans] [Cartographic Material].”

⁹⁶ “THE UNEMPLOYED.,” *Australian Star*, July 26, 1892, 6, <http://nla.gov.au/nla.news-article227292636>.

⁹⁷ ‘ONE DAY A WEEK.’ *Australian Star*. 24 January 1890. <http://nla.gov.au/nla.news-article230625309>.

⁹⁸ ‘PARLIAMENT OF NEW SOUTH WALES.’ *Sydney Morning Herald*. 5 November 1890.

<http://nla.gov.au/nla.news-article13793808>.

⁹⁹ ‘DREDGING OPERATIONS.’ *Daily Telegraph*. 23 December 1891. <http://nla.gov.au/nla.news-article235936143>.

¹⁰⁰ “WHITE BAY RECLAMATION.,” *Sydney Morning Herald*, November 29, 1892, 7, <http://nla.gov.au/nla.news-article13887955>.

¹⁰¹ “WHITE BAY RECLAMATION.,” 7.

appointed as a Legal Wharf with the Gazettal on 24 September 1895, with users paying the official wharfage and tonnage rates.¹⁰²

In 1894, a plan ‘Showing Eleven Reclamation Areas at White Bay Balmain’ was prepared, showing those areas “approved to be alienated to the owners of the adjoining freeholds as compensation for deprivation of the water frontages thereof.” Reclaimed areas to the west of the newly formed extension of Mullens Street were sold to individual owners between 1894 and 1899, to compensate them for their loss of direct water frontage. Matilda Symons, noted as the owner and occupier of Allotment 1 in Section 19, acquired her portion containing 1 rood 17 ½ perches on 8 March 1898, thus extending her property yet again.¹⁰³

A further plan was prepared in May 1899 as part of the dedication of the resumed and reclaimed area to the east of the extended Mullens Street for the purpose of Public Recreation (Figure 25). The reserve contained an area of 8 acres and 17 perches, and was bounded in the east by a new, 50 feet wide road, followed by the Government Wharf further to the east. The wharf was dedicated on 24 September 1895. By September 1900, the trustees were still unsure about the exact extent of the park. By that time, however, the sand-pumping had been completed, and there was still “some levelling to be done and some grass to be planted.”¹⁰⁴

The reserve became later known as ‘Swan Park’ and was used for matches, games and assemblies by the nearby Abattoir workers.¹⁰⁵ It was bounded to the east by the road that was subsequently named Swan Road. The reclaimed land to the east of the road was divided into two different properties that were subsequently leased by a timber merchant and shipbuilders, with both parties using the newly established Government Wharf located between the two.



¹⁰² “Government Gazette Notices,” *New South Wales Government Gazette*, September 24, 1895, 6165, <http://nla.gov.au/nla.news-article224300959>.

¹⁰³ NSW LRS, CP 922-3000.

¹⁰⁴ “WHITE BAY PARK.,” *Sydney Morning Herald*, September 29, 1900, 5, <http://nla.gov.au/nla.news-article14358482>.

¹⁰⁵ NSW LRS, Crown Plan 3654-3000; “Rawson Cup.,” *Sunday Sun*, July 17, 1910, 6, <http://nla.gov.au/nla.news-article226878633>. “AT THE ABATTOIRS.,” *Evening News*, August 9, 1910, 4, <http://nla.gov.au/nla.news-article115255751>.

Figure 23: Detail from ‘Plan showing Eleven Reclamation Areas at White Bay Balmain’, showing reclaimed areas to the west of the Mullens Street extension shaded red. These areas were sold to owners of adjoining freehold allotments from 1894 to 1899, to compensate for their loss of access to the waterfront. Source: NSW LRS, CP 922-3000.

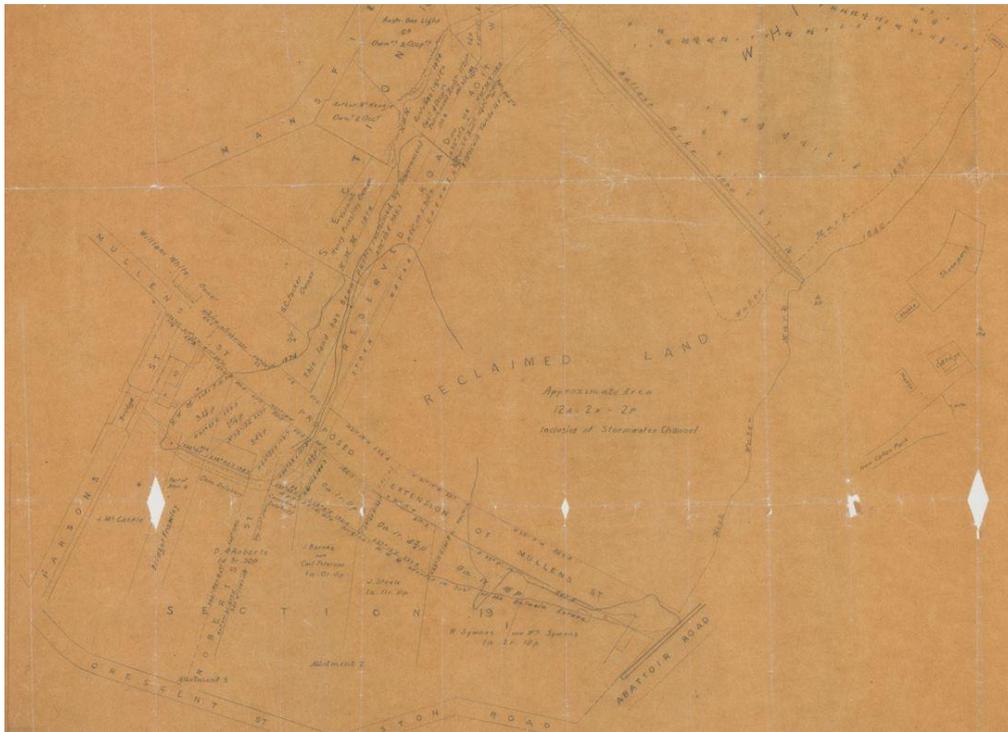


Figure 24: Detail from plan for ‘White Bay Shewing Reclaimed Land’, reduction from a survey dated 16 September 1892, showing the newly formed Mullens Street extension, reclaimed areas, dyke and stormwater channel. Source: SLNSW, Rozelle Subdivision Plans, Z/SP/R17/44¹⁰⁶

¹⁰⁶ “White Bay, Shewing Reclaimed Land, Z/SP/R17/44, [Rozelle Subdivision Plans] [Cartographic Material].”

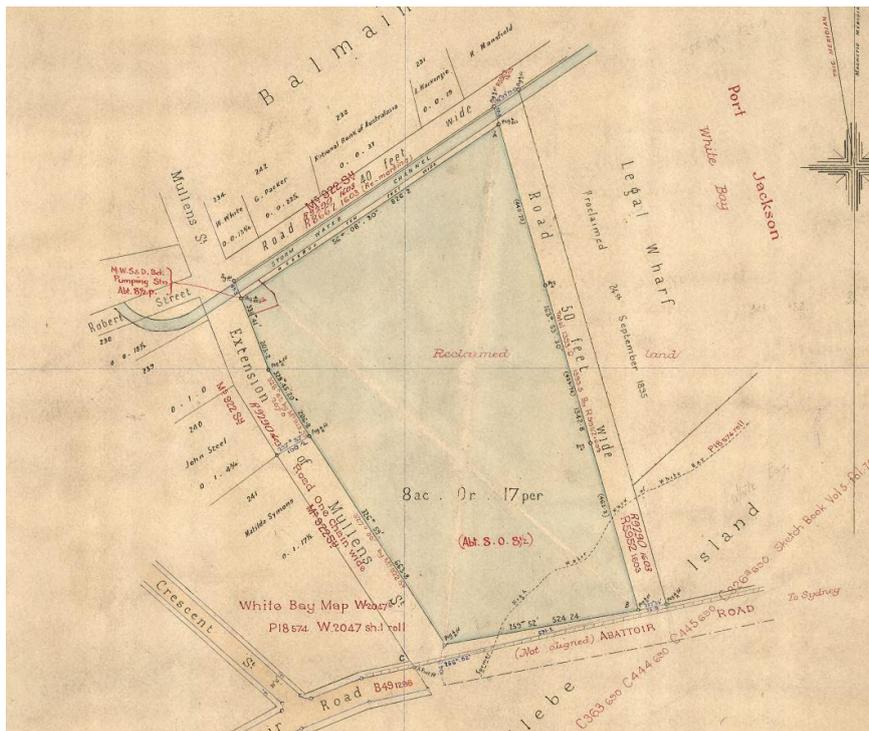


Figure 25: Detail from plan dated May 1899 for dedication of 8 acres and 17 perches (shaded blue) for the purpose of public recreation. Another road separated this land from the Legal Wharf in the east, which had been proclaimed on 24 September 1895. Source: NSW LRS, CP 1521-3000

2.3.3.3 Maxwell's Timber Yard

The plan included in Figure 26 shows a lease by a "J.J. Maxwell" from the Treasury for use as a timber yard adjacent to the south(-west) of the Government Wharf. The c1890 stone dyke was still noted on the eastern boundary, and a 'gutter' or drain ran along the southern boundary of the site on the reclaimed land. It appears that the land was leased by timber merchant John James Maxwell, of Annandale, or his family.¹⁰⁷ Born in northern New South Wales, and growing in up in Ipswich, Queensland, J. J. Maxwell later moved to Sydney where he worked for Allen and Zahel, timber merchants.

Maxwell left the firm in 1891 and is said to have opened the Harbour View Saw-Mills in Pyrmont Street, Pyrmont, that same year.¹⁰⁸ He had a 20 year lease on the land in Pyrmont by 1892.¹⁰⁹ He later moved to Annandale, where he was Alderman by 1894.¹¹⁰ It is unclear when Maxwell opened his timber yard at White Bay, and whether he relocated from Pyrmont or opened the yard as an additional establishment. He is noted on the 1899 plan included Figure 27, suggesting that he was located at White Bay by that time at the latest. Maxwell was a protectionist, "in favour of federation, local government, an income tax for the rich and a land tax, to be levied by the local governing authorities."¹¹¹ Maxwell's Timber Yard at Balmain was still noted in September 1900¹¹² and his Harbour View Saw and Planing Mills at White Bay, Rozelle, were advertised in December 1900.¹¹³ By

¹⁰⁷ "Death of Mr. J. J. Maxwell.," *Queensland Times, Ipswich Herald and General Advertiser*, December 14, 1905, 2, <http://nla.gov.au/nla.news-article123904060>.

¹⁰⁸ "Death of Mr. J. J. Maxwell.," 2.

¹⁰⁹ "PUBLIC WORKS COMMITTEE.," *Sydney Morning Herald*, May 19, 1892, 6, <http://nla.gov.au/nla.news-article28268959>.

¹¹⁰ "DENISON.," *Australian Star*, July 9, 1894, 6, <http://nla.gov.au/nla.news-article227497632>.

¹¹¹ "ANNANDALE.," *Australian Star*, July 17, 1895, 3, <http://nla.gov.au/nla.news-article227264114>.

¹¹² "A WORKMAN LOSES HIS ARM.," *Evening News*, September 20, 1900, 6, <http://nla.gov.au/nla.news-article112589128>.

¹¹³ "Advertising," *Australian Star*, December 29, 1900, 3, <http://nla.gov.au/nla.news-article230641055>.

1904, Maxwell's timber yard had been taken over by Millar's Karri and Jarrah Company (1902) Ltd, and Maxwell died soon after, in 1905.¹¹⁴

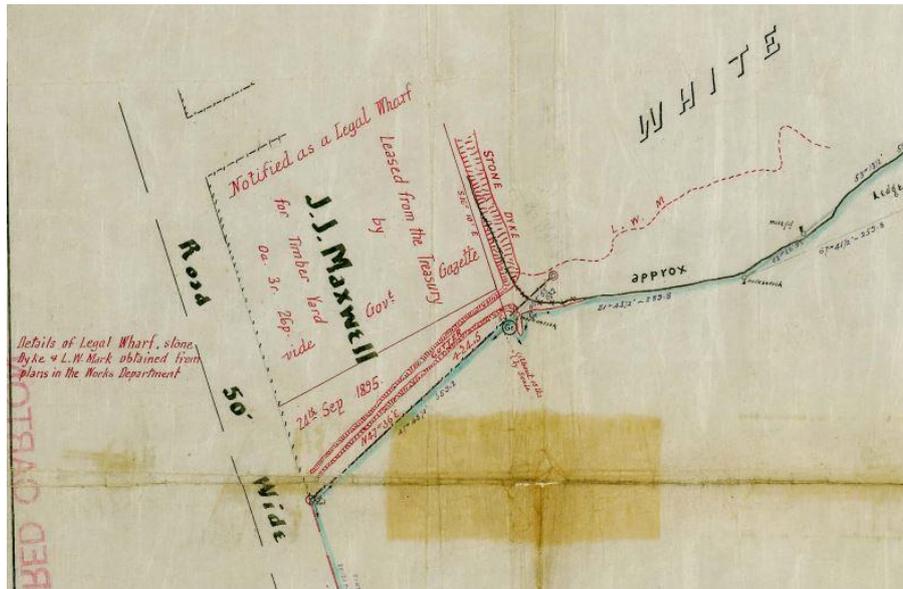


Figure 26: Detail from c1890s Crown Plan, showing J. J. Maxwell's lease from the Treasury of resumed land adjacent to Glebe Island, for use as a timber yard. The land was bounded to the east by the c1890 stone dyke, and to the west by a drain. Source: NSW LRS, Crown Plan 2443-3000

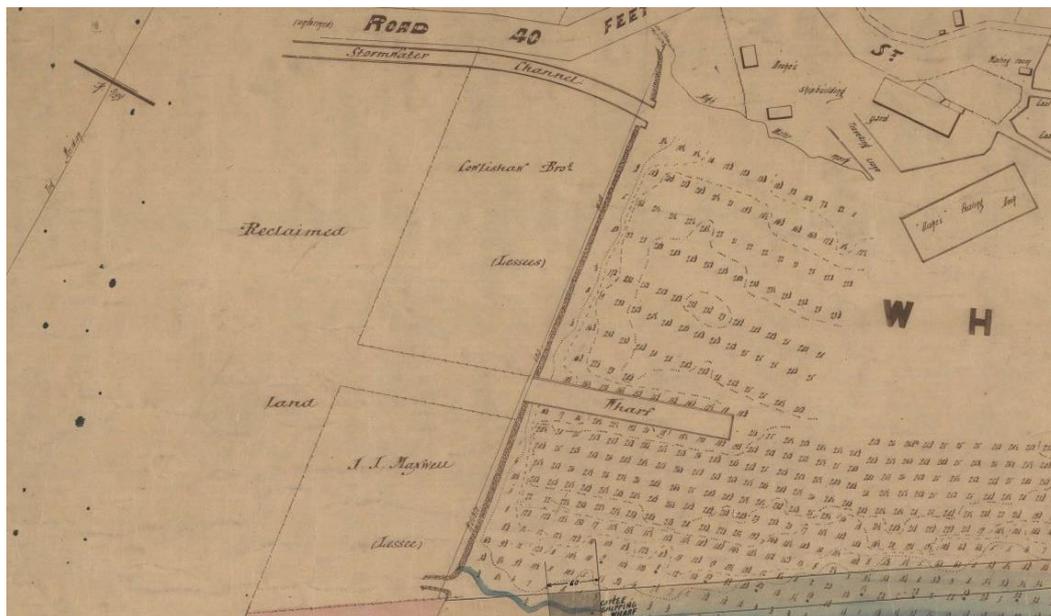


Figure 27: Detail from 1899 Crown Plan, showing J. J. Maxwell's lease for a timber yard, and Cowlishaw Brothers' lease for a shipbuilding yard. The stormwater channel is also noted on this plan. Source: NSW LRS, Crown Plan 2629-3000

2.3.3.4 White Bay Steel Works

The White Bay Steel Works were established by March 1907, occupying the former Cowlishaw Bros site south of the stormwater channel.¹¹⁵ Founded by the established steel merchants, R. L. Scrutton

¹¹⁴ "Death of Mr. J. J. Maxwell.," 2.

¹¹⁵ "PICNIC TO MR. H. J. THOMPSON.," *Sydney Morning Herald*, March 11, 1907, 5, <http://nla.gov.au/nla.news-article14850178>.

and Co Ltd, which had their head office at 161 Clarence Street,¹¹⁶ one of their first commissions was the supply of the steelwork for the roof of the concourse of the new Central Railway Station.¹¹⁷ Steel girders and stanchions fabricated by the White Bay Steel Works were used in various buildings across Sydney, including the 1908 addition to the Art Gallery.¹¹⁸

It is worth noting that the term steel works refers not to the production of steel as in an iron and steel works but the fabrication (or prefabrication) of steel sections. This means that the works had machinery for fabrication and probably a limited capacity for forging and casting. A similar company established in 1910 was the Sydney Steel Company in Marrickville.¹¹⁹

Building magazine published an article on the White Bay Steel Works in June 1908, including some photographs showing the interiors of buildings and associated machinery. At that time, the company obtained “a great part of its steel from Lithgow, especially such things as angle-irons, T-bars and flats, as far as possible it utilises Australian products; the great joists and plates are of the famous Glengarnock, Lenarkshire, steel plates.”¹²⁰

A description of the White Bay Steel Works was provided in the *Sydney Morning Herald* of 30 September 1912:

“One of the largest steel works in the Commonwealth is situated in Sydney in a convenient position for the unloading of the steel on to a wharf adjoining the works. When the rolled steel joists are landed, a small travelling steam crane, capable of lifting up to five tons, removes them to any part of the yard. If it is wanted in the workshop it is loaded onto a truck, and taken to a powerful steel saw, which is the only one of its kind in Australasia. It can cut through a girder in less than half a minute...

When the girder had been cut to its right length it was sent to the centre of the workshop. That workshop was a long one. Its galvanised iron roof was high and well ventilated, for the workmen need plenty of fresh and cool air when working with iron. One end of the workshop was left open. Two of the other sides were covered in with galvanised iron, and the remaining side, which faced the bay, had two openings for receiving the girders. Overhead were travelling cranes, which are necessary for the picking up and carrying of the heavy girder from one part to another.”¹²¹

By 1912, the company still only used British steel in the fabrication of girders, due to its superior strength in comparison with German and American steel.

In March 1913, a small portion to the north of the steel works was bought from the Harbour Trust Commissioners and resumed for Railway Purposes. The White Bay Steel Works were subsequently

¹¹⁶ “INDUSTRIAL.,” *Sydney Morning Herald*, September 30, 1912, 11, <http://nla.gov.au/nla.news-article28127449>; “BUSINESS EXHIBITS AT THE ROYAL SHOW.,” *Sydney Mail and New South Wales Advertiser*, April 19, 1911, 33, <http://nla.gov.au/nla.news-article165739055>.

¹¹⁷ “Looking Backward. Building Activity in the Early Days of ‘Building’ Magazine,” *Building* 61, no. 365 (January 24, 1938): 56, <http://nla.gov.au/nla.obj-314300620>.

¹¹⁸ “The Latest Addition to Sydney’s Architecture,” *Weekly Supplement to Building*, July 6, 1908, 1, <http://nla.gov.au/nla.news-article235342690>.

¹¹⁹ Stuart, Warwick. *Sydney Steel: An Illustrated History of the Sydney Steel Company 1910 - 1979*. 1979.

¹²⁰ “The Making of a Steel Girder,” *Building* 2, no. 10 (June 15, 1908): 36, <http://nla.gov.au/nla.obj-312903771>.

¹²¹ “INDUSTRIAL.,” 11.

acquired by the Railway Commissioners of NSW to become part of the White Bay Power Station operations.¹²²

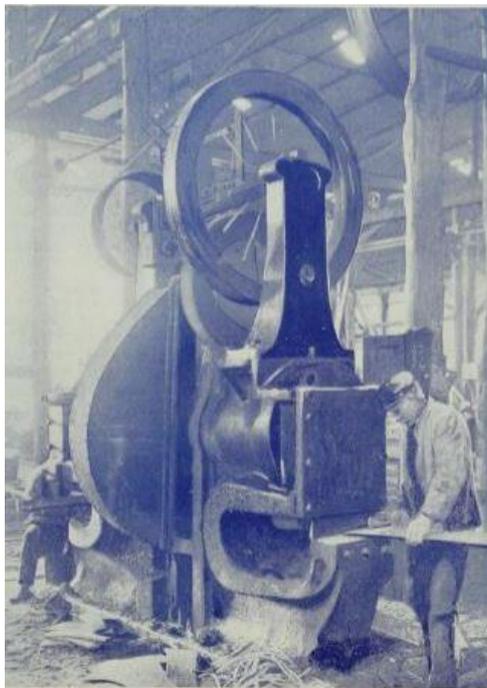


Figure 28: “The Great Shearing Machine Cutting Through Steel Plates” at the White Bay Steel Works, 1908.¹²³

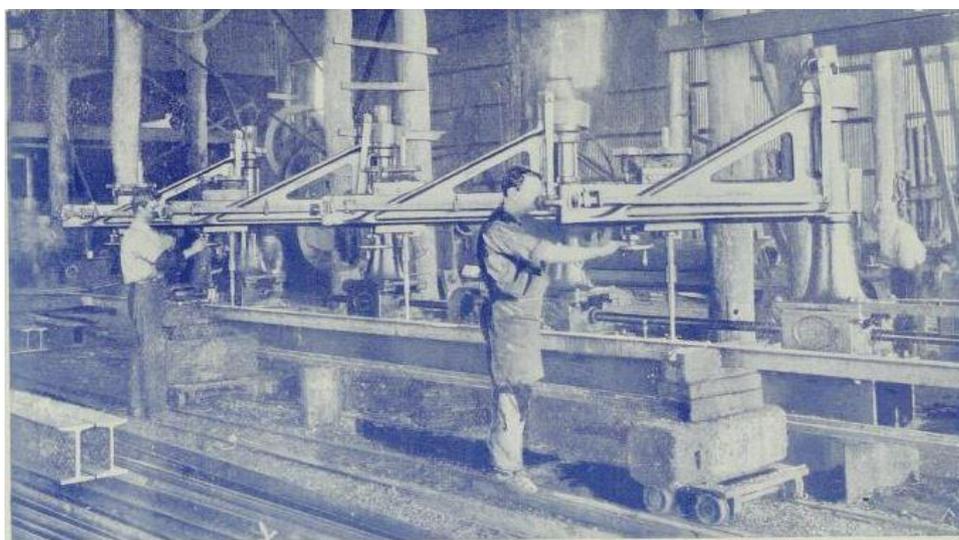


Figure 29: “The Multiple Radial Drill” at the White Bay Steel Works, 1908.¹²⁴

¹²² “Architects, Builders and Engineers.,” *Construction and Local Government Journal*, July 27, 1914, 4, <http://nla.gov.au/nla.news-article118677560>.

¹²³ “The Making of a Steel Girder,” 33.

¹²⁴ “The Making of a Steel Girder,” 34.

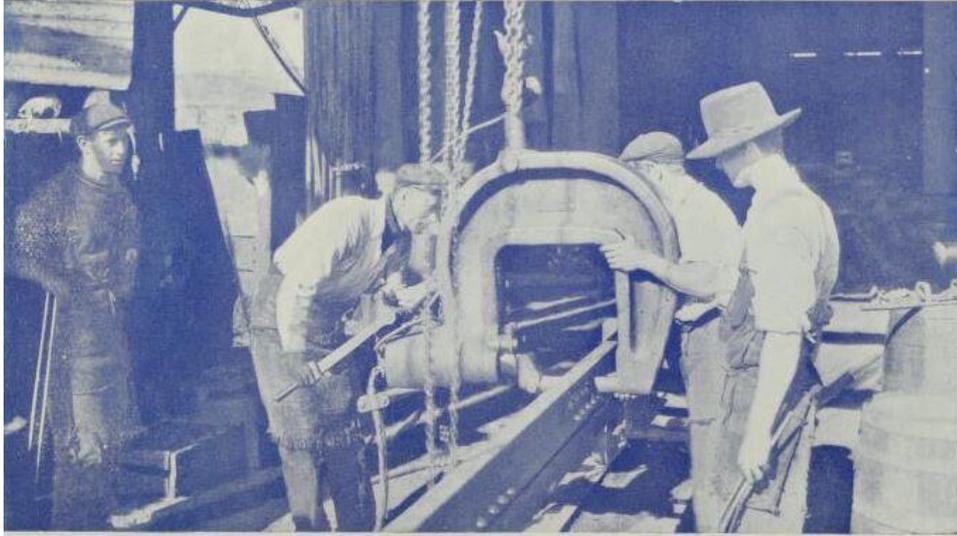


Figure 30: “The Hydraulic Rivetter” at the White Bay Steel Works, 1908.¹²⁵

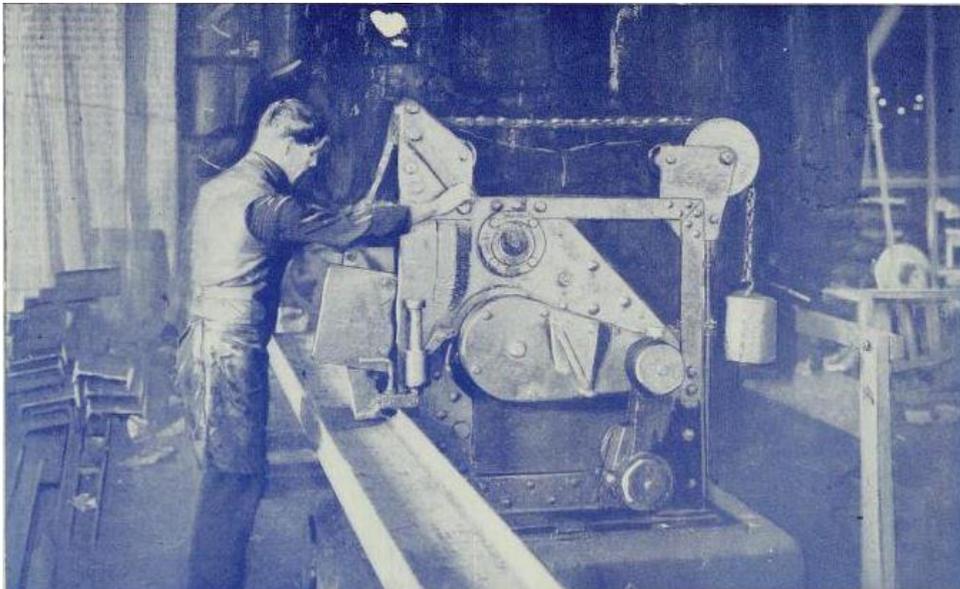


Figure 31: “Snipping through a Great Steel Joist” at the White Bay Steel Works, 1908.¹²⁶

2.3.3.5 Millars’ Karri and Jarrah Company

The site of J. J. Maxwell’s timber yard was from 1904 occupied by Millars’ Karri and Jarrah Company (1902) Ltd. The company was in the process of erecting their new offices on the White Bay frontage in November 1904.¹²⁷ The company originated from Western Australia but had since established flourishing businesses in Adelaide and Melbourne, with plans to expand into New South Wales from their new site at White Bay. Specialising in Western Australian hardwoods, which were noted for their durability and their fire-resisting and ant-resisting qualities as a building material, the company had

¹²⁵ “The Making of a Steel Girder,” 35.

¹²⁶ “The Making of a Steel Girder,” 36.

¹²⁷ “Current Items,” *Balmain Observer and Western Suburbs Advertiser*, November 5, 1904, 5, <http://nla.gov.au/nla.news-article132448868>; “KARRI AND JARRAH.,” *Evening News*, December 14, 1904, 3, <http://nla.gov.au/nla.news-article113311427>.

over 2,000,000 acres of timber forests in Western Australia and exported their products around the world.¹²⁸

The Balmain Observer described the site in its 31 December 1904 edition:

“Lying alongside the wharf was the Melbourne Steamship Company’s magnificent steamer Perth, a vessel of 3000 tons, busy discharging from four derricks, working the forward and after holds, hardwood of all lengths and sizes. Fine, clean red-colored timber which might easily be mistaken for red-wood or cedar...

The yard is admirably laid out and having a deep water frontage its facilities for loading or discharging vessels are obvious. In area there is ample room for the big stock of timber carried, namely, 600 loads...

Ingress and egress to and from the yard are provided by three double wide gateways and the road to the main thoroughfare – the Abattoir road – is wide and well laid. To such visitors as are new to jarrah wood for buildings our attention was called to the company’s offices erected on the site. Also, to a six-stall stable, a structure which suffers no disparagement by comparison with any high-class racing stable. These buildings are entirely of jarrah, and we think will be admitted as striking illustrations of ornamental and stylish capabilities of the new wood for residential uses.”¹²⁹

Photographs showing the site in 1905 and c1909 are included below. They show that a new, smaller wharf had been built on this site by 1905, in addition to the Government Wharf to the northeast. In 1908, the lease with the Sydney Harbour Trust Commissioners was renewed for another three years,¹³⁰ and, after changing its name to Millar’s Timber & Trading Co. Ltd in 1912, the *Sydney Sands Directory* continued to note the company at White Bay, Balmain, until 1918, when it was listed adjacent to the White Bay Steel Works for the last time.¹³¹ Advertisements noted the company at White Bay until at least November 1925, however, it is possible that this was in relation to their role as shipping agents.¹³²

The former timber yard site became part of the White Bay Steel Works from 1916 at the latest, when a carpenter’s shop was constructed in the northern portion. A site diagram dated June 1917 (Figure 88) only noted an ‘office’ the area of the former timber yard, which was constructed between 1909 and 1917, either by Millars’ or by the White Bay Steel Works. An aerial photograph depicting the former Millars’ Timber & Trading Company site in c1919 (Figure 89) shows the buildings in that area by the time Millars’ had vacated the site.

¹²⁸ “KARRI AND JARRAH.,” 3; “Jarrah The Coming Timber.,” *Balmain Observer and Western Suburbs Advertiser*, December 31, 1904, 3, <http://nla.gov.au/nla.news-article132446057>.

¹²⁹ “Jarrah The Coming Timber.,” 3.

¹³⁰ “APPEAL AGAINST ASSESSMENT,” *Australian Star*, July 16, 1908, 7, <http://nla.gov.au/nla.news-article229084537>.

¹³¹ “1918 Part 3 - Suburban Directory - Ashfield to Dundas,” City of Sydney Archives, accessed August 4, 2021, <https://archives.cityofsydney.nsw.gov.au/nodes/view/1899656>.

¹³² “DIRECTORY FOR ARCHITECTS. BUILDERS & PROPERTY OWNERS,” *Construction and Local Government Journal*, November 11, 1925, 20, <http://nla.gov.au/nla.news-article109760778>.

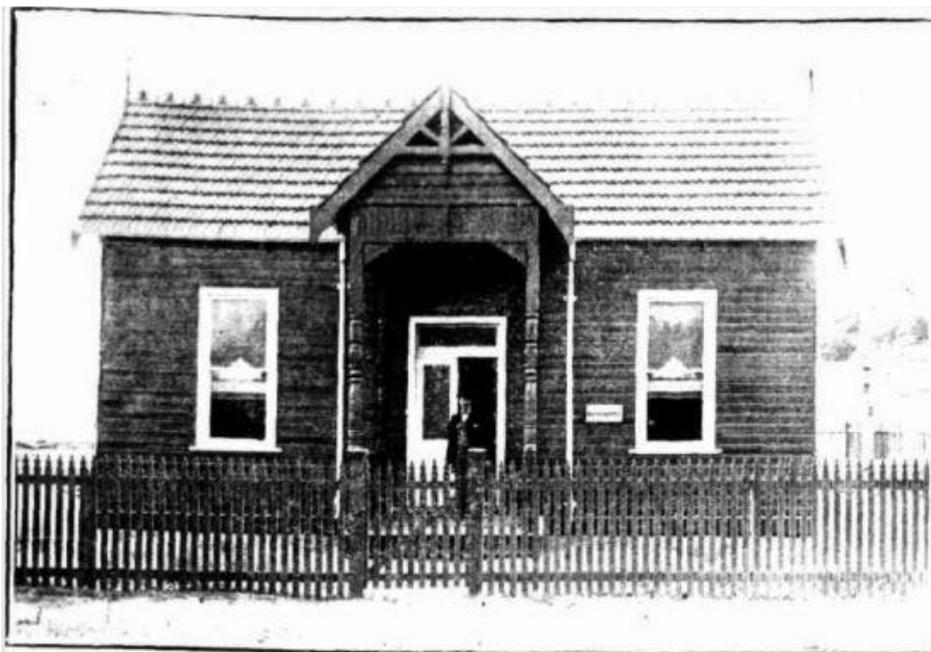


Figure 32: “The company’s office, built of Jarrah” at Millars Karri and Jarrah Company (1902) Ltd, White Bay, February 1905.¹³³

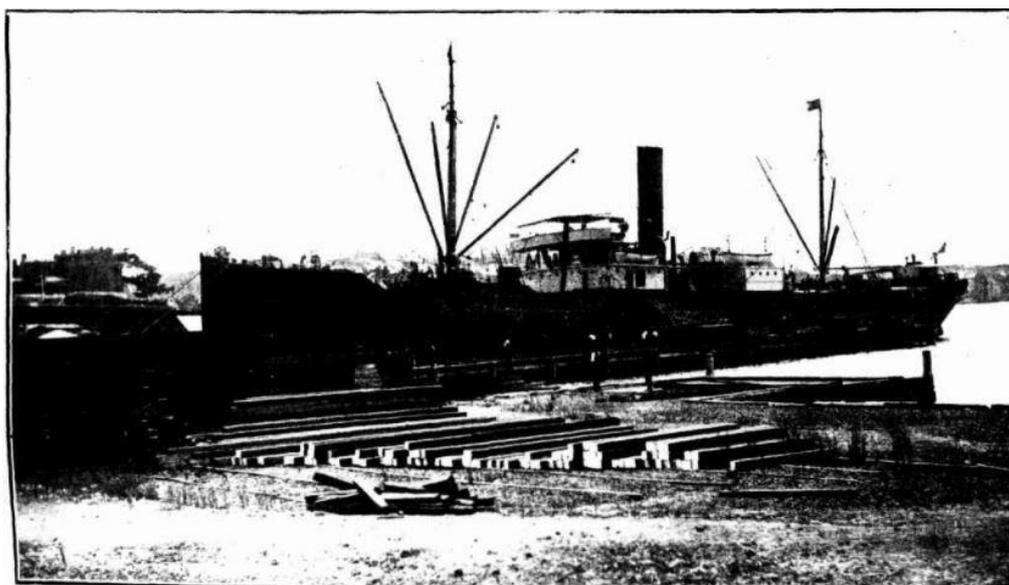


Figure 33: “S. S. HOBART discharging Jarrah at the Company’s jetty” at Millars Karri and Jarrah Company (1902) Ltd, White Bay, February 1905. View looking from the timber yard towards the north-east.¹³⁴

¹³³ “MILLAR’S KARRI AND JARRAH COY. (1902) LTD.,” *Sydney Mail and New South Wales Advertiser*, February 1, 1905, 291, <http://nla.gov.au/nla.news-article164036154>.

¹³⁴ “MILLAR’S KARRI AND JARRAH COY. (1902) LTD.,” 291.



Figure 34: “The company’s yards, White Bay” at Millars Karri and Jarrah Company (1902) Ltd, White Bay, February 1905. View looking towards Abattoir Road. Note the additional wharf/jetty on the left.¹³⁵

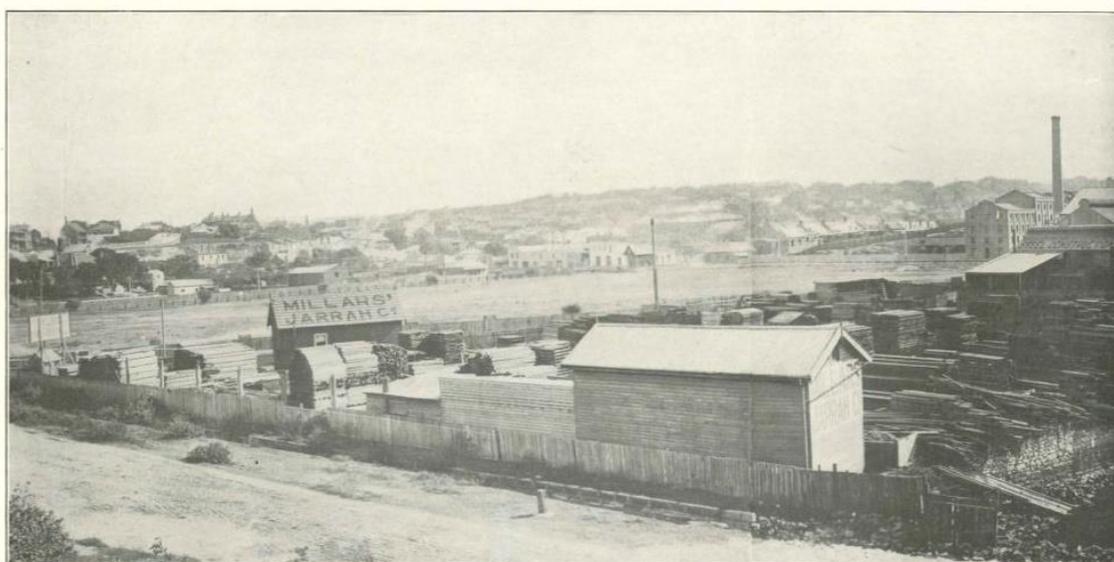


Figure 35: Millars Karri and Jarrah Company (1902) Ltd, White Bay, c1909. Swan Park is visible in the background, and the White Bay Steel Works building is visible on the far right.¹³⁶ The site was largely used to store timber and contained only a few small timber buildings.

¹³⁵ “MILLAR’S KARRI AND JARRAH COY. (1902) LTD.,” 291.

¹³⁶ *Millars’ Karri & Jarrah Company (1902) Limited* (London: Millars’ Karri & Jarrah Co., 1909), <https://library.dbca.wa.gov.au/static/FullTextFiles/009838.pdf>.

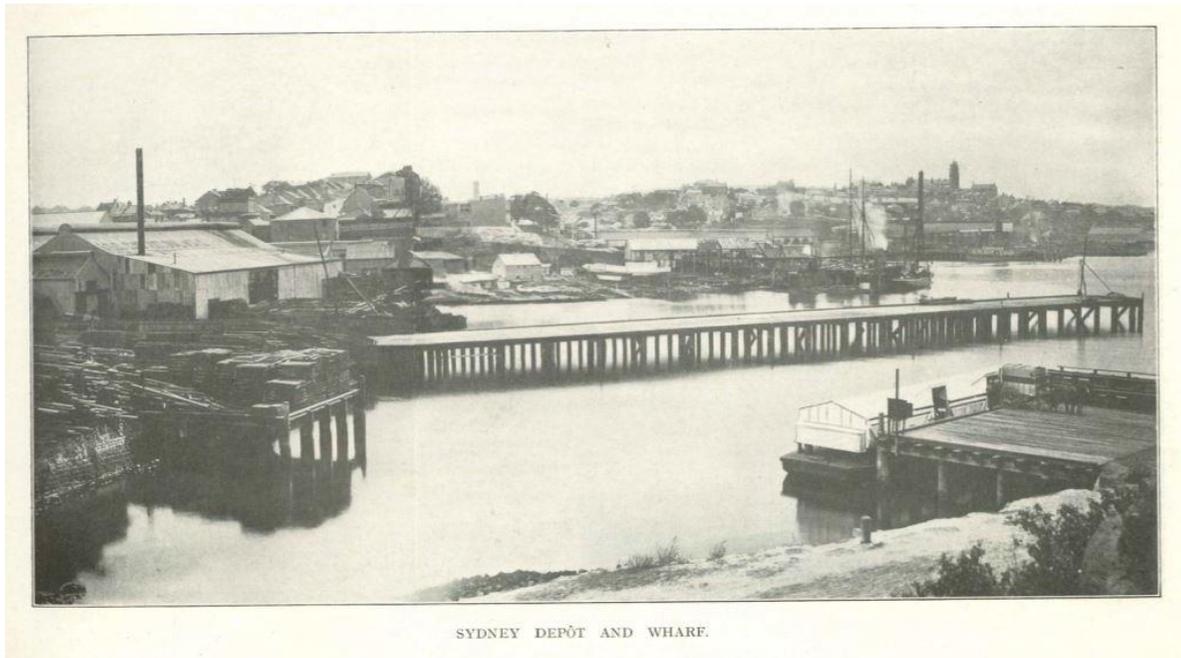


Figure 36: Millars' Karri and Jarrah Company (1902) Ltd, White Bay, c1909. The Government Wharf extends out into the bay, with the separate jetty for the timber yard on the left. The Cattle Wharf for the Glebe Island Abattoir is visible on the right, and the White Bay Steel Works building is visible on the left.¹³⁷

2.3.3.6 19th Century Shipwrecks

A plan dated 1899 notes the site of two shipwrecks at White Bay, including that of the 'MARION' and the 'remains of old wreck, ribs shewing above water' (Figure 37). Both were located near the on the Glebe Island side of the bay, near an old jetty that were only noted as 'remains' by that time. While the details of the 'old wreck' closer to the shore remain elusive, information about the wreck of the 'Marion' is more readily available.

The Barquentine MARION is said to have sunk in 1898 at her moorings, with 443 tons of coal on board.¹³⁸ She subsequently shifted her position and was lying almost on her beam ends on 20 July 1898. Owned by Messageries Maritimes Company, she was intended for the French mailboats.

By September 1900, plans were underway to remove the schooner. An order of the court had been obtained and the Works Department was planning to blow the wreck up with dynamite.¹³⁹

That failed, however, and she was broken up at her moorings by the Works Department and "raised piecemeal" with a large crane in September 1900.¹⁴⁰

These two wrecks were located outside the project study area and are likely to have been incorporated into the wharf along the northern shore of Glebe Island.

¹³⁷ Millars' Karri & Jarrah Company (1902) Limited.

¹³⁸ "THE SUNKEN BARQUENTINE MARION.," *Daily Telegraph*, July 21, 1898, 3, <http://nla.gov.au/nla.news-article239555058>.

¹³⁹ "REMOVING A WRECK.," *Evening News*, September 4, 1900, 6, <http://nla.gov.au/nla.news-article112591114>.

¹⁴⁰ "RAISING A WRECK.," *Evening News*, September 15, 1900, 6, <http://nla.gov.au/nla.news-article112582478>.

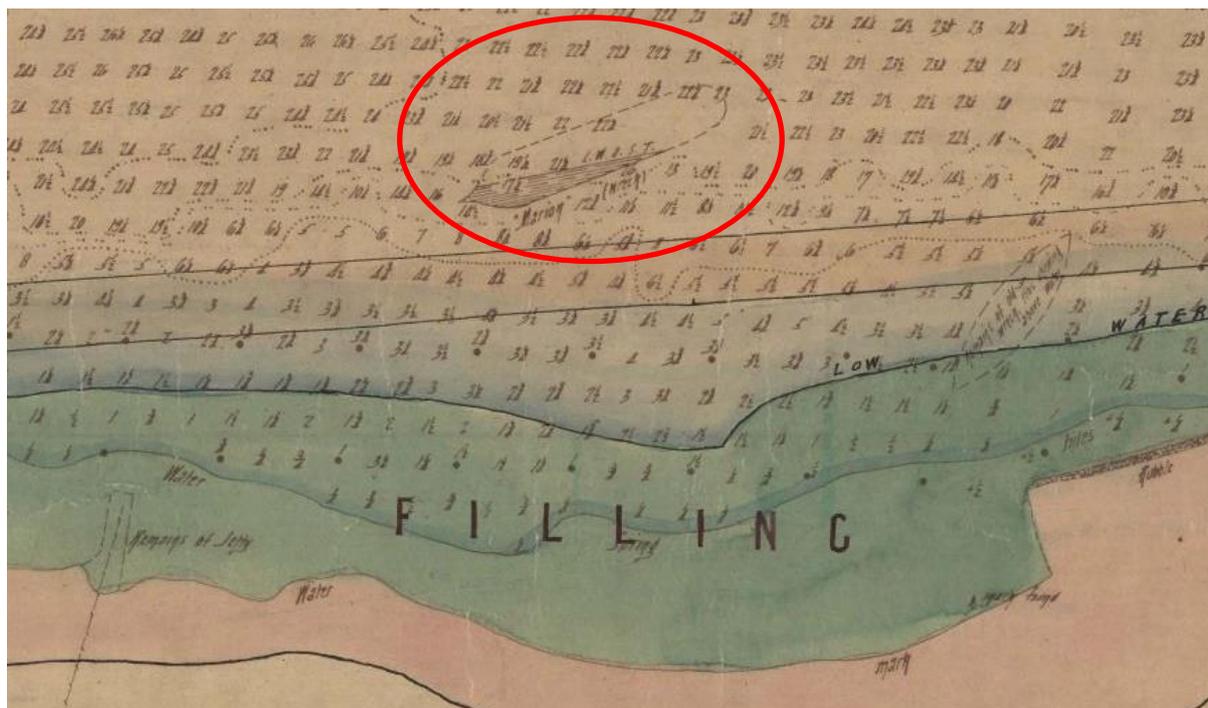
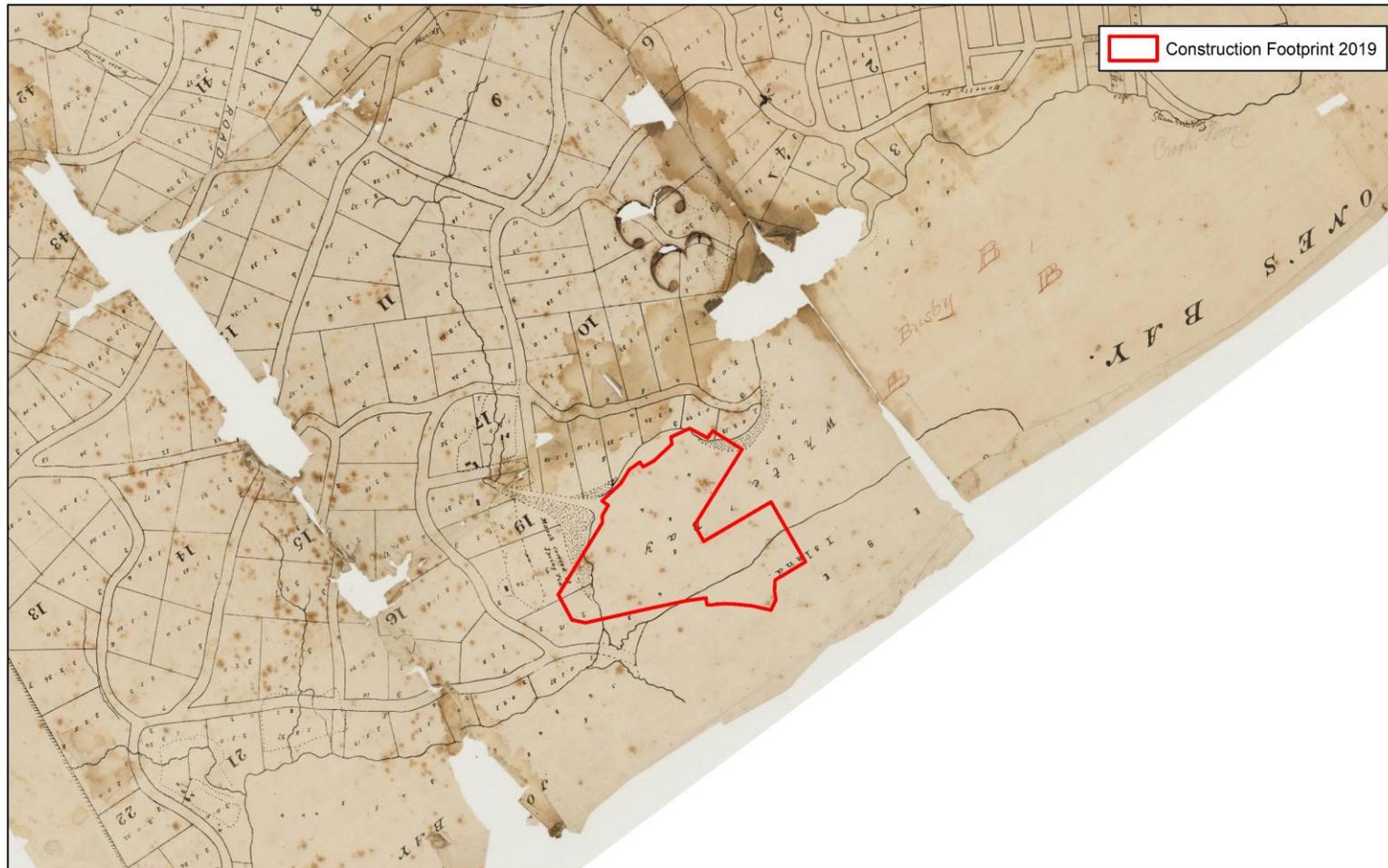


Figure 37: Detail from 1899 Crown Plan, showing the location of the 'MARION' (red circle) and the 'remains of old wreck, ribs shewing above water' (on right), near the old jetty on the northern side of Glebe Island. Source: NSW LRS, Crown Plan 2629-3000

2.3.4 Historical overlays for phase 1 (1800 – 1910)

Historic plans have been overlaid to demonstrate where the locations of former structures and landscapes in Figure 38 to Figure 42 for phase 1.



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1852 Plan of the Balmain Estate Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:7,500
SIZE A4
DATE 25/08/2021

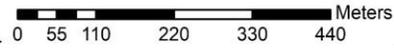


Figure 38: 1852 Plan of Balmain Estate Subdivision Overlay



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1888 PWDS1544-S394 Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:3,000
SIZE A4
DATE 25/08/2021



Meters



Figure 39: 1888 Sydney Water Plan Overlay



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1890 Eleven Reclamation Areas Map Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:3,000
SIZE A4
DATE 27/08/2021

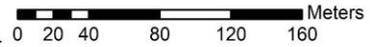
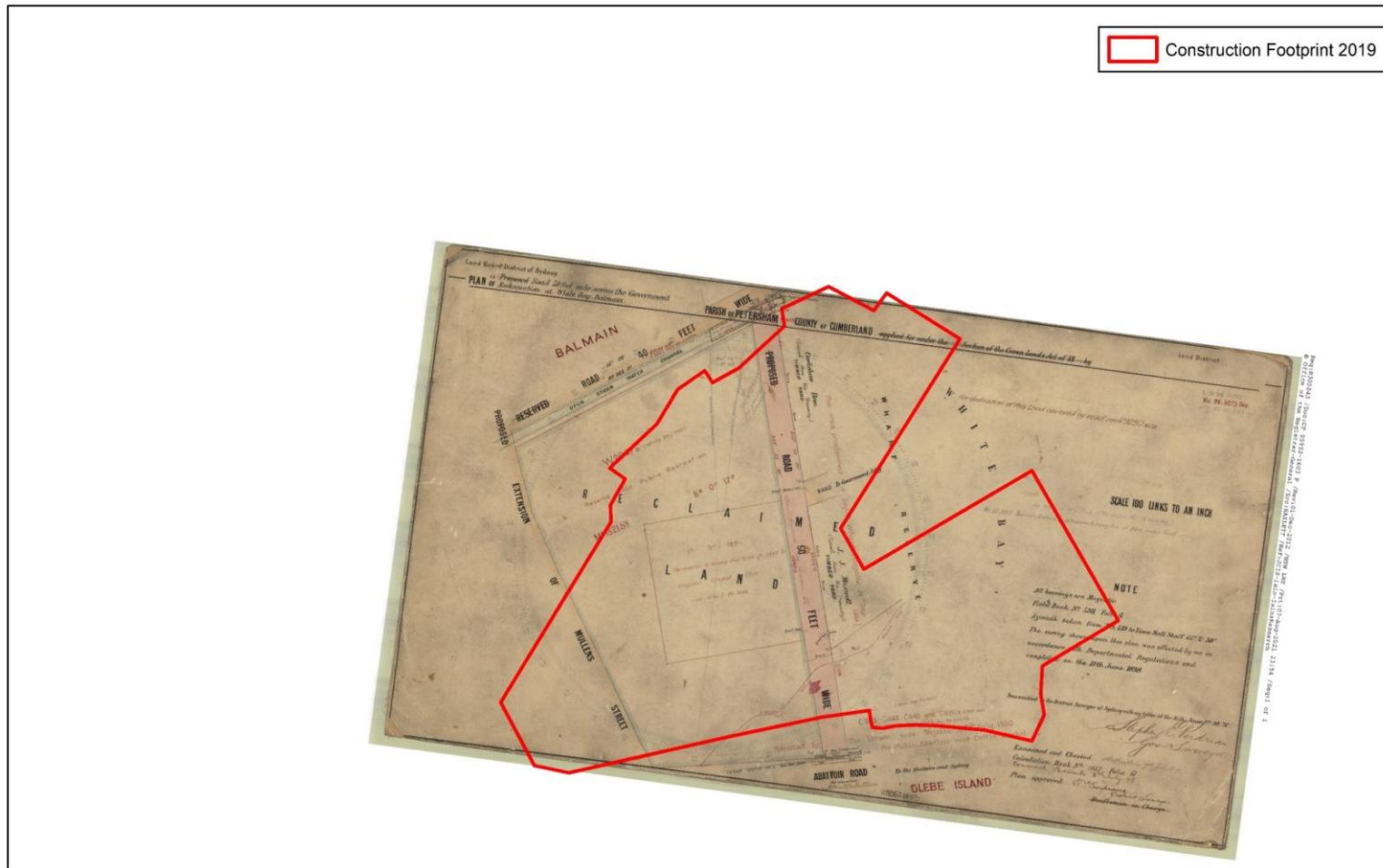


Figure 40: 1890 Land Reclamation Area Overlay



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1898 Reclaimed Land Map Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:3,000
SIZE A4
DATE 24/08/2021

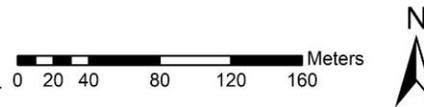
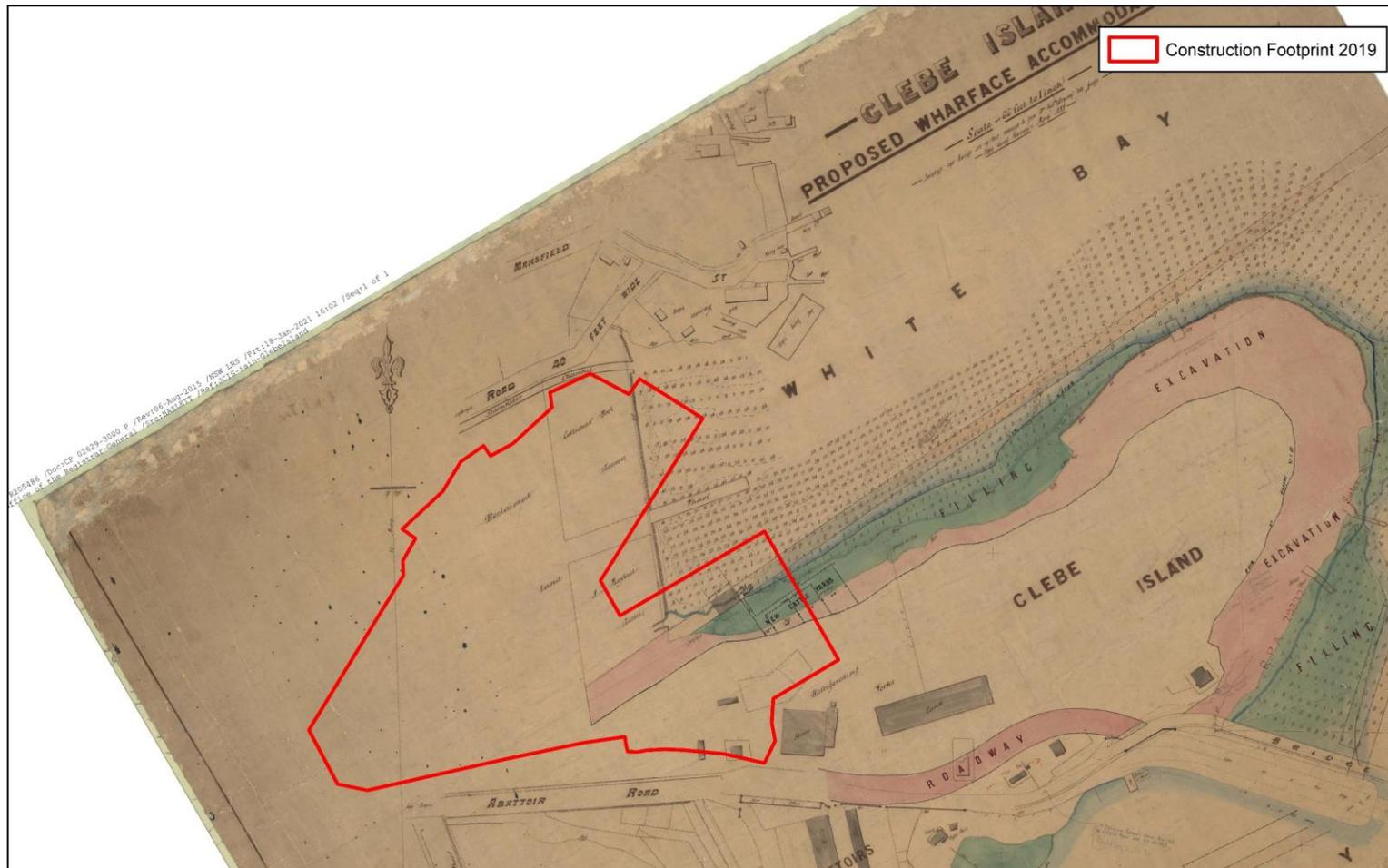


Figure 41: 1898 Reclaim Land Mapping Overlay



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Crown Plan 2629-3000 Historical Overlay
21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:3,500
SIZE A4
DATE 25/08/2021

Meters

Figure 42: 1899 Crown Plan Overlay

2.4 Phase 2: Establishment of Government Infrastructure and wartime use of the site (1910 – 1950)

2.4.1 Development of Glebe Island Grain Terminal and Wharfage (1910s-1920s)

2.4.1.1 Sydney Wharfage Scheme and Metropolitan Goods Line

By June 1914, two years prior to the closure of the Glebe Island abattoir, an “extensive scheme of wharfage construction” was in progress at Glebe Island.¹⁴¹ The wharfage, which extended into Johnstone’s Bay, comprised “a coal loading wharf 1020 ft in length, and a grain loading jetty 2000ft long, with six large storage sheds for wheat.”¹⁴² This involved extensive reclamation and filling of land along the foreshore. The shores of Blackwattle, Rozelle, White and Johnston’s Bays contained an extensive timber trade by that time, with wool stores being noted as another feature of these ports. The scheme had been devised by the Sydney Harbour Trust, formed in 1901 to take over and develop Sydney’s wharves, and ease congestion of Darling Harbour.¹⁴³

The wharfage scheme came into being at the tail end of the Federation drought (1895-1903), after which the rapid expansion of grain crops in NSW resulted in major congestion along Sydney’s main transport routes.¹⁴⁴ To relieve congestion on the existing Flemington to Sydney line, the Railway Commissioners devised a scheme for directing goods traffic from western Sydney directly to Darling Harbour, involving a new goods line between Flemington and Glebe Island as one of various new railway lines of the Metropolitan Goods Lines network.¹⁴⁵ The *Flemington to Belmore and Wardell Road to Glebe Island and Darling Harbour Railways Act (No 17) 1910* was passed in August 1910.¹⁴⁶

The line to Glebe Island was designed to “relieve pressure on the crowded wharves, transit sheds and goods yard at Darling Harbour by developing Glebe Island” and involved construction of “a double-track from the Main Suburban Line at Summer Hill to White Bay, Rozelle and Darling Harbour together with an extension of this line to Wardell Road; provision of a large yard at Rozelle for goods wagons; building a grand wheat receiving and loading terminal, and [construction of] two coal loading berths at Glebe Island.”¹⁴⁷

The goods line from Flemington to Glebe Island was well advanced in mid-1913,¹⁴⁸ however, by mid-1914 the originally proposed route along Glebe Island Bridge had been abandoned (Figure 43).¹⁴⁹ This was to better accommodate the Sydney Harbour Trust’s massive expansion of wharves in the area, including at Glebe Island.¹⁵⁰ Instead, the goods line was diverted near the Rozelle Goods Yard and extended along a new tunnel. The sidings to Glebe Island and White Bay, however, remained.

¹⁴¹ “TWO SCHEMES.,” *Sydney Morning Herald*, June 25, 1914, 7, <http://nla.gov.au/nla.news-article28118209>.

¹⁴² “TWO SCHEMES.,” 7.

¹⁴³ “Port Authority of New South Wales - History,” accessed July 27, 2021, <https://www.portauthoritynsw.com.au/corporate/about-us/history/>.

¹⁴⁴ Bob McKillop and Supported by Australian Railway Historical Society, Transport Heritage Grant 2016, “Sydney’s Metropolitan Goods Lines | The Dictionary of Sydney,” accessed July 27, 2021, https://dictionaryofsydney.org/entry/sydneys_metropolitan_goods_lines.

¹⁴⁵ “TO RELIEVE RAILWAY CONGESTION.,” *Sydney Morning Herald*, June 25, 1914, 12, <http://nla.gov.au/nla.news-article28118015>.

¹⁴⁶ “The Flemington to Belmore and Wardell Road to Glebe Island and Darling Harbour Railways Act (No 17) 1910 | The Dictionary of Sydney,” accessed July 23, 2021, https://dictionaryofsydney.org/artefact/the_flemington_to_belmore_and_wardell_road_to_glebe_island_and_darling_harbour_railways_act_no_17_1910.

¹⁴⁷ McKillop and Supported by Australian Railway Historical Society, Transport Heritage Grant 2016, “Sydney’s Metropolitan Goods Lines | The Dictionary of Sydney.”

¹⁴⁸ “FLEMINGTON RAILWAY.,” *Evening News*, June 11, 1913, 8, <http://nla.gov.au/nla.news-article113355069>.

¹⁴⁹ “TO RELIEVE RAILWAY CONGESTION.,” 12.

¹⁵⁰ McKillop and Supported by Australian Railway Historical Society, Transport Heritage Grant 2016, “Sydney’s Metropolitan Goods Lines | The Dictionary of Sydney.”

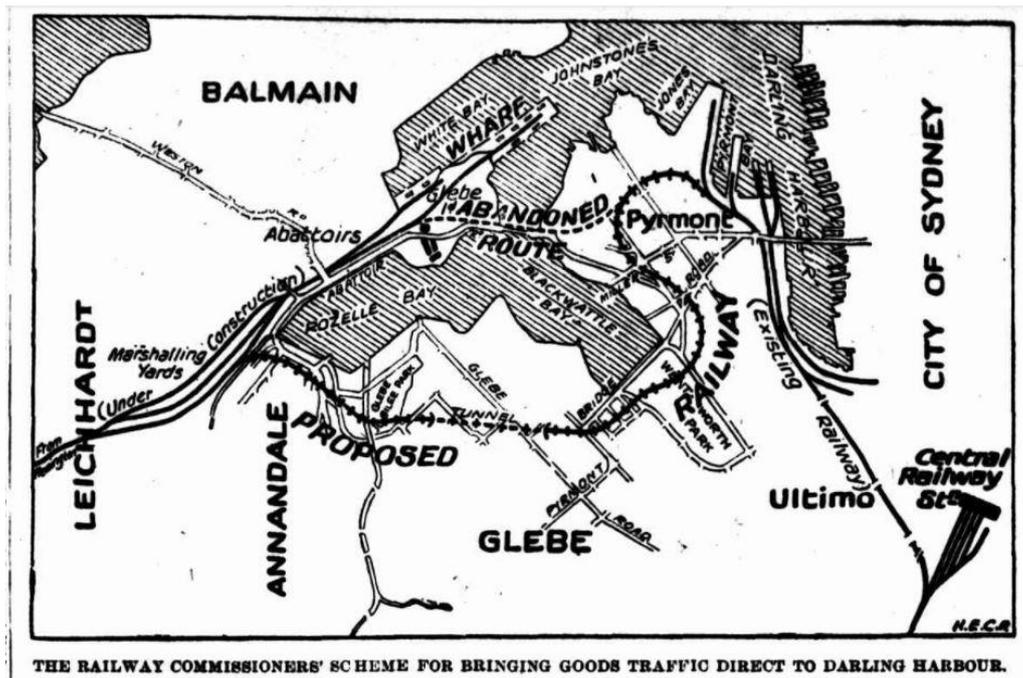


Figure 43: Map showing the scheme for the Flemington to Darling Harbour railway, 1914. The Flemington to Glebe Island line was under construction, however, by that time the continuation of the line across Glebe Island Bridge had been abandoned and a tunnel was proposed instead. The map shows the new wharfage and railway lines on Glebe Island.
Source: Flemington Railway, *Sydney Morning Herald*, 11 June 1913, 8¹⁵¹

2.4.1.2 Glebe Island Coal and Wheat Loading wharves (1915-21)

In February 1915, the dangerous state and size limitations of the circa late 1890s Glebe Island Cattle Wharf were noted.¹⁵² In 1906, when the Cattle Wharf had been removed from the Sydney Harbour Trust and vested into the Board of Health, the wharf had been described as a “pile structure comprising a wharf, cattle race, and sheep slip,” located on the northern side of Glebe Island, “erected on an area of 9 ¼ perches below high-water mark of White Bay.”¹⁵³ By 1915, coastal streamers had difficulties mooring at the wharf’s landing facilities which were too small, as the Harbour Trust had shortened them in connection with the new wharfage scheme.¹⁵⁴ At that time, the cattle wharf was still being used to offload cattle, and the same year, the steamer ‘Malachite’ collided with another vessel, the ‘Star’, after backing away from the wharf.¹⁵⁵

In July 1915, a deputation of people, including the Minister for Lands, Minister for Agriculture and a representative of the Sydney Harbour Trust, inspected the site on the western side of Glebe Island “for the proposed erection of a grain elevator and McMyler coal hoists”¹⁵⁶ as part of a big scheme involving the bulk handling of grain which was under consideration by the Public Works Committee at an estimated cost of £2,000,000. By then, extensive reclamation work had already been carried out,

¹⁵¹ “TO RELIEVE RAILWAY CONGESTION.,” 12.

¹⁵² “GLEBE ISLAND CATTLE WHARF.,” *Daily Telegraph*, February 25, 1915, 4, <http://nla.gov.au/nla.news-article238838239>.

¹⁵³ “PROCLAMATION.,” *Government Gazette of the State of New South Wales*, January 23, 1906, 545, <http://nla.gov.au/nla.news-article226405167>.

¹⁵⁴ “GLEBE ISLAND WHARF.,” *Daily Telegraph*, February 26, 1915, 5, <http://nla.gov.au/nla.news-article238837773>.

¹⁵⁵ “MARINE INQUIRY.,” *Daily Commercial News and Shipping List*, August 17, 1915, 12, <http://nla.gov.au/nla.news-article159282561>.

¹⁵⁶ “GRAIN AND COAL.,” *Daily Telegraph*, July 31, 1915, 18, <http://nla.gov.au/nla.news-article238920566>.

with the foreshore on this side of the island “having been cut away above the sea level back for a distance of 200ft.”¹⁵⁷

Wharves were also already under construction, and it was intended to provide six large wheat storage sheds alongside the wharves, and to extend railway line along them for transportation of the wheat. The McMyler coal hoists, to be erected at the head of the bay, were expected to create issues during operation in strong westerly winds, when the coal dust was “liable to be carried to the wheat elevator at the other end of the wharf and cause damage to the wheat.”¹⁵⁸ The coal loaders were supposed to be able to load 500 tons per hour, and had the “necessary gravity roads and sidings for full and empty trucks.”¹⁵⁹ At that time, the facilities at Glebe Island were also thought to potentially process frozen meat, likely from the nearby refrigeration works.

The McMyler hoists were a controversial item. The State Government had purchased four and by 1909 one was in commission at Newcastle. However, as the coal was dropped into colliers holds from a reasonable height the larger lumps of coal were broken up into much smaller pieces which were useless for use in the stoking equipment fitted to steam generating boilers or coke production techniques for steel making used at that time. The McMyler hoist worked intermittently but the hoist was decommissioned in 1916. The remaining hoists were never used.¹⁶⁰

The following month, in August 1915, the wharf for coal loading was nearing completion, and instructions for immediate construction of the railway sidings had been given.¹⁶¹ The completed wharf was to be utilised for the handling of the grain of the coming harvest, while the grain elevators were being installed. By December 1915, there was over 1200 feet of wharf accommodation available at Glebe Island, at a depth of 30 feet at low water.¹⁶² With the construction of the Glebe Island bulk wheat plant, Sydney’s “grain trade was centralized there.”¹⁶³

On 9 February 1916, a new railway wharf containing 1 acre 1 rood 4 perches on the northern side of Glebe Island was officially proclaimed and appointed,¹⁶⁴ and on 1 March 1916 the Flemington to Glebe Island railway line was officially opened.¹⁶⁵

The question of bulk handling of the NSW grain crop, as was undertaken in most of the major grain producers was debated and muddled for many years and it was only when the Commonwealth Government had purchased the entire crop as war emergency measure and was willing pay money for a bulk handling and storage system that NSW made to move to implement the system.¹⁶⁶

In 1918, work on the silos began. The silos were designed by J. S. Metcalfe and Co an established Canadian engineering firm with extensive experience in constructing grain silos.¹⁶⁷ They were “shaped as large cylindrical bins capable of holding 6,382,000 bushels. On top of the bins were six

¹⁵⁷ “GRAIN AND COAL.,” 18.

¹⁵⁸ “GRAIN AND COAL.,” 18.

¹⁵⁹ “RAILWAY GOODS TRAFFIC.,” *Daily Telegraph*, March 13, 1915, 14, <http://nla.gov.au/nla.news-article238822531>.

¹⁶⁰ Cockbain, Peter. “The Engineering History of Coal Loading in Newcastle New South Wales from 1790 to 2015.” Paper presented at the 18th Australian Engineering Heritage Conference 2015, 7 – 9 December 2015, 201

¹⁶¹ “NEW GRAIN ELEVATORS.,” *Albury Banner and Wodonga Express*, August 6, 1915, 32, <http://nla.gov.au/nla.news-article108144741>.

¹⁶² “HARBOUR TRUST.,” *Sydney Morning Herald*, December 25, 1915, 10, <http://nla.gov.au/nla.news-article15633597>.

¹⁶³ Peter R. Proudfoot, “The Extension of Maritime Activity in Sydney: Pyrmont, Glebe Island and Balmain, 1890-1950,” *The Great Circle* 10, no. 2 (October 1988): 112, <https://www.jstor.org/stable/41562625>.

¹⁶⁴ “NEW RAILWAY WHARF, WHITE BAY, SYDNEY.,” *Commonwealth of Australia Gazette*, February 17, 1916, 287, <http://nla.gov.au/nla.news-article232467908>.

¹⁶⁵ “NEW LINE OPENED,” *Sun*, March 1, 1916, 5, <http://nla.gov.au/nla.news-article221376567>.

¹⁶⁶ See Pollard, Neville. “Silo to Seaboard: Bulk Handling the Golden Grain.” *Australian Railway History* 63, no. 895 (2012): 3-11

¹⁶⁷ J.S. Metcalf. *Grain Elevators Montreal: John S Metcalf Co. Limited 1926.*

steel galleries with conveying equipment to direct the wheat, unloaded from trucks, through a tripper into the bins.”¹⁶⁸

By November 1919, the large wheat terminal had been completed to about one third, “occupying a large square in the middle of the so-called island, where the rugged hill has been blasted away and used to reclaim portions of the foreshore” and built “as a huge mass of concrete”.¹⁶⁹ Presenting its face to White Bay, it consisted of “60 enormous cylinders” enclosed “in the mountain of concrete” that was being created.¹⁷⁰ Some of the stone quarried at the site was transported to Dalton’s Wharf at Millers Point, where it was being broken up for ballast.¹⁷¹

The railway was also nearing completion by that time. Metcalfe also had the contract to construct 50 grain silos in the Central district of NSW. Wheat from the farm was brought to these silos and then from the silos it was transported in bulk To Glebe Island where it was loaded into the terminal silos. Bagged wheat was also brought from all of parts of the State to sheds along the wharf.¹⁷²

The framework of the gantry (noted as ‘shipping gallery’ in Figure 45) was springing up by 1919, taking the bulk wheat from the silo to the water’s edge, and along its conveyors to the ships via large discharging towers.¹⁷³ The wharf was still under construction, while the existing coal wharf at the western end was being raised four feet, as well as widened and strengthened, “to adapt for its new use,” being joined with the new wharf to form a wharf of 3440 feet, running into Johnston’s Bay.¹⁷⁴ The new wharf provided berths for five of the largest wheat carriers, and further wharfage accommodation was to be provided later, as required. The silos, railway, and wharves were expected to be in full working order in 1920.¹⁷⁵

Photographs, held by the State Library and largely taken by Arthur Ernest Foster, photographer, in c1919 and 1920, show the construction works underway (Figure 89, Figure 90 and Figure 91). They suggest that the old Government Wharf had been shortened by that time and the old Cattle Wharf removed, to accommodate access for ships to the new wharves on Glebe Island. The Museum of Applied Arts & Sciences also holds a “photographic album that provides an excellent record of the period of construction (1918-1921) of the original Glebe Island Grain silos and the grain handling machinery that was installed when the facility became operational in 1921. The black and white images record the progress of the construction of the three main building structures, namely, the storage bins, working house, track sheds, plus the external conveyors, grain machinery and associated infrastructure”.¹⁷⁶ These photographs have not yet been digitised.

A Crown Plan which was based on a survey completed on 3 October 1919 (Figure 45) and showing five areas vested in the Sydney Harbour Trust Commissioners in 1924, also illustrates the transformation of Glebe Island, showing the old shoreline and extensive reclamation areas and rubble filling, as well as the new railway lines extending along the northern side of the island. The location of the old refrigeration works structures is still shown, with the location of the new terminal grain elevator

¹⁶⁸ Thorp, “Thorp 1994,” 9.

¹⁶⁹ “NEW WHARFS.,” *Sydney Morning Herald*, November 17, 1919, 6, <http://nla.gov.au/nla.news-article15873127>.

¹⁷⁰ “NEW WHARFS.,” 6.

¹⁷¹ “Happenings of the Week – News in Brief.,” *Australian Town and Country Journal*, April 24, 1918, 39, <http://nla.gov.au/nla.news-article263621073>.

¹⁷² See Pollard 2012A also Pollard, Neville. “‘Striving to Keep up’ - the Role of the Nsw Railways in Wheat Transportation During the 1930s to 1960s.” *Australian Railway History* 63, no. 895 (2012): 18-25.; Boardman, Terry, John Brown, and Neville Pollard. “Moving Nsw Wheat - 1970s and ‘80s Style.” *Australian Railway History* 63, no. 897 (2012): 16-27; and Stuart, Iain Malcolm “Rural and Industrial Landscapes – the Wheat Landscape.” *Cultural Landscape Diversity and the Implications for Management Australia ICOMOS Cultural Landscape Symposium Proceedings*, Hobart Tasmania, Australia, ICOMOS, 10 November 2018 2020.

¹⁷³ “NEW WHARFS.,” 6.

¹⁷⁴ “NEW WHARFS.,” 6.

¹⁷⁵ “NEW WHARFS.,” 6.

¹⁷⁶ “Photograph Album of Sydney Terminal Elevator on Glebe Island,” accessed July 23, 2021, <https://collection.maas.museum/object/398129>.

and working house indicated. A new “wharf on piles” with its ‘shipping gallery’ (gantry) and towers at regular intervals extended out from the Monier sea wall at high water mark. The wharf was built entirely on reclaimed land, and an extension towards the east was noted as a future site.

The Australian in October 1922 provided an extensive description of the site, noting that “a considerable portion of the plant stands on the site of a stone quarry from which the sandstone for the G.P.O and Challis House was taken. A large additional area has been excavated to the same level to provide for administrative offices, wharf sheds, railways and roadways, so that when the Island has been fully developed it will present a magnificent layout of facilities for oversea shipping and handling, not only of bulk grain, but of merchandise of all kinds.” The report continued:

Just east of the elevator site there is the commodious Rozelle Classification Yards, in which all kinds of goods can be split up into classified trains, but in addition to this yard the elevator has private sidings for wheat only, sufficient to provide continuous working of the plant with, say, two visits of the shunting engine per day. The trains of grain are pushed by the locomotive through the truck shed to the end of the rail track, which is on a slight up-grade. There are four of these tracks and cable haulage worked by machinery in the basement of the track shed will pull the loaded trucks over the receiving pits in the track shed, into which they are unloaded. On each of the four tracks there are five receiving pits, making twenty in all, and these are large enough to contain over 40 tons of wheat as unloaded from trucks. (...)

For convenience, the elevator man divides the twenty pits in the track shed into five units, each unit consisting of four pits in line across the railway tracks. Each unit is served by a conveyor belt 36in. wide immediately below the hoppers mouths of these pits, and the grain running from the pits is carried by this belt to the elevator legs in the main building, the purpose of which is to elevate the grain to the top of the working house, to be weighed and distributed by gravity and by conveyor belt. (...)

The conveyor belts throughout the building are all 36in. wide, and run on rollers placed every few feet, side rollers giving the belt a slight concave formation to increase the carrying capacity. The belts are made up like a motor tyre, being alternate layers of duck and rubber, subjected to great pressure and vulcanised. In the whole plant there are no less than 6 ½ miles of conveyor belting used, every foot of which represents an outlay of about £1. The vertical elevator leg belts, of course, are fitted with cups or buckets, which discharge at the head of the leg. (...)

In order to handle the exportable surplus of grain in the Riverina and Western districts of N.S.W., the plant has had to be designed with each conveyor and elevator leg of a maximum capacity of 430 tons or 16,000 bushels per hour. In order to place the wheat on overseas vessels it is withdrawn from the storage bins by means of conveyor belts or direct spouting, and is elevated to the automatic weighing machines, which record the weights and discharge the grain to a row of shipping bins on one side of the working house. From there it is run to four 36in. conveyor belts through overhead galleries, which are built of structural steel and corrugated iron. These galleries run from the elevator to the wharf, and then extend for the full length of the wharf in two directions; two belts running east and two running west. On the wharf in front of the galleries there are four gigantic travelling machines. In them is housed machinery which takes grain delivered from the gallery conveyor belt, and elevates it to a height suitable for the loading of the largest vessel likely to visit Sydney in the near future. From this point the grain runs

down a steel spout about 12in. in diameter to the hold of the vessel. Four of these travelling machines or gantries can be used to load at each of the four hatches of a ship simultaneously, and the usual speed of loading is at the rate of 300 tons per hour per gantry, but a maximum of 430 tons per hour is possible. (...)

The work of construction was carried out by the late H. Teesdale Smith, contractor, under the supervision of the Railway Department's engineers. The John S. Metcalf Co., Ltd., of Montreal, London, and Melbourne, are engineers to the Government on all bulk grain matters, and both the country elevators and Sydney terminal have been designed, and the country work supervised by them. (...)

The Sydney terminal is one of the largest in the work, though there are a few in America of greater capacity.”¹⁷⁷

After bulk shipments had commenced in 1922, additional improvements were made to the facilities, including extension of the wharves and provision of facilities to handle bagged wheat.¹⁷⁸ Two large sheds with conveyors were completed by mid-1926, and another shed was built at the western end by mid-1927. This appears to have been Shed No. 9, located adjacent to Berths No. 8 and 9. The south-western side of Glebe Island as well as the eastern portion continued to be developed for wharfage, and further connections were made between the wheat handling facilities and the Rozelle railway system.

A Metropolitan Water Board survey carried out in September 1927 shows the footprint of buildings, including the enclosed shed at No. 9 Wharf (Figure 52). The narrow footprint of this building on the survey suggests that the shed may later have been enlarged.

By 1931, the wharfage on Glebe Island was described as follows:

“The whole of the wharfage scheme has been so arranged that ships loading bulk wheat are enabled to take parcels of bagged wheat for topping-up without having to move from one wharf to another. It has also been designed and laid out so as to provide for general cargo, thus enabling the wharfage to be kept in continual use, and making it possible for a vessel to discharge its general cargo and receive bagged wheat at the same berth with a consequent saving in time and removal charges.

At the eastern end of Glebe Island, wharves have been constructed for a total length of about 1720 feet, and on the northern or White Bay side, a total of 2680 feet has been provided.”¹⁷⁹

All bagged wheat loading operations were transferred from Pyrmont to Glebe Island in October 1936.¹⁸⁰

¹⁷⁷ “To Bulk or Not to Bulk ?,” *Australian*, October 27, 1922, 4, <http://nla.gov.au/nla.news-article210253607>.

¹⁷⁸ Thorp, “Thorp 1994,” 10.

¹⁷⁹ “WORK OF HARBOUR TRUST COMMISSIONERS,” *Construction and Real Estate Journal*, January 6, 1932, 8, <http://nla.gov.au/nla.news-article222907563>.

¹⁸⁰ Thorp, “Thorp 1994,” 13.

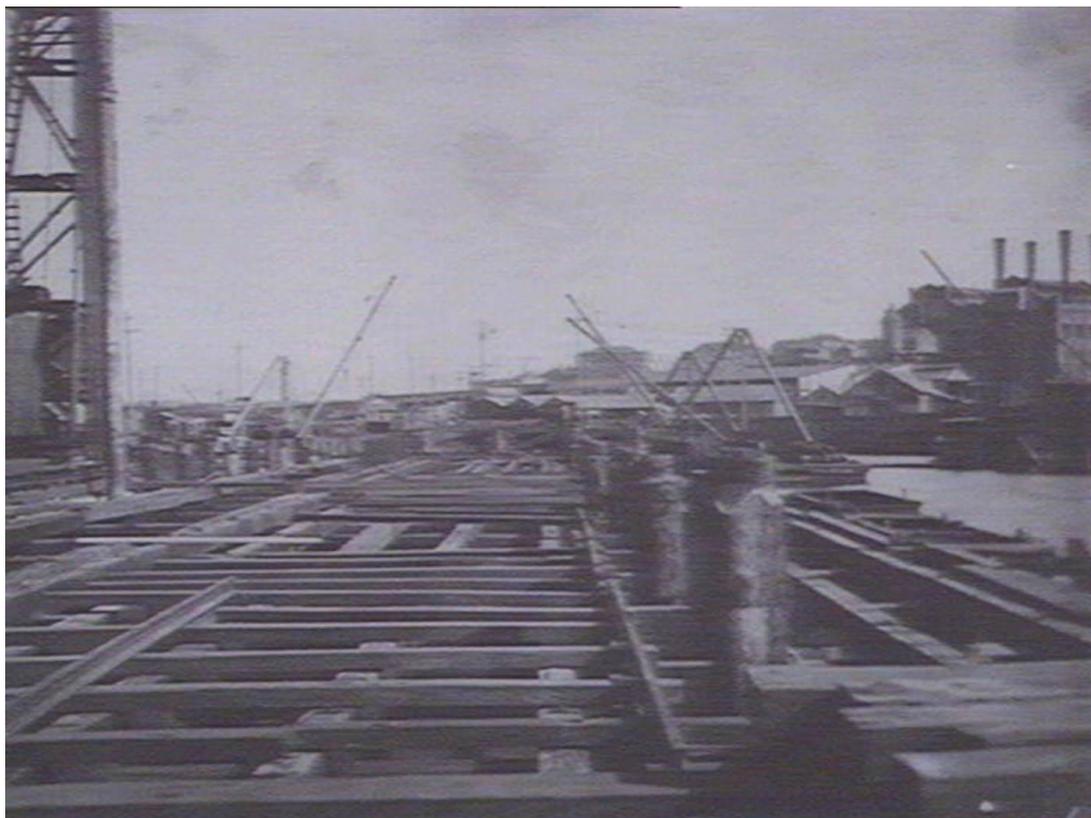


Figure 44: “Raising wharf: Glebe Island”, 4 July 1919. Looking west from the existing coal loading wharf that is being raised to match the new wharves. The White Bay Power House is visible in the right background. Source: SLSNW, d1_24791¹⁸¹

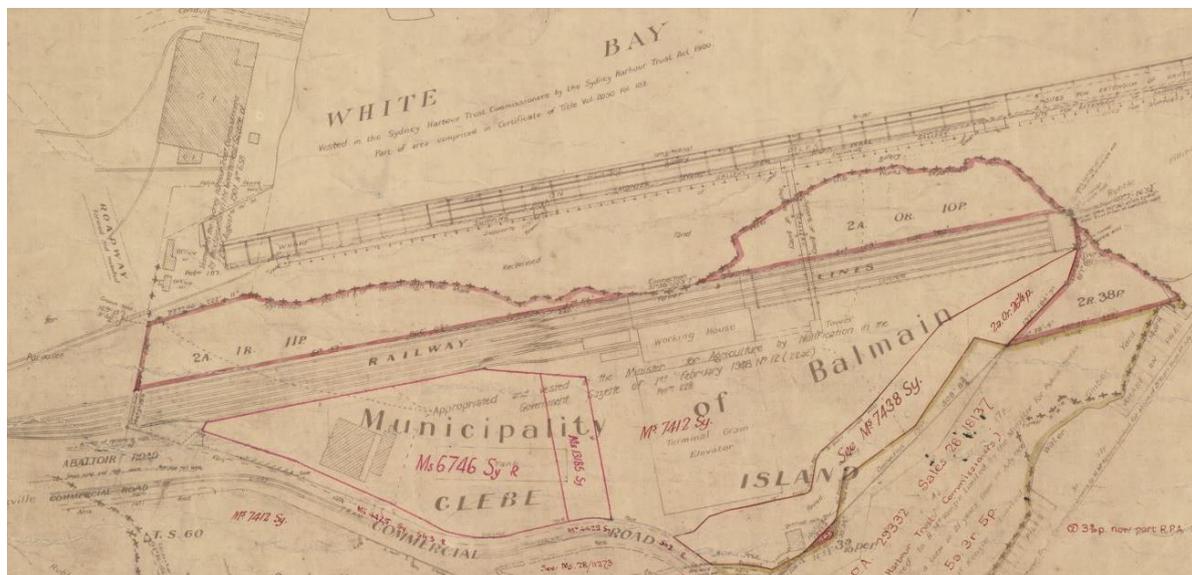


Figure 45: Detail from Crown Plan based on a survey dated 3 October 1919, showing the northern portion of Glebe Island, noting new and old structures. Source: NSW LRS, CP 6051-3000

¹⁸¹ “Raising Wharf: Glebe Island,” accessed July 27, 2021, <https://search.slnsw.gov.au/permalink/f/1cvjue2/ADLIB110119794>.



Figure 46: The northern side of Glebe Island, c1919, with the raising of the existing wharves underway. Railway tracks have been laid, and there are various smaller and larger buildings and sheds located alongside the tracks. Source: SLNSW, FL412660¹⁸²



Figure 47: The western end of the Glebe Island wharves, 28 September 1920. The wharves have been raised and the framework for the 'shipping galleries' is ready for construction. Some of the sheds alongside the railway tracks have been removed. Source: SLNSW, FL 412658¹⁸³

¹⁸² "Series 03 Part 02: Sydney Shops, Offices and Stores Etc. (Gardiner Warehouse, Glebe Island Wheat Silos, Grace Building, Grenville House, Hudson's Timber Yard, Kidman & Mayoh Shipbuilders), ca. 1920-1925 / Photographed by Arthur Ernest Foster," Collection - State Library of NSW, accessed July 28, 2021, <https://collection.sl.nsw.gov.au/record/9O4oZprn/XejJ5IAReKgWE>.

¹⁸³ "Series 03 Part 02."



Figure 48: View from Balmain towards the new wharves and silos at Glebe Island, still under construction, c1920-21. Source: SLNSW, FL 412662¹⁸⁴



Figure 49: View from the White Bay Power House towards the new wharves and silos at Glebe Island, still under construction, c1920-21. Note the White Bay Steel Works in the foreground and what appears to be a fabricated steel truss bridge Source: SLNSW, FL 412664¹⁸⁵

¹⁸⁴ "Series 03 Part 02."

¹⁸⁵ "Series 03 Part 02."



Figure 50: View of the new 'shipping galleries'/gantries as seen from the silos, c1922. Source: SLNSW, FL 412655¹⁸⁶



Figure 51: Photograph dated 9 June 1922, showing the new silos and wharfrage from the northwest. This photo also shows the White Bay Steel works (RHS) and the circulation input channel to the White Bay Power Station Source: SLNSW, FL 412667¹⁸⁷

¹⁸⁶ "Series 03 Part 02."

¹⁸⁷ "Series 03 Part 02."

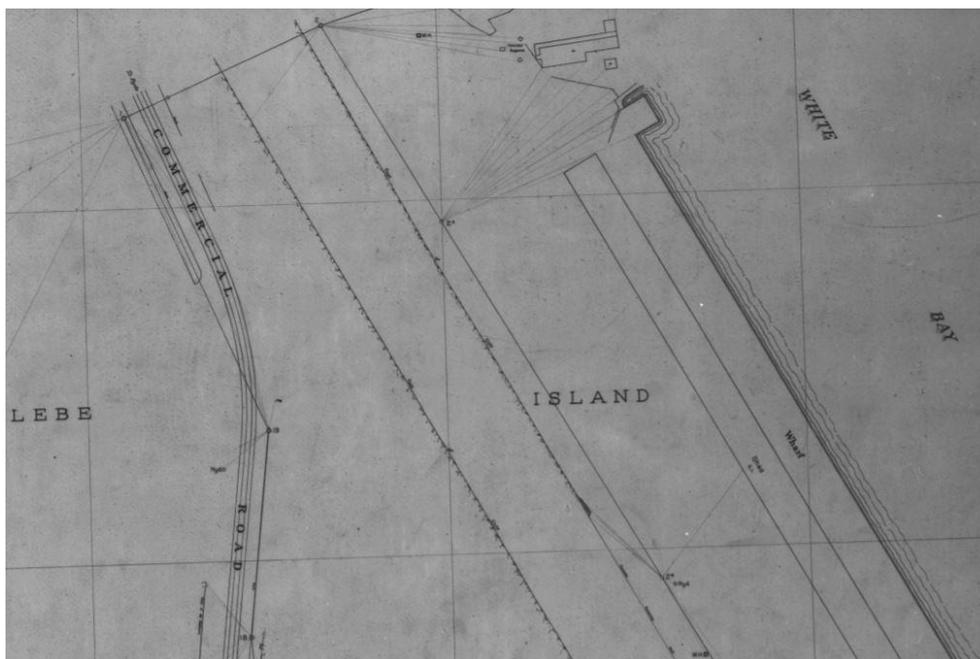


Figure 52: Detail from MBWS & S plan, based on survey dated September 1927, showing buildings and wharves, including Shed No. 9. The building at the top is the Engineer's Building of the White Bay Steel Works. Source: Sydney Water Archives, DTS794, Sheet 76



Figure 53: Undated photograph, circa late 1920s, looking from the grain silos towards the Power House site across No. 8 and No. 9 Wharves. The steel works are still in operation and

the Power House has been extended. Source: NSW State Records & Archives, 9856_2017_2017000268¹⁸⁸



Figure 54: Undated photograph, c1930s, showing grain being loaded onto a ship at No 8. and No. 9 Wharves at Glebe Island. Source: NSW State Records & Archives, FL423093¹⁸⁹

2.4.2 Development of White Bay Power House (1910s-1930)

2.4.2.1 First Phase of White Bay Power House Development (1912-1917)

The White Bay Power Station was constructed by the NSW Railway Commissioners in order to support the ever-expanding tramway network and cope with the anticipated electrification and expansion of the railway system.¹⁹⁰ The Sydney tramway system had expanded throughout the nineteenth century from horse power to steam, to cable and finally to electrical traction.¹⁹¹ Ultimo Power House, completed in 1889, was reaching capacity and a newer, larger and more flexible power station was required to fulfil Sydney's railway and tramway needs.

The construction of the White Bay Power House coincided with the construction of the Wardell Road to Darling Island Railway as part of an extension of the Metropolitan Goods Line. From that line, sidings were provided to the new Glebe Island bulk wheat facilities and later also the new Power House to provide coal for its operation. The site at White Bay was considered ideal as it was sufficiently large, had "both rail links and dock facilities for coal plant delivery, and ash disposal,

¹⁸⁸ "View of Balmain Power Station and White Bay Headwaters from Glebe Island Grain Solos.," August 16, 2018, https://www.records.nsw.gov.au/image/9856_2017_2017000268.

¹⁸⁹ "[Grain Being Loaded onto a Ship by a Portable Conveyor Belt at Wharf No.8-9, Glebe Island (NSW)]," accessed August 3, 2021,

https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE417623.

¹⁹⁰ Lisa Murray, "White Bay Power Station," *Dictionary of Sydney* (blog), June 3, 2016, <https://home.dictionaryofsydney.org/white-bay-power-station-2/>.

¹⁹¹ "White Bay Power Station," State Heritage Inventory, accessed August 2, 2021, <https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5001335>.

unlimited circulating water, with the possibility of separating inlet and outlet to avoid local heating problems,” and was low-lying which reduced cooling water lift, and was considered low cost.¹⁹²

On 11 July 1911 the resumption of land at White Bay “for the purpose of providing the necessary accommodation for the Wardell Road to Darling Island Railway at White Bay, Balmain,” was gazetted, involving the resumption of various parcels of land, including several areas of reclaimed land at White Bay and part of the ‘Symon’s Estate’ on Lot 1 in Section 19 of the Balmain Estate.¹⁹³ On 18 February 1913, part of the legal wharf was resumed by the Commissioner for Railways and Tramways from the Sydney Harbour Trust for the purpose of facilitating the construction of the ‘Tramway Electric Power House at White Bay’.¹⁹⁴

Construction for the Power House was planned to be executed in two phases and commenced in June 1912, when piles were driven in the north-eastern corner of the building (Figure 55 and Figure 56).¹⁹⁵ The rest of the building was constructed on more solid foundations. By June 1913, the first of 10 planned turbine units was noted as completed, and cables had been laid connecting White Bay with Ultimo Power House.¹⁹⁶ By that time, all the land from the bay to across Weston Road had been resumed, “and those buildings which were in the way of the main objective were speedily smashed up by the demolition gangs.”¹⁹⁷ The White Bay Hotel had also been resumed but remained standing until 10 November 1915, when the brick was auctioned off “for removal” by the Chief Commissioner for Railways and Tramways, and the building was subsequently demolished.¹⁹⁸ Construction of the new White Bay Hotel, further to the west on elevated level, facing the realigned Barnes Street (well outside the study area), had commenced by then.¹⁹⁹

Tenders for the supply of two coal elevators and conveyors were called in March 1913,²⁰⁰ and for the supply of a pneumatic ash-handling plant and eight automatic coal-weighing machines in May 1913.²⁰¹ The ash handling plant was connected with the boiler house by a footbridge (Figure 59). The first boilers and the first turbo-alternator set were steam tested on site in July 1913, long before completion of the first stage.²⁰² The photograph in Figure 57 shows the power house at that time, with various temporary buildings erected for construction of the building as well as for storage of machinery, many of which were erected at Swan Park.²⁰³

A site plan dated 21 January 1913 (Figure 58) shows these temporary structures at Swan Park, comprising one large and several smaller sheds for the various building and construction components, with boiler parts and crane parts stored in front of the larger shed. This plan also notes some of the existing buildings located in the southern portion of the future power house site at that

¹⁹² Don Godden and Associates & Heritage Consultants, “The Significance of White Bay and Balmain Power Stations to Sydney’s Industrial Heritage. A Report to the Electricity Commission of NSW” (Sydney, 1989), 35.

¹⁹³ “NOTIFICATION OF APPROPRIATION AND RESUMPTION OF LAND FOR RAILWAY PURPOSES UNDER THE ‘PUBLIC WORKS ACT, 1900.’” *Government Gazette of the State of New South Wales*, July 12, 1911, 3727, <http://nla.gov.au/nla.news-article230683765>.

¹⁹⁴ “NOTIFICATION OF APPROPRIATION AND RESUMPTION OF LAND FOR TRAMWAY PURPOSES UNDER THE ‘PUBLIC WORKS ACT, 1912.’” *Government Gazette of the State of New South Wales*, March 12, 1913, 1530, <http://nla.gov.au/nla.news-article226759716>.

¹⁹⁵ Don Godden and Associates & Heritage Consultants, “The Significance of White Bay and Balmain Power Stations to Sydney’s Industrial Heritage. A Report to the Electricity Commission of NSW,” 36.

¹⁹⁶ “BUILDING INDUSTRY&MACHINERY,” *Sun*, June 30, 1913, 5, <http://nla.gov.au/nla.news-article229845292>.

¹⁹⁷ “BUILDING INDUSTRY&MACHINERY,” 5.

¹⁹⁸ “Advertising,” *Sydney Morning Herald*, November 10, 1915, 15, <http://nla.gov.au/nla.news-article15623829>.

¹⁹⁹ “Advertising,” *Sydney Morning Herald*, October 8, 1915, 12, <http://nla.gov.au/nla.news-article15618097>.

²⁰⁰ “Government Gazette Tenders and Contracts,” *Government Gazette of the State of New South Wales*, March 27, 1912, 1952, <http://nla.gov.au/nla.news-article227590813>.

²⁰¹ “Government Gazette Tenders and Contracts,” *Government Gazette of the State of New South Wales*, May 21, 1913, 3136, <http://nla.gov.au/nla.news-article221594694>.

²⁰² Don Godden and Associates & Heritage Consultants, “The Significance of White Bay and Balmain Power Stations to Sydney’s Industrial Heritage. A Report to the Electricity Commission of NSW,” 36.

²⁰³ “BUILDING INDUSTRY&MACHINERY,” 5.

time, including the White Bay Hotel and Padstow House (and associated outbuildings), as well as buildings on the western side of Crescent Street (Weston Street).

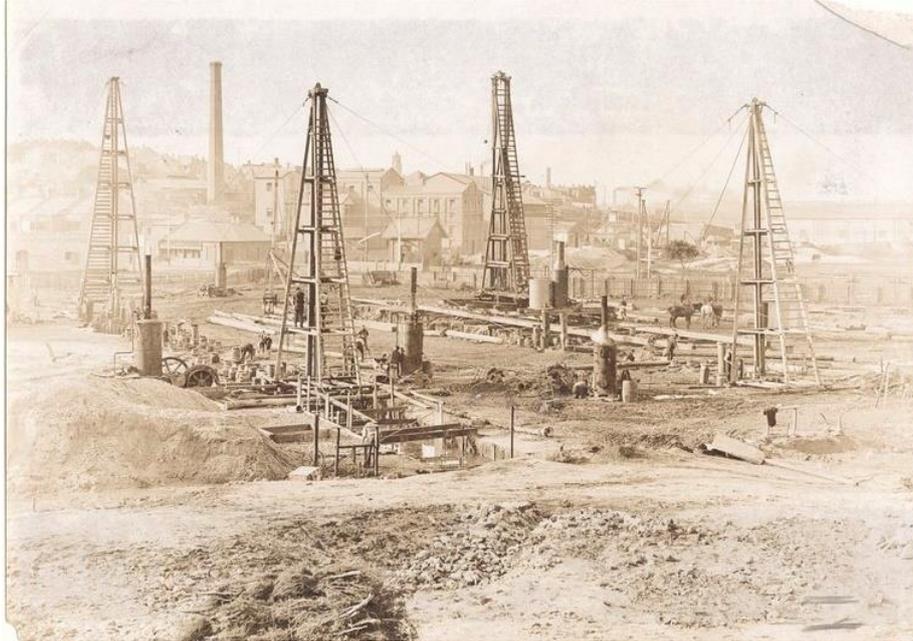


Figure 55: Construction of the White Bay Power Station is underway, 13 June 1912. View looking north-east. Source: NSW State Records & Archives, FL1783854²⁰⁴

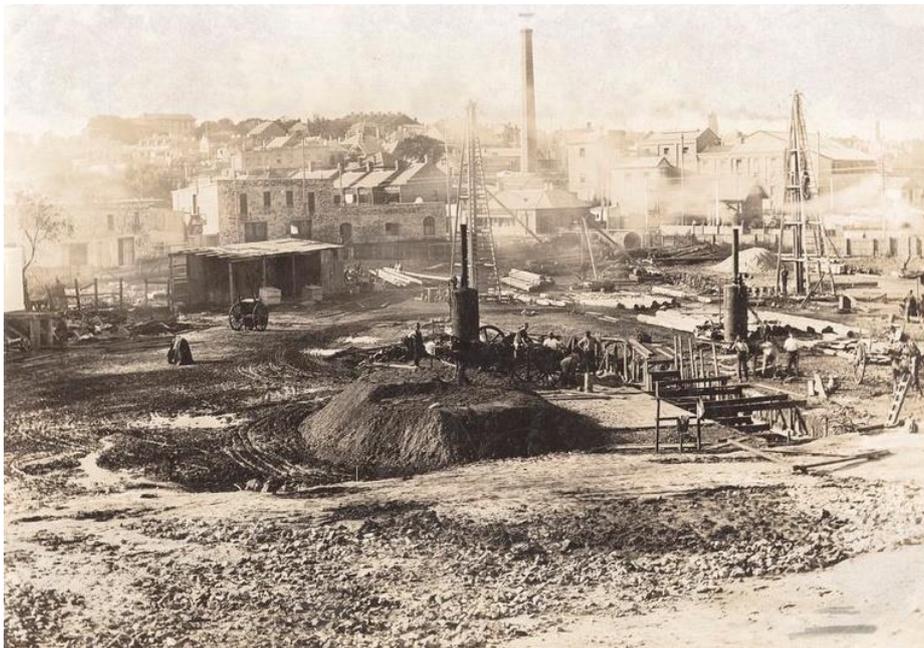


Figure 56: Pile driving in full swing, 3 August 1912. View looking north/northeast. Source: NSW State Records & Archives, FL 1784018²⁰⁵

²⁰⁴ “[WHITE BAY POWER STATION CONSTRUCTION, WHITE BAY, DARLING HARBOUR GOODS, NSW],” accessed August 6, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1781576.

²⁰⁵ “[WHITE BAY POWER STATION CONSTRUCTION, WHITE BAY, DARLING HARBOUR GOODS, NSW],” accessed August 6, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1781657.



Figure 57: 'White Bay Power Station – 1st day under steam', 3 July 1913. Source: NSW State Records & Archives, FL 1783713²⁰⁶

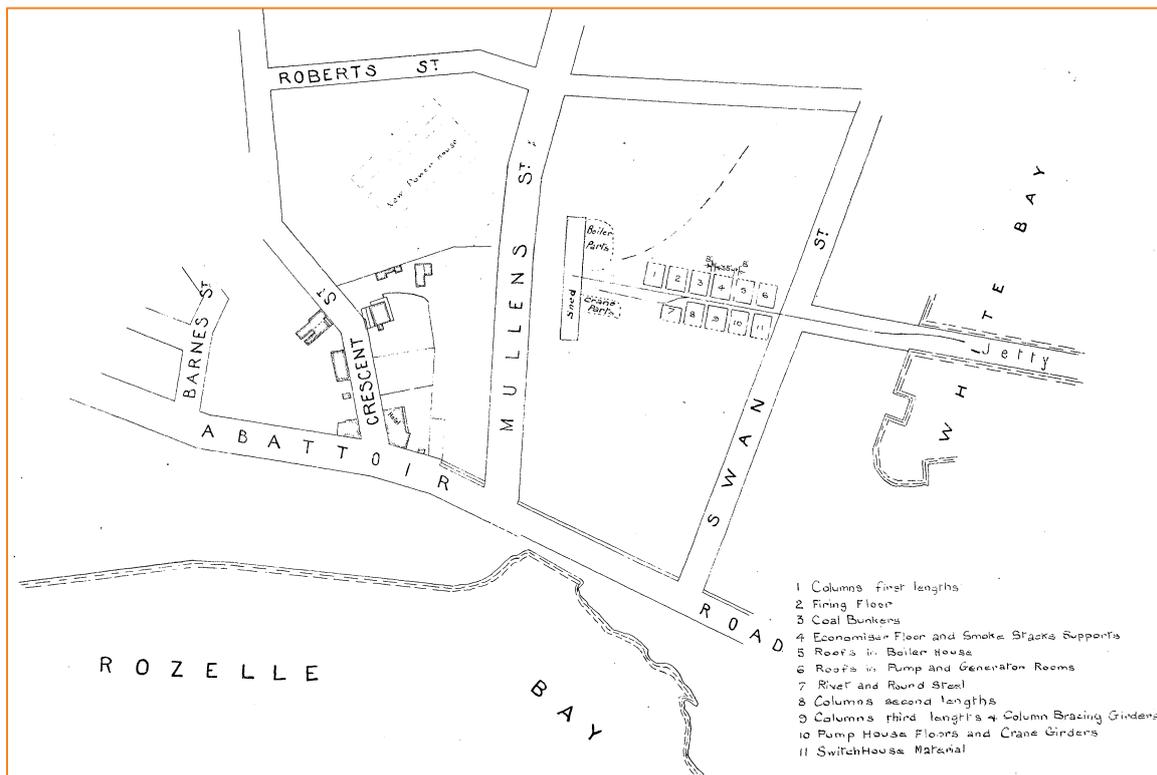


Figure 58: 'NSWR Site Plan – White Bay Power House', 21 January 1913. This plan shows temporary sheds in Swan Park for material storage (much of the machinery was imported), and existing buildings in the area of the White Bay Hotel and Padstow House. The outline of the Power House (Stage 1) is also shown dotted. Source: Transport for NSW Plan Room, 0364029

²⁰⁶ "[POWER STATION FIRST DAY UNDER STEAM, WHITE BAY, DARLING HARBOUR GOODS, NSW]," accessed August 6, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1781471.

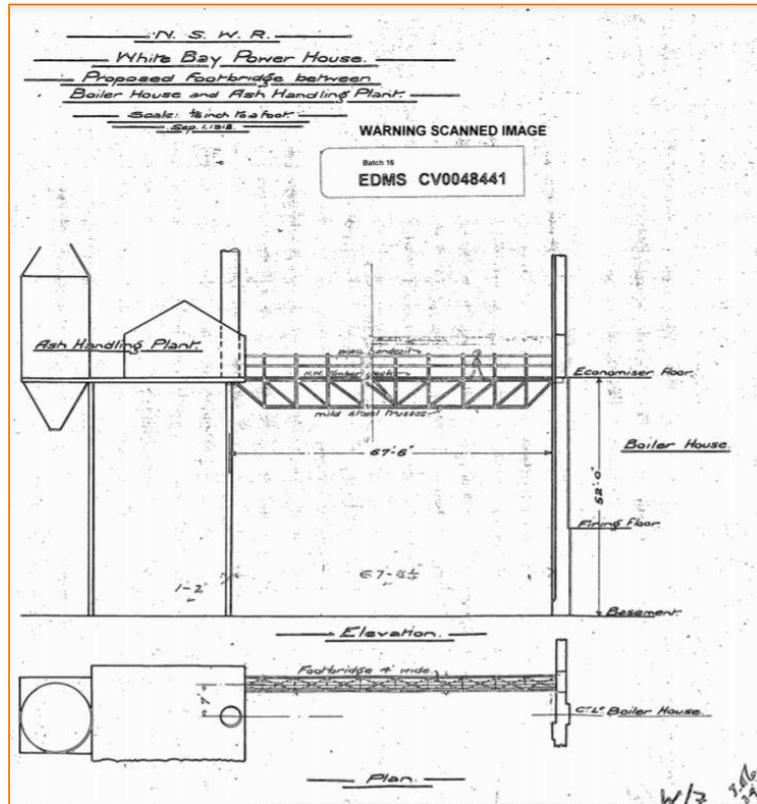


Figure 59: 'N.S.W.R. White Bay Power House – Proposed Footbridge between Boiler House and Ash Handling Plant', 1 September 1913. Source: Transport for NSW Plan Room, 0048441

Construction of the cooling channel, or circulating water conduit, was underway by 26 September 1912 (Figure 61). By June 1913, provisions were being made for the “supply of 6,000,000 gallons of cooling, or ‘circulating’ water, which will be drawn from the bay along two conduits, each measuring 6f. by 6ft. on the cross-section. Having been passed through the condensers, this great volume of water will be discharged through similar aqueducts along a tunnel to Rozelle Bay.”²⁰⁷ The concrete conduits contained valves that allowed the flow to be reversed, if required. Building two smaller channels instead of just one larger conduit allowed for easier cleaning, as one channel could be shut down for cleaning while the other one was kept running. The water was occasionally allowed to heat up, to kill of any algae growth, and “special motor-driven revolving screens of wire-netting” were in use to catch any rubbish.²⁰⁸

On the White Bay side, the double conduit was constructed to the north of the White Bay Steel Works on land resumed for that purpose on 12 March 1913.²⁰⁹ A diagram prepared in November 1911 (Figure 60) shows the location of the proposed conduit, with a well located where the conduit was taken underground. A later plan (dated 1919, see Figure 66) shows the location of a pump house and of the conduit which continued on the south-western side of the turbine hall.

The plan included in Figure 62 shows the to the north of the White Bay Steel Works that was resumed for the purpose of constructing the circulating water conduit. This was located to the south of the existing stormwater channel. The plan also shows the original alignment of Swan Street, running along the western elevation of the White Bay Steel Works building. By June 1913, cables had been

²⁰⁷ “BUILDING INDUSTRY&MACHINERY,” 5.

²⁰⁸ “WHITE BAY POWER-HOUSE.,” *Sun*, October 13, 1913, 5, <http://nla.gov.au/nla.news-article229345312>.

²⁰⁹ “WHITE BAY POWER-HOUSE.,” *Sun*, October 13, 1913, 5, <http://nla.gov.au/nla.news-article229345312>.

laid from the Power House up to Louisa Road, and from there to Longnose Point, for future connection with and electrification of the North Shore.²¹⁰

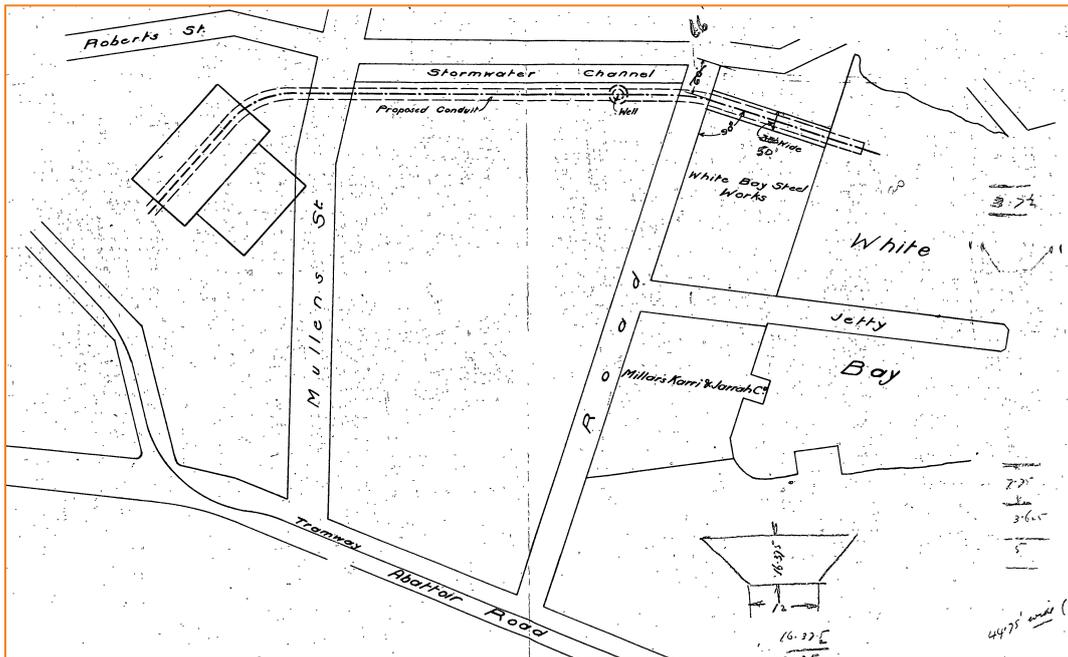


Figure 60: 'NSWR, Wardell Rd to Darling Island Railway, Plan of Easement required on property occupied by White Bay Steel Works', 24 November 1911, showing the proposed location of the conduit and well at the top. Source: Transport for NSW Plan Room, 0240693



Figure 61: 'White Bay Power Station – Commencement of conduit for circulatory water', 26 September 1912. Source: NSW State Records & Archives, FL 1783554²¹¹

²¹⁰ "BUILDING INDUSTRY & MACHINERY," 5.

²¹¹ "[COMMENCEMENT OF CONDUIT FOR CIRCULATORY WATER, WHITE BAY, DARLING HARBOUR GOODS, NSW]," accessed August 6, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1781354.

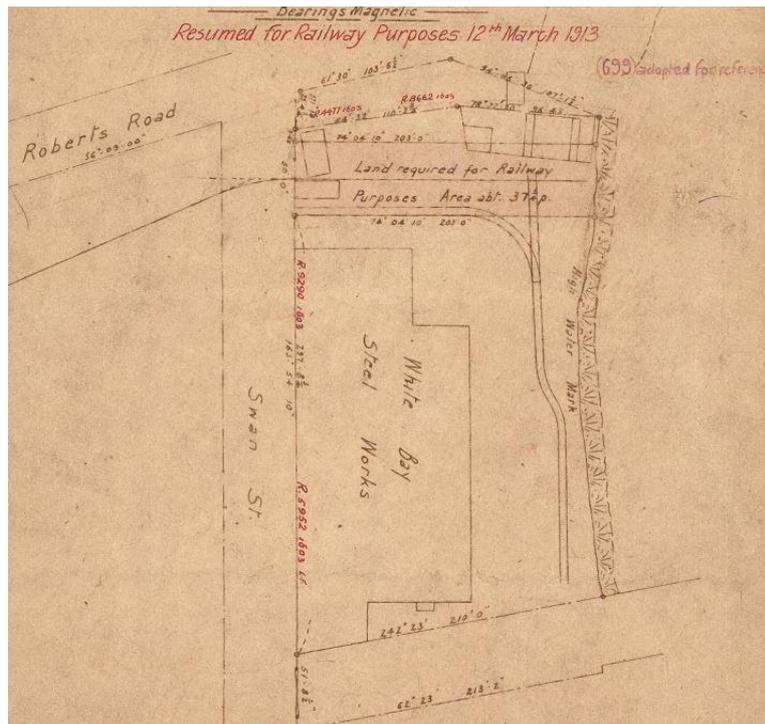


Figure 62: Plan showing the resumed area to the north of the White Bay Steel Works, 12 March 1913, for construction of a circulating water conduit shaded red. Source: NSW LRS, CP 4075-3000

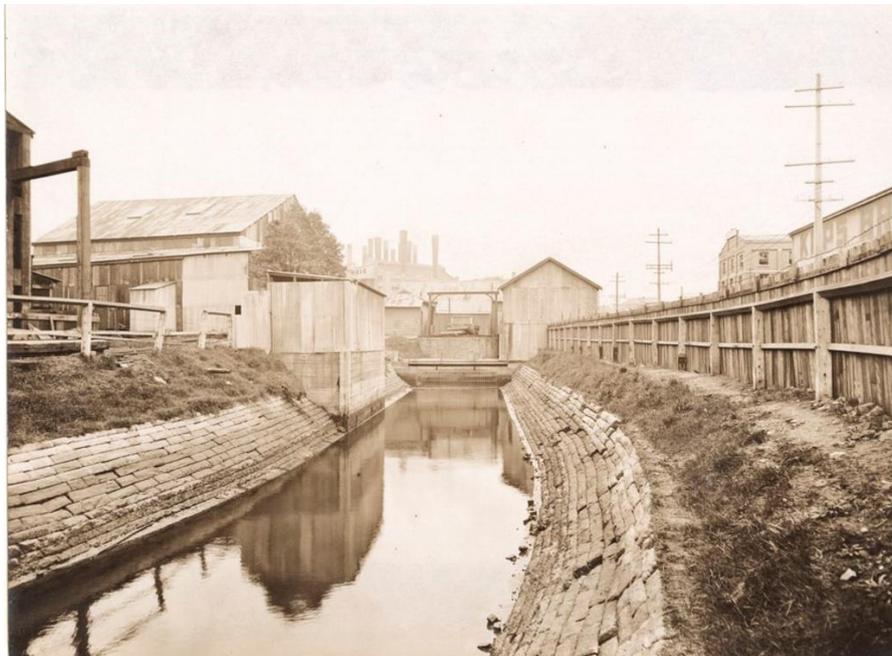


Figure 63: “Water Channel, White Bay”, undated, c 1920s, looking west towards the Power House, with the Steel Works site on the left. The small shed on the left was noted as a latrine on the plan in Figure 66. Source: NSW State Archives & Records, FL1784141²¹²

²¹² “[WATER CHANNEL, WHITE BAY, DARLING HARBOUR GOODS, NSW],” accessed August 6, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1781894.

A tender for the construction and supply of a quadrant turntable at White Bay was sought in April 1915.²¹³ The contract was awarded to Hy. Vale & Sons as the lowest tenderer.²¹⁴ This turntable was located at the northern end of the coal tracks, adjacent to the Boiler House and is shown on a plan dated 5 March 1915 (Figure 64).²¹⁵ The plan also shows the original alignment of those portions of Weston Street and Abattoir Road that were located on the power house site and were resumed and demolished, including old tram tracks. The site was bounded by the newly aligned Barnes Street in the west and Commercial Road in the south.

The coal tracks for the power house ran along the eastern side of the power house site, ending in front of the boiler house, where the ash handling plant was located (Figure 65). They were connected to the Glebe Island railway and “erected on a steel viaduct at a height of 14ft above the ground, to allow for the coal hopper over the conveyor filler, the floor of the chamber for which is 8ft below ground level.”²¹⁶ The hopper for each conveyor was said to extend “laterally under the tracks sufficiently to allow the discharging of coal from both sides of a D truck on either track.”²¹⁷ The tracks were strictly divided into coal and ash roads (cf. Figure 66).²¹⁸

Slowed down by shortages of materials and manpower after the outbreak of World War I, and with demand on the tramway system reduced, it was not until May 1917 that White Bay Power House was fully operational. A 1989 report on the significance of White Bay Power Station to Sydney’s Industrial Heritage noted:

“The layout of the site and buildings articulated the process of electricity generation more clearly than any other Sydney power station of its time. Coal was railed into the site at the east and conveyed to the top of the boiler house. Abutting the west of the boiler house was the pump gallery, the turbine hall and finally, separated by a gap for ventilation and lighting, the switch house. The channel taking cooling water to the condensers ran the length of the turbine hall: on the basis of the experience at Ultimo, it had been designed to accommodate future turbines of greater power. Similarly, problems with ash handling at Ultimo led to the adoption of a suction system of boiler ash collection.”²¹⁹

²¹³ “Advertising,” *Sun*, April 10, 1915, 3, <http://nla.gov.au/nla.news-article229319225>.

²¹⁴ “Advertising,” *Construction and Local Government Journal*, April 16, 1915, 2, <http://nla.gov.au/nla.news-article109634277>.

²¹⁵ Transport for NSW Plan Room, ‘NSW GT Balmain. General Plan of Proposed Deviation re Glebe Island Railway, dated 5 March 1915, 0049124

²¹⁶ “The Railways & Tramways,” *Australian Town and Country Journal*, August 14, 1918, 23, <http://nla.gov.au/nla.news-article263629722>.

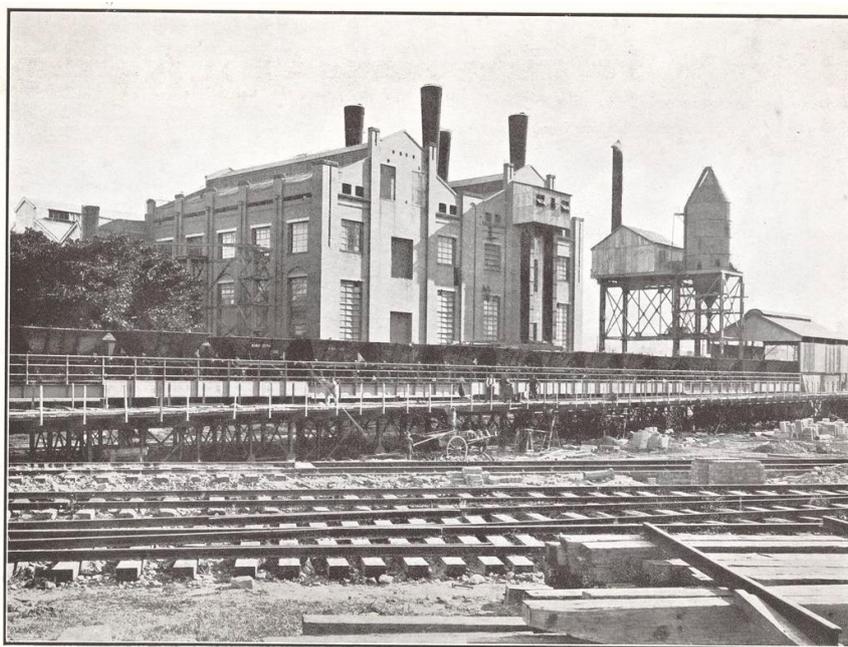
²¹⁷ “The Railways & Tramways,” 23.

²¹⁸ A. G. Denniss, “Metropolitan Goods Lines - Sydney Station West Signal-Box to Wardell Road Junction Signal-Box via Darling Island Junction,” *NSW Government Railways Circular*, no. 256–12 (June 18, 1934): 17.

²¹⁹ Don Godden and Associates & Heritage Consultants, “The Significance of White Bay and Balmain Power Stations to Sydney’s Industrial Heritage. A Report to the Electricity Commission of NSW,” 37.



Figure 64: Detail from “N.S.W. G.T. – Balmain Line – General Plan of Proposed Deviation – re Glebe Island Railway”, showing the location of the quadrant turntable and arrangement of buildings constructed as part of the first stage of the White Bay Power House. The alignment of roads that were subsequently resumed is also shown. Source: Transport for NSW Plan Room, 0049124



White Bay Power House from the South-east. Showing Elevated Railway Tracks and Pneumatic Ash Plant.

Figure 65: Photograph showing the first stage of the White Bay Power House after completion, with railway sidings to the east and elevated coal tracks in the background, leading to the pneumatic ash plant on the right, in front of the boiler house. Source: NSW State Archives & Records, FL1784022²²⁰

²²⁰ “[POWER STATION FROM THE SOUTH EAST, WHITE BAY, DARLING HARBOUR GOODS, NSW],” accessed August 6, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1781660.

A site plan dated June 1919, entitled 'N.S.W.R – White Bay - Site Plan of Round House' (Figure 66) shows the Power House site after completion of the first phase of construction and after acquisition of the White Bay Steelworks, and after appropriation of the Millars' Timber & Trading Co. site. The plan contains names of buildings and shows various site elements, including railway sidings and tracks, manholes, latrines, vents, boilers, and ash pits.

By that time, the White Bay Hotel had been relocated, Barnes Street had been formed, Abattoir Road had been relocated further to the south and renamed Commercial Road, and sections of Weston and Mullens Street had been resumed. The Barnes Street overbridge had been constructed over the various railway sidings that had been extended from the nearby Rozelle Marshalling Yard to the Power House, the Steel Works and the Glebe Island Wharves.

A Signalling Cabin was located near the Barnes Street overbridge, on the northern side of the Glebe Island siding and weigh bridges. Another set of tracks deviated from the Glebe Island sidings just before the Barnes Street overbridge, before being divided again. From there, one track led back to the Glebe Island siding, joining it at the Swan Street crossing and leading past the conduit silt well, an old latrine, 'water col.', manhole and tar boiler. Another track led to the steel works, past several smaller sheds near the Swan Street crossing and a vent. Coal and ash tracks led to the Power House, while two tracks ran to the roundhouse and turntable. The plan also shows the outline of a large building behind the round house, later noted as large store for the Electrical Branch (cf. Figure 70).

While drawings for the foundations of the Engine Shed and Turntable had been prepared in May 1915,²²¹ a photograph showing the power house site in circa 1919 (Figure 67) suggests that the roundhouse associated with a 75ft turntable and rail tracks was still under construction by that time, as the side walls had yet to be added. Between April and September 1920 another building was added to the south of the round house, as shown in Figure 69. This was later noted as the Concrete Works (see Figure 70).

By September 1920, Swan Street had been deviated along the northern side of the Glebe Island tracks, and another crossing added further to the west. This involved demolition of some earlier sheds near the original Swan Street crossing (see Figure 70). One of the two buildings that remained standing was a Transformer House.²²² The deviation was noted as 'Mullens Street' in the plan in Figure 68. A deviation involving an overbridge was also noted on the plan included in Figure 70 however, these works were never carried out.

²²¹ Transport for NSW Plan Room, 'NSWR – White Bay – Foundations for Engine Shed and Turntable' dated 19 May 1915, 0048496

²²² Transport for NSW Plan Room, 'NSWGR & T Chief Electrical Engineer's Office – White Bay – Power House, Steel Works, Bulk Wheat TermI Depot', 18 March 1921, EL0089915

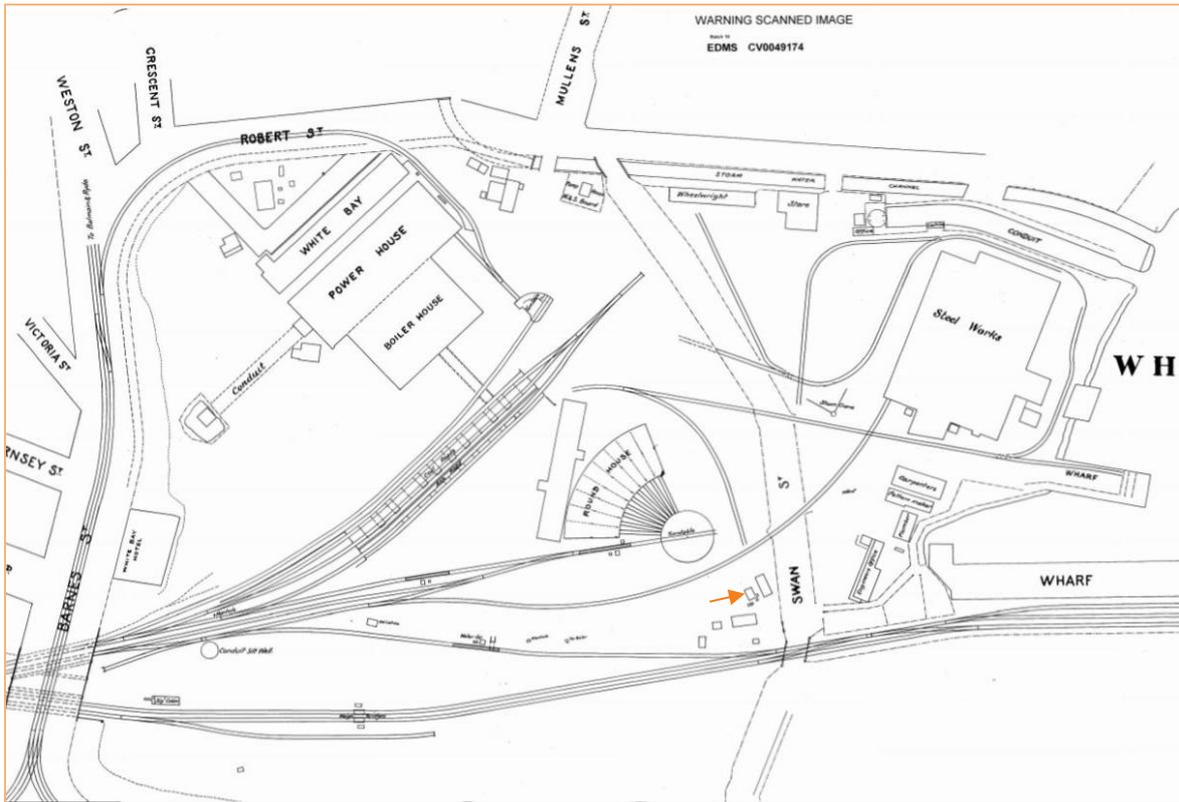


Figure 66: Detail from 'N.S.W.R. - White Bay – Site Plan of Round House', dated June 1919. It shows the location of buildings, water conduit, round house, turntables, wells, vents, boilers, and tracks. Source: Transport for NSW Plan Room, 0049174



Figure 67: The White Bay Power House site in c1919, with the area of the roundhouse and turntable circled. The roundhouse is under construction, with the side walls missing. Behind it, part of the store for the Electrical Branch is visible. Source: SLNSW, FL412660²²³

²²³ "Series 03 Part 02."

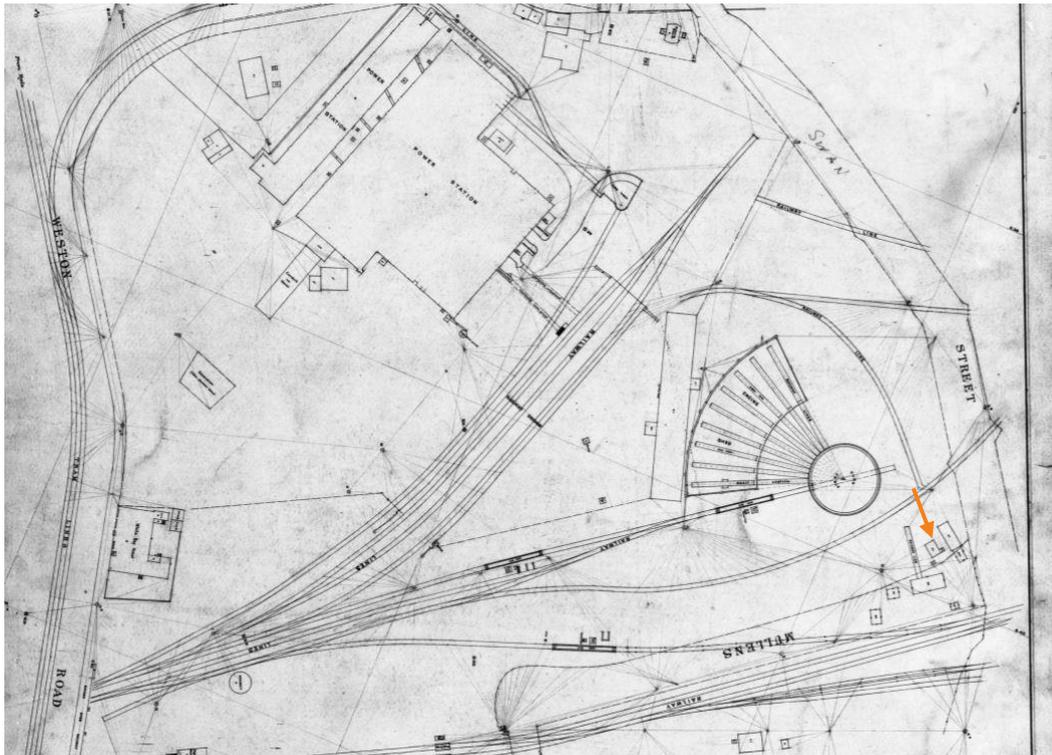


Figure 68: Detail from MBWS & S plan dated April 1920, showing buildings and tracks at the White Bay Power House site as existing by that time. One of the smaller sheds near Swan Street was a transformer house (noted by the arrow). Several buildings nearby were demolished shortly later, when the Swan Street deviation was constructed (noted as Mullens Street on the plan). Source: Sydney Water Archives, DTS 11, MBWS & S, Balmain Sheet 51

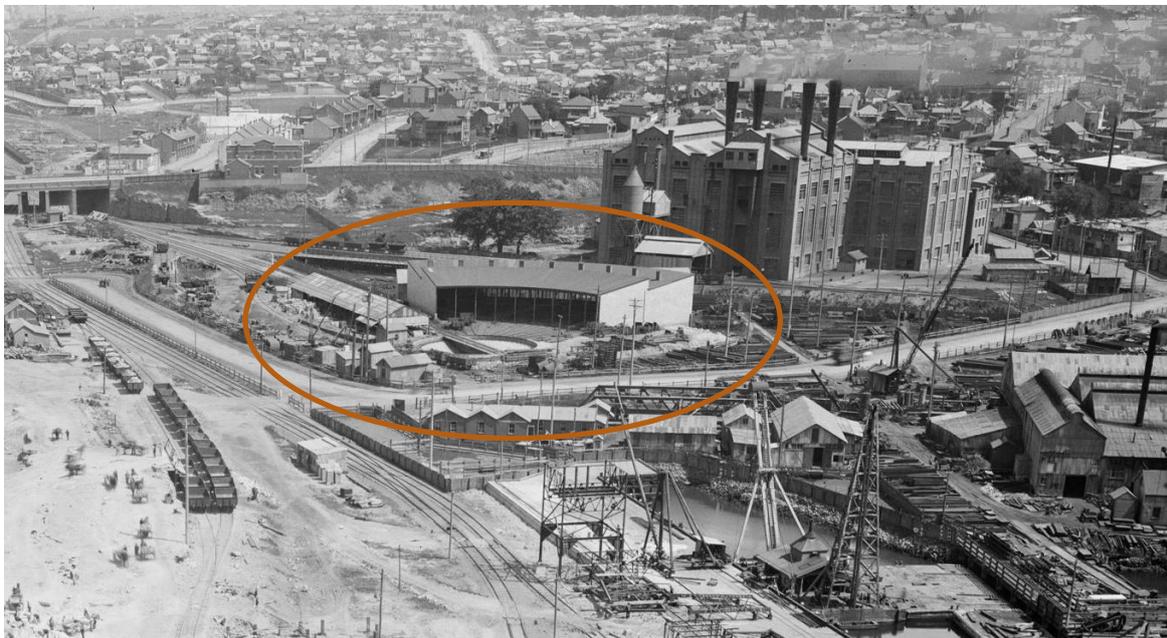


Figure 69: The White Bay Power House site, 28 September 1920, with the area of the turntable circled. The roundhouse appears completed and the Concrete Works have been added to its south (left). Note the newly formed Swan Street deviation on the left, involving demolition of some earlier sheds near the Swan Street crossing. Source: SLNSW, FL 412658²²⁴

²²⁴ "Series 03 Part 02."

2.4.2.2 Second Phase of White Bay Power House Development (1923-28)

From 1923–28 the White Bay Power House was extended utilising steel framing and reinforced concrete, rather than brickwork.²²⁵ The turbine hall, switch house and boiler house were extended as originally designed, and an amenities block added at the southern end of the turbine hall. Working structural drawings were prepared by the Engineer-in-Chief for Existing lines to designs by the Electrical Branch, and the Engineer-in-Chief was also responsible for construction.²²⁶

In addition to the five 25-cycle 6600 volt turbo-alternators that were fully operational by 1918, four 22,000 kW, 11,000 volt, 50-cycle turbo alternators and two 18,750 kw 6600 volt, 25-cycle turbo alternators were installed between 1923 and 1928.²²⁷ The 50-cycle turbo alternators were commissioned in 1925, 1926 and 1928, together with new boilers, to accommodate the system selected for railway electrification as well as the increasing demand for general purpose energy.²²⁸ Electric train services began operations in Sydney on 1 March 1926.

As part of the power house extension, tenders were called for two new coal elevators, two ash conveyors and a travelling jib crane in June 1925.²²⁹ The *Construction and Local Government Journal* reported in December 1926:

“A reserve stock of coal, amounting normally to 35,000-tons, is stacked at Rozelle, and is therefore conveniently situated to the power house at White Bay. Provision is being made for coal storage in the White Bay Power House yard, adjacent to the boiler house, where up to 10,000 tons may be stored. Coal can be recovered from this latter stack by means of an electrically operated jib crane or by means of the power house coal elevators. Bunkers are also provided in the boiler house, there being two bunkers, each of 1780 tons capacity, in No. 1 boiler house, and one bunker of 500 tons capacity in No. 2 boiler house (a second 500-ton bunker in this boiler house is now being installed).”²³⁰

There were plans at that time to provide a weighbridge on the coal tracks at the power house, to measure any discrepancies between the weight of coal as received at the power house and the weight of coal as despatched from the collieries.²³¹ To determine the efficiency of individual boilers, the coal chutes leading to the grate hoppers in batteries No. 1 to 4 had automatic weighers. For batteries No. 5 and 6, provision was made for Lea Coal Recorders on the individual grates. Two coal elevators were provided for each bunker, i.e. for two batteries of boilers. No. 1 and 2 elevators were swinging (gravity) bucket elevators and the rest were of the overlapping bucket type.

Photographs taken during and after construction between 1923 and 1930 are included below. A diagram of the White Bay Power House arrangement, dated 12 February 1930, shows the location of new plant, including that associated with coal handling in front of the boiler house, as well as two new quadrant turntables added to the south-west of Boiler House No. 2 by that time.

²²⁵ “White Bay Power Station.”

²²⁶ “SYDNEY’S CITY RAILWAY.—2.,” *Construction and Local Government Journal*, December 15, 1926, 13, <http://nla.gov.au/nla.news-article109640370>.

²²⁷ Don Godden and Associates & Heritage Consultants, “The Significance of White Bay and Balmain Power Stations to Sydney’s Industrial Heritage. A Report to the Electricity Commission of NSW,” 36. 38; “White Bay Power Station.”

²²⁸ Don Godden and Associates & Heritage Consultants, “The Significance of White Bay and Balmain Power Stations to Sydney’s Industrial Heritage. A Report to the Electricity Commission of NSW,” 38.

²²⁹ “NEW SOUTH WALES GOVERNMENT RAILWAYS AND TRAMWAYS.,” *Government Gazette of the State of New South Wales*, June 19, 1925, 2661, <http://nla.gov.au/nla.news-article223035767>.

²³⁰ “SYDNEY’S CITY RAILWAY.—2.,” 13.

²³¹ “SYDNEY’S CITY RAILWAY.—2.,” 13.



Figure 72: White Bay Power House showing extension of the Turbine Hall under construction, 1924. Source: SLNSW, FL382932²³³



Figure 73: White Bay Power House being extended, circa mid-1920s. View across yard, with the crossing from the Swan Street deviation visible on the left. Note the water crane used for refilling locomotive tanks while they were shunting. Boiler House No. 2 is not yet standing. Source: NSW State Archives & Records, FL1783292²³⁴

²³³ "Series 07: Sydney (Abattoirs, Banks, Bridges, Cemeteries, Churches, Harbour and Islands, Hospitals, Hotels, Libraries, Light and Power Supply), ca. 1916-1947 / Photographed by Arthur Ernest Foster," accessed July 23, 2021, <https://archival.sl.nsw.gov.au/Details/archive/110363641>.

²³⁴ "[VIEW OF POWER STATION, WHITE BAY, DARLING HARBOUR GOODS, NSW]," accessed August 10, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1782421.



Figure 74: White Bay Power House, 1924, showing works underway. Source: SLNSW, FL382928²³⁵



Figure 75: White Bay Power House Extensions, 23 April 1925. Roundhouse and store visible at the far right, behind the elevated coal and ash tracks. Source: NSW State Archives & Records, FL1783374²³⁶

²³⁵ "Series 07: Sydney (Abattoirs, Banks, Bridges, Cemeteries, Churches, Harbour and Islands, Hospitals, Hotels, Libraries, Light and Power Supply), ca. 1916-1947 / Photographed by Arthur Ernest Foster."

²³⁶ "[POWER HOUSE EXTENSIONS, WHITE BAY, DARLING HARBOUR GOODS, NSW]," accessed August 6, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1781219.



Figure 76: White Bay Power House, 17 June 1925. Construction of the new amenities building has begun. Source: NSW State Archives & Records, FL1784052²³⁷



Figure 77: Extension of White Bay Power Station, 1920s. View across tracks and coal handling plant. One portion of Boiler House No. 2 has been constructed. Source: NSW State Archives & Records, FL1783671²³⁸

²³⁷ “[POWER HOUSE EXTENSIONS, WHITE BAY, DARLING HARBOUR GOODS, NSW],” accessed August 6, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1781699.

²³⁸ “[VIEW OF POWER STATION, WHITE BAY, DARLING HARBOUR GOODS, NSW].”

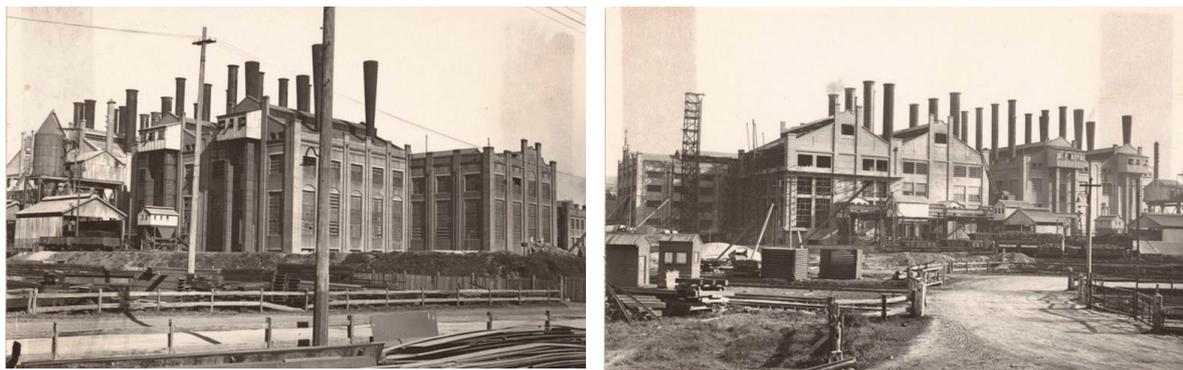


Figure 78: White Bay Power House Extensions, 16 August 1927. Source: NSW State Archives & Records, FL1784010²³⁹



Figure 79: White Bay Power House Extensions, 16 August 1927. New coal and ash handling plant is under construction in front of Boiler House No. 2 (on left). Source: NSW State Archives & Records, FL1784010²⁴⁰

²³⁹ “[VIEW OF EXTENSIONS TO POWER HOUSE, WHITE BAY, DARLING HARBOUR GOODS, NSW],” accessed July 27, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1782122.

²⁴⁰ “[VIEW OF EXTENSIONS TO POWER HOUSE, WHITE BAY, DARLING HARBOUR GOODS, NSW].”

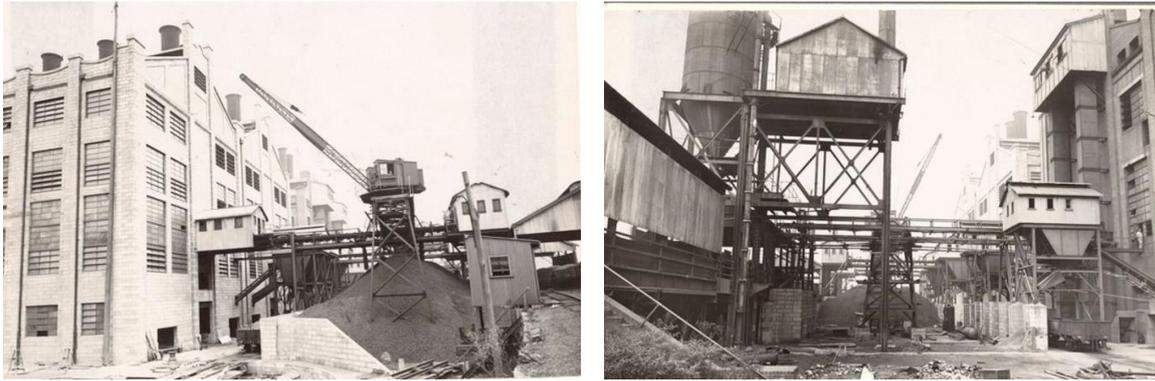


Figure 80: White Bay Power House, 23 April 1928, showing old and new coal conveyors.
Source: NSW State Archives & Records, FL1783668²⁴¹

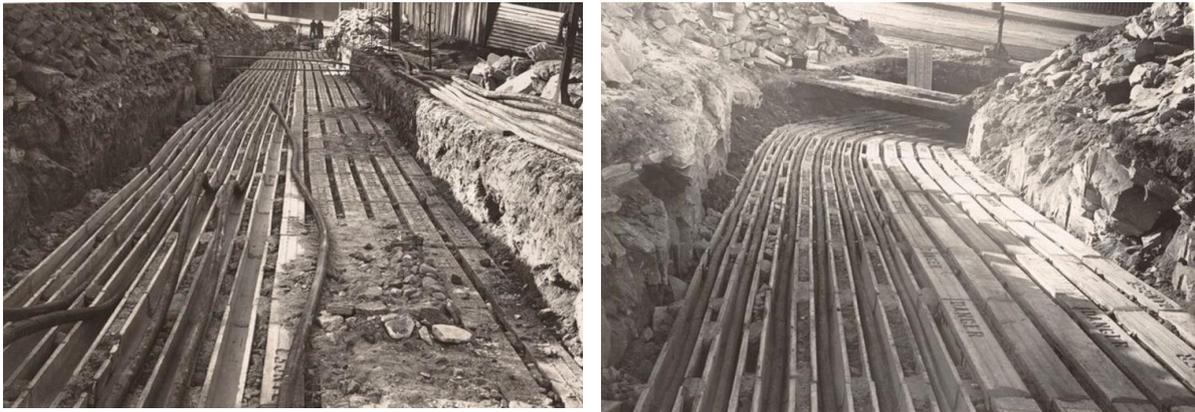


Figure 81: Cable laying from the White Bay Power House, 23 April 1928. Source: NSW State Archives & Records, FL1783386²⁴²



Figure 82: White Bay Power House, 12 February 1930, showing the coal stack and coal and ash handling plant in front of Boiler House No. 1 and 2. Source: NSW State Archives & Records, FL1783902²⁴³

²⁴¹ “[COAL CONVEYORS AT POWER HOUSE, WHITE BAY, DARLING HARBOUR GOODS, NSW],” accessed August 6, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1782555.

²⁴² “[CABLE LAYING FROM POWER STATION, WHITE BAY, DARLING HARBOUR GOODS, NSW],” accessed August 6, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1781228.

²⁴³ “[COAL AND ASH HANDLING PLANT AT POWER STATION, WHITE BAY, DARLING HARBOUR GOODS, NSW],” accessed August 6, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1782609.



Figure 83: White Bay Power House, 12 February 1930, showing the coal stack and coal and ash handling plant in front of Boiler House No. 1 and 2. Source: NSW State Archives & Records, FL1783902²⁴⁴

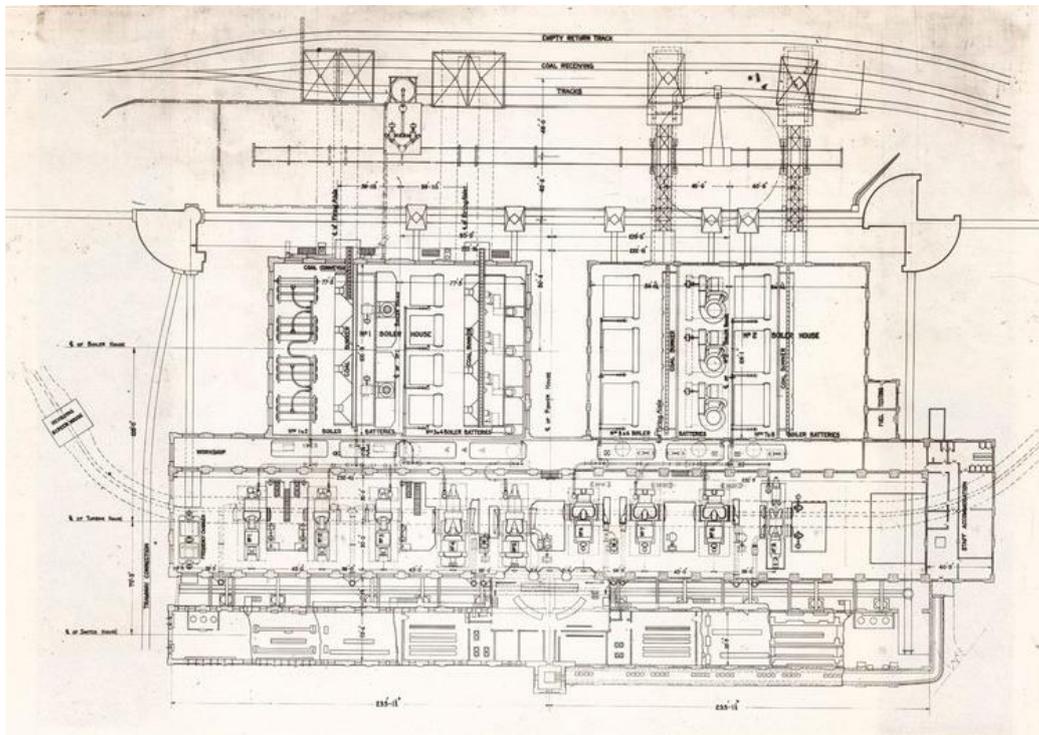


Figure 84: Diagram of White Bay Power House, 12 February 1930. Source: NSW State Archives & Records, FL1784052²⁴⁵

²⁴⁴ “[COAL AND ASH HANDLING PLANT AT POWER STATION, WHITE BAY, DARLING HARBOUR GOODS, NSW].”

²⁴⁵ “[POWER HOUSE EXTENSIONS, WHITE BAY, DARLING HARBOUR GOODS, NSW].”

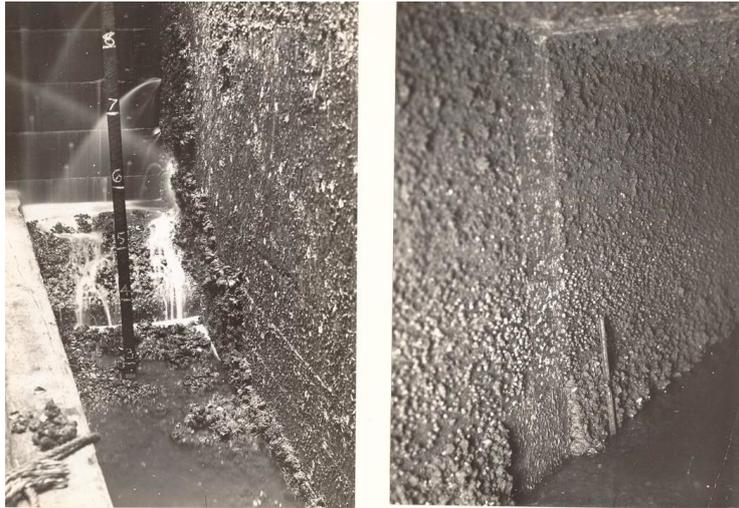


Figure 85: White Bay Power House, 17 June 1931, showing details of the circulating water conduit. Source: NSW State Archives & Records, FL1784147²⁴⁶

2.4.3 Other Development (1920s-1930s)

2.4.3.1 The Railway Department Steel Works (White Bay Steel Works)

By July 1914, the White Bay Steel Works had been acquired by the Railway Commissioners of NSW to become part of the White Bay Power Station operations.²⁴⁷ The steel works were purchased to “economise the expense” of constructing the power house.²⁴⁸ In early 1916, as part of the proposed extension of the steel works, the Railway Commissioners submitted an application “for closing of a portion of a street, and the diversion of Swan-Street and the Wardell-road to Glebe Island Railway” to Balmain Council “in order that the work of extension can be proceeded with as speedily as possible.”²⁴⁹ Plans for a proposed siding to the steel works were prepared in April 1916.²⁵⁰

The Railway Department Steel Works at White Bay, still known as ‘White Bay Steel Works’, continued to fabricate steel products, supplying for instance the steel frame for the Darling Harbour receiving goods shed for NSW Railways in 1919.²⁵¹ A “great deal of the steel work used in railway bridge construction city and country” was made at White Bay during the 1920s.²⁵²

A plan prepared between 1923 and 1928 as part of extensions to the White Bay Power House (Figure 93) shows that the steel works occupied the entire area to the east of Swan Street by that time, including the former timber yard site. The plan shows that the carpenter’s shop and general store were located near the corner of the deviated Swan and Robert Street, and an office was also situated nearby. The carpenter’s shop, pattern makers store, plumber, latrines, and engineer’s office were all located in the area of the former timber yard. The plan also shows the various sidings and tracks for coal hoppers and other transport vehicles. The carpenter’s shop was likely constructed in 1916,

²⁴⁶ “[CONDUIT CIRCULATING WATER AT POWER STATION, WHITE BAY, DARLING HARBOUR GOODS, NSW],” accessed August 10, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE1782362.

²⁴⁷ “Architects, Builders and Engineers.,” 4.

²⁴⁸ “A Huge Undertaking —The Electric Power House at White Bay, Sydney.,” *Australian Town and Country Journal*, July 22, 1914, 35, 35, <http://nla.gov.au/nla.news-article263749779>.

²⁴⁹ “GENERAL NOTES.,” *Sydney Morning Herald*, January 18, 1916, 6, <http://nla.gov.au/nla.news-article15637634>.

²⁵⁰ Transport for NSW Plan Room, ‘N.S.W.R. Glebe Island – Proposed Siding to White Bay Steel Works,’ dated 14 April 1916, 0240523.

²⁵¹ F. Ernest Stowe, “Steel Section - Steel and Steel Construction II.,” *Building* 25, no. 146 (October 11, 1919): 26–29.

²⁵² “Railway Bridges in the Making,” *Daily Telegraph*, May 15, 1925, 12, <http://nla.gov.au/nla.news-article245239006>.

reusing a relocated carpenter's shop from Alexandria, as noted on plans dated 26 November 1916 (Figure 87).

It is unclear whether any of the buildings within the former area of the timber yard had originally been built during the occupation by Millars' Timber & Trading Co. A diagram prepared on 23 June 1917 (Figure 88) only shows an 'Office' at the western end of the Glebe Island Wharves, and it is possible that this was a building constructed as part of the timber yard after 1909 and was reused as the engineer's building from c1918, when Millars' Timber & Trading Co. vacated the site. It was certainly built between 1909 and 1917.

From the mid-1920s, plans were made to relocate the steel works to the new Railway Workshops at Chullora. Construction of the new facility at Chullora had begun with the construction of the boiler shop in late 1921 and by 1926 a welding shop was noted, forming part of the White Bay steelworks which was later to be "concentrated also at Chullora."²⁵³ This coincided with the Sydney Harbour Trust's plans to establish a site for specialised cargo handling facilities at White Bay. With the welding shop at Chullora completed in 1927, and the main workshop building constructed in 1928, the transfer of machinery and operations from White Bay to Chullora was carried out later that year and completed in early 1929.²⁵⁴ The relocated buildings and machinery formed part of the new Permanent Way Workshops.

A report prepared by Godden Mackay Ltd in 1919 on the Chullora Railway Workshops noted about the 1928 transfer:

*This included the demolition of the smaller buildings at White Bay and their re-erection at Chullora. The Fodder Store was transferred complete, the Pattern Shop was built from the remains of the White Bay Carpenters Shop, the Pattern Store from the General Store at White Bay, the Wheelwrights and Saddlers was from the Concrete Shed and the Drawing Office was also transferred complete.*²⁵⁵

The Pattern Shop and the Pattern Store at Chullora (former Carpenters Shop and General Store, respectively) were noted as timber framed, corrugated iron buildings.²⁵⁶ The Wheelwrights and Saddlers building (former Concrete Shed) was also noted as a "timber framed and corrugated iron clad single storey shed measuring 168 feet by 33 feet, divided internally into four sections by walls."²⁵⁷ The Concrete Shed appears to have been located on the western side of Swan Street, near the turntable and roundhouse, and was annotated as such on the plan in Figure 93.

Not all the buildings and machinery seem to have been transferred to Chullora. On 18 September 1929 an auction sale of "buildings for demolition and removal" and "surplus engineering machinery and materials" was held at the White Bay Steel Works site.²⁵⁸ Offered for sale were "11 buildings, built of galvanised iron, and 3 built of weatherboard, with iron roofs, being large Workshops, Offices, Storerooms, and Sheds"²⁵⁹ as well as leftover corrugated iron and timber, one boiler, several travelling cranes, one hydraulic pump and various other machinery. After the removal of the buildings, the former steel works site remained vacant for a while and started to be overgrown with weeds

²⁵³ "CHULLORA," *Sydney Morning Herald*, November 8, 1926, 12, <http://nla.gov.au/nla.news-article16316607>; Godden Mackay Pty Ltd, "Chullora Railway Workshops. History and Site Development. A Report for the State Rail Authority," March 1991, 8.

²⁵⁴ Godden Mackay Pty Ltd, "Chullora Railway Workshops. History and Site Development. A Report for the State Rail Authority," 53.

²⁵⁵ Godden Mackay Pty Ltd, 54.

²⁵⁶ Godden Mackay Pty Ltd, 58.

²⁵⁷ Godden Mackay Pty Ltd, 56.

²⁵⁸ "Advertising," *Sydney Morning Herald*, September 18, 1929, 22, <http://nla.gov.au/nla.news-article16584916>.

²⁵⁹ "Advertising," 22.

(Figure 99).²⁶⁰ The roundhouse and turntable remained standing at that time, with the turntable later said to have been removed to Broadmeadow.²⁶¹

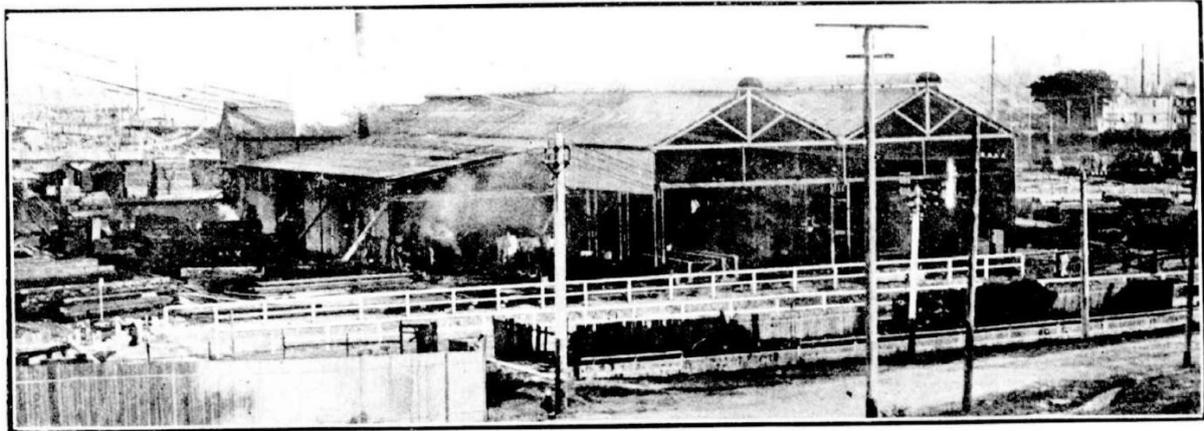


Figure 86: The White Bay Steel Works, 1914, after acquisition by the Railway Commissioners of NSW. Looking south-west, across the stormwater channel at the front.²⁶²

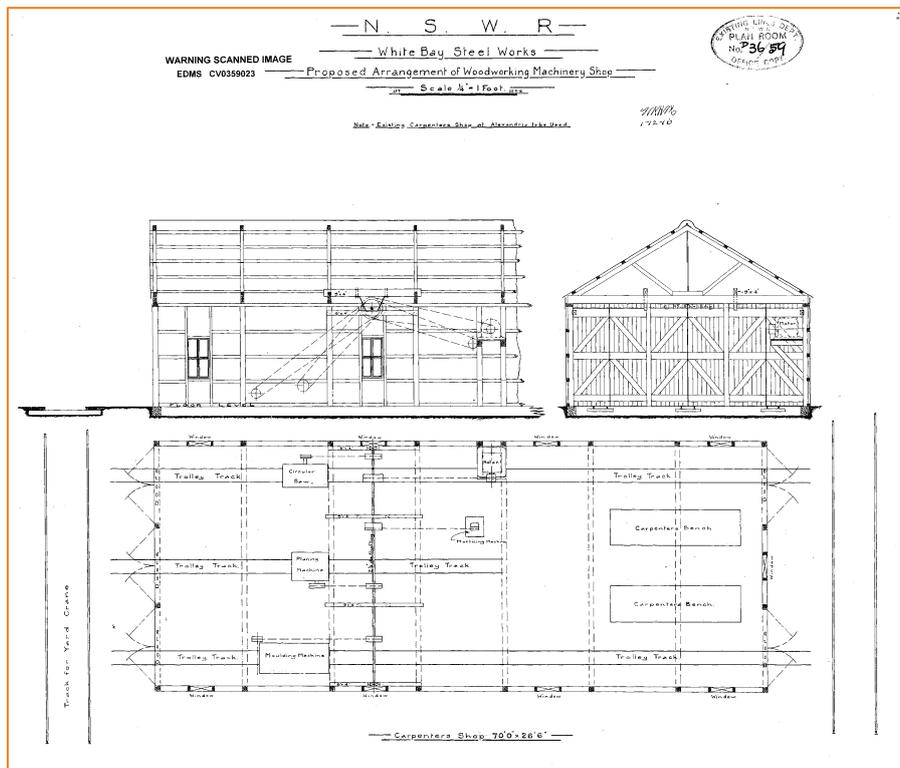


Figure 87: Plan for the 'Proposed Arrangement of Woodworking Machinery Shop' at the White Bay Steel Works, dated 25 November 1916, noting 'Existing Carpenters Shop at Alexandria to be used'. Source: Transport for NSW Plan Room, 0359023

²⁶⁰ "HARBOR SITE MINE," *Daily Telegraph*, June 23, 1931, 7, <http://nla.gov.au/nla.news-article246249443>.

²⁶¹ Transport for NSW Plan Room, 'NSWR Glebe Island Compilation', dated 4 June 1931, amended 31 May 1945, with later annotations, 592/25:689, 0049138 AOC

²⁶² "A Huge Undertaking — The Electric Power House at White Bay, Sydney.," 35.

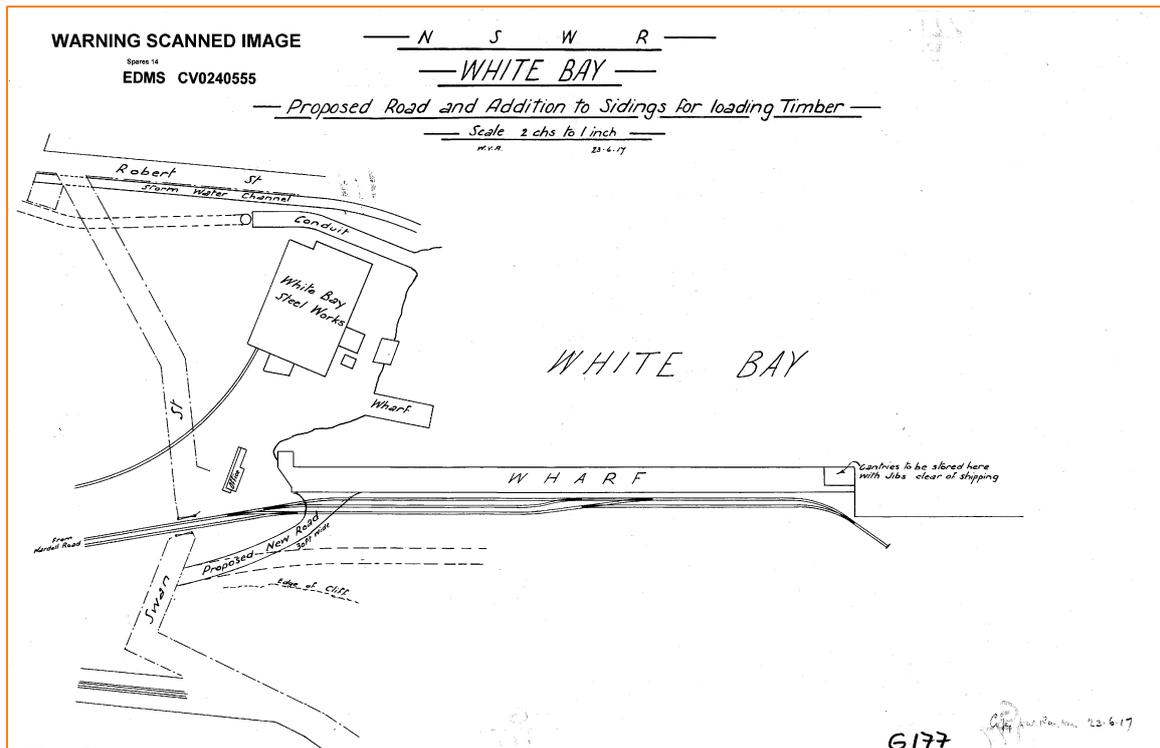


Figure 88: ‘NSWR – White Bay – Proposed Road and Addition to Sidings for loading Timber’, dated 23 June 1917, showing the White Bay Steel Works at top left, with an ‘Office’ noted at the western end of the Glebe Island Wharf. Source: Transport for NSW Plan Room, 0240555



Figure 89: The northern portion of the Railway Department Steel Works in c1919, after having been extended. The ‘White Bay Steel Works’ signage is visible alongside the large shed at the front. The buildings circled orange, located on Swan Street, were the Wheelwrights shop and a store. The small building on the left of the image was the carpenters shop. Source: SLNSW, FL412660²⁶³

²⁶³ “Series 03 Part 02.”



Figure 90: The southern portion of the Railway Department Steel Works, c1919. Some of these buildings may have been constructed during the 1910s by Millar's Timber & Trading Co., and were reused by the steel works. The building on the left was later noted as the Engineer's Building. Source: SLNSW, FL412660²⁶⁴



Figure 91: The northern portion of the White Bay Steel Works, 28 September 1920, on right. The Wheelwrights Shop at top right appears to have been extended. Just visible on the left are the carpenter's shop and the smaller pattern maker store. Source: SLNSW, FL 412658²⁶⁵

²⁶⁴ "Series 03 Part 02."

²⁶⁵ "Series 03 Part 02."



Figure 92: The White Bay Steel Works, on right, 9 June 1922. The stormwater channel is visible on the left and the circulating water conduit, built in c1913, to the right. Source: SLNSW, FL 412667²⁶⁶

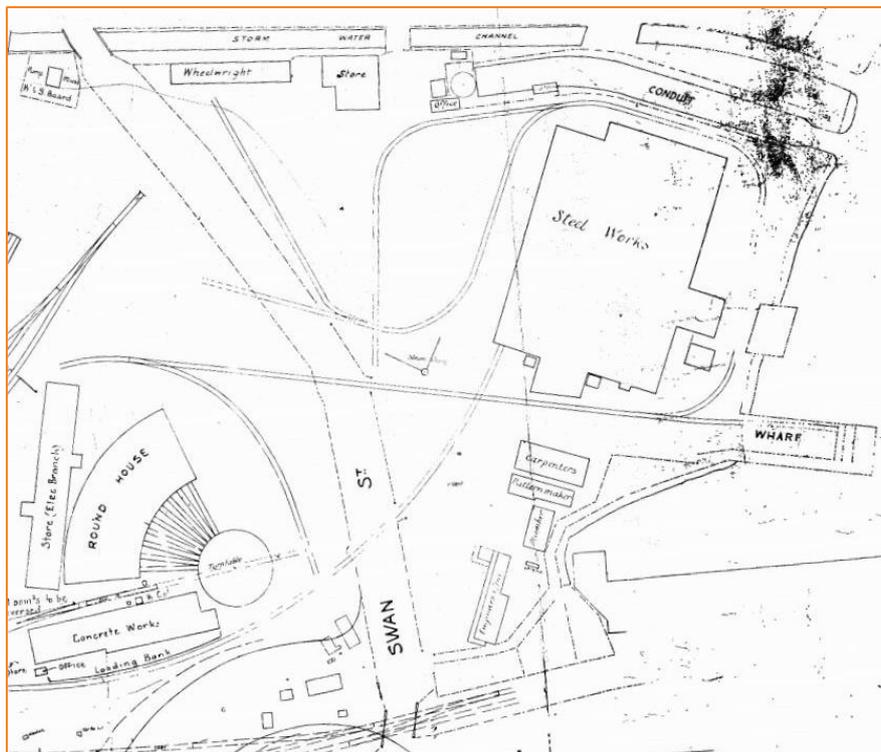


Figure 93: Plan prepared ca 1923 to 1928, showing the White Bay Steel Works as part of the power house site. Swan Street has been deviated by that time, and the water conduit built. Names of buildings are also noted on this plan, as well as sidings and tracks. Source: Transport for NSW Plan Room, 0049125

²⁶⁶ "Series 03 Part 02."

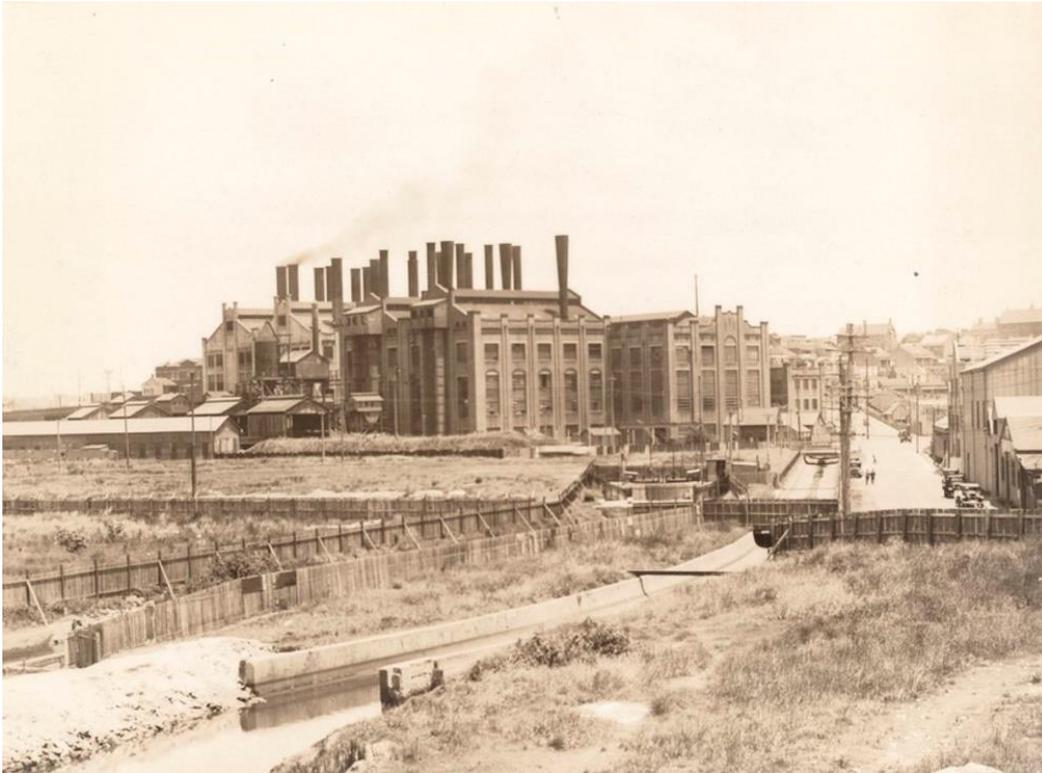


Figure 94: “Overall View of Power House, White Bay”, undated, c1930s, showing the site after demolition of the buildings associated with the former Steel Works on the left. The photos also shows the Beattie Street channel Source: NSW State Archives & Records, NRS-17420-2-4-363/092, FL1783346

2.4.3.2 Vacuum Oil Company 1926

In April 1926, the Vacuum Oil Company Pty Ltd submitted an application to Balmain Council for construction of a distributing warehouse on the site of the old abattoir and refrigeration works on Glebe Island, at a cost of £500,000.²⁶⁷ The works included petrol storage tanks and warehouse premises. A 1930s photograph shows the new facility after initial construction (Figure 95).

Vacuum Oil, today part of Mobil, had begun its operations in Melbourne in 1895 and was incorporated in 1904.²⁶⁸ Producing lubricating products, it grew rapidly and merged with the Colonial Oil Co in 1908, now also offering kerosene and motor spirit. With the increased popularity of cars in Australia, Vacuum Oil Co. expanded into Sydney in 1924, when it opened its first bulk petroleum products terminal at Pulpit Point, Hunters Hill and shortly later occupied the site at Glebe Island, serviced by a siding from the Rozelle Yards.

²⁶⁷ “VACUUM OIL COMPANY.,” *Daily Examiner*, April 24, 1926, 7, <http://nla.gov.au/nla.news-article195642845>; “VACUUM OIL.,” *Sydney Morning Herald*, April 23, 1926, 11, <http://nla.gov.au/nla.news-article16287833>; “OIL WAREHOUSE FOR BALMAIN,” *Evening News*, April 21, 1926, 7, <http://nla.gov.au/nla.news-article117280907>.

²⁶⁸ “Mobil History | ExxonMobil Australia,” ExxonMobil, accessed August 3, 2021, <https://www.exxonmobil.com.au:443/Company/Who-we-are/Mobil-history>.



Figure 95: Aerial photograph, 1930s, by Milton Kent, showing the Vacuum Oil Company's works at centre along with the Glebe Island Grain terminal and the railway roundhouse.
Source: SLNSW, FL8805530, c079150007²⁶⁹

2.4.3.3 Construction of No. 1 Balmain Coal Loading Wharf (1930s)

While the wheat loading wharfage at Glebe Island was extended in the early 1930s, work “commenced in January, 1930, in connection with providing new coal-loading accommodation, comprising a long-shore wharf and a jetty at White Bay in replacement of the existing railway jetties at Pyrmont.”²⁷⁰ As part of the scheme, the old wharf at White Bay was demolished (Figure 117)

Construction of the new coal loading wharf had progressed well up to the end of September, but subsequently stopped due to financial issues caused by the Great Depression. The new, incomplete wharf is visible in Figure 100. In January 1936 it was reported that “erection of new coal loading jetties at White Bay had been recommenced after the depression.”²⁷¹ The new coal loading facility was known as “No. 1 Balmain Wharf” and appears to have been in use by December 1937.²⁷² It is visible in the 1943 aerial (Figure 104), by which time additional land had been reclaimed between the new wharf and the area of the stormwater and circulation channels as well as in the area of the junction of White Bay and Glebe Island.

The area to the west of the wharf, including the railway yards, continued in its former use, with plans showing the arrangement and purposes of sidings and tracks, which appear to have remained largely the same (Figure 97 and Figure 98). A Yardmaster's building was noted by 1929 near the Barnes Street overbridge (Figure 97), and a new coal siding with coal stage had been added to the west of the engine shed. A new 'Union Siding' had also been added in c1928 to service the Atlantic Union Oil Company, which opened their bulk storage depot on the northern side of White Bay, on the Balmain

²⁶⁹ “Item 08: Milton Kent Aerial Vacuum Oil Company Views of Brisbane, Concord, Glebe Island, Mascot, North Sydney, Pyrmont, Pulpit Point and Sydney, between 1928-1940,” accessed July 29, 2021, <https://archival.sl.nsw.gov.au/Details/archive/110366599>.

²⁷⁰ “WORK OF HARBOUR TRUST COMMISSIONERS,” 8.

²⁷¹ “Fate Of Future Work On The Waterfront,” *Sun*, January 5, 1936, 2, <http://nla.gov.au/nla.news-article230086060>.

²⁷² “PROJECTED MOVEMENTS OF STEAMERS TO AND FROM SYDNEY,” *Daily Commercial News and Shipping List*, December 7, 1937, 8, <http://nla.gov.au/nla.news-article161969772>.

peninsula, in May 1928 (Figure 96).²⁷³ The works contained six benzine tanks as well as two Foamite tanks, with the latter constructed as a fire safety measure. Pipelines delivered their products to the 'Union Siding' at White Bay, as described in 1929: "Underground, through piping, motor spirit and kerosene can be pumped from the big main tanks to the Rozelle railway siding (a distance of approximately a mile). And it seems that a 5,000 gallon tank car can stand away at the railway siding at Rozelle and be filled in 70 minutes by pumps at the Balmain Terminal."²⁷⁴

The Union Siding had an elevated filling stage and a travelling gantry. Pipelines leading from the area of the siding in the direction of the Atlantic Union Oil works, partly underground and partly above ground across the site, over the circulating water conduit and stormwater channel, visible on photographic aerials from the 1940s (Figure 104) and noted on a diagram dated 1951 (Figure 121) were likely connected with the operations of the company.

By 1934, the 'White Bay Power Station Sidings' comprised Nos. 1 and 2 Ash Sidings, with Dead-end, and Nos. 1 and 2 Coal Bin Sidings.²⁷⁵ The Steel Works siding was still existing as two dead-end sidings, connected with the Union Siding, and the Loco. The Repair Sidings also comprised two dead-end sidings.



Figure 96: 'Atlantic Motor Oil Depot, Sydney with a ship moored at the dock', by A. G. Foster, taken after May 1928 when the depot was opened on the southern foreshore of the Balmain peninsula. It was connected with the Union Siding at White Bay by underground pipes. Source: National Library of Australia²⁷⁶

²⁷³ "OIL MONEY," *Sun*, May 25, 1928, 21, <http://nla.gov.au/nla.news-article223215711>.

²⁷⁴ "ATLANTIC UNION OIL CO.," *Glen Innes Examiner*, March 16, 1929, 3, <http://nla.gov.au/nla.news-article178576003>.

²⁷⁵ Denniss, "Metropolitan Goods Lines - Sydney Station West Signal-Box to Wardell Road Junction Signal-Box via Darling Island Junction," 17.

²⁷⁶ "Atlantic Motor Oil Depot, Sydney with a Ship Moored at the Dock [Picture]," Trove, accessed August 11, 2021, <https://nla.gov.au/nla.obj-142722304>.

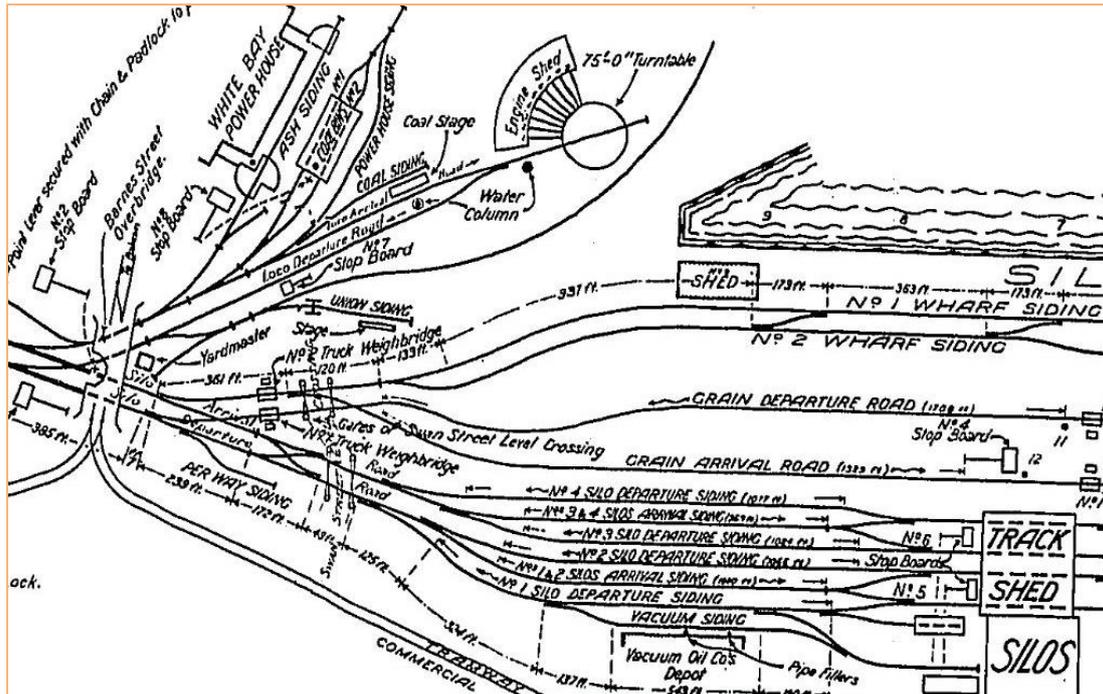


Figure 97: Detail from ‘NSWR Rozelle – Diagram of Yard and Signalling Arrangements’ dated 30 May 1929, showing the area of the White Bay Power House and Glebe Island Wharves.²⁷⁷

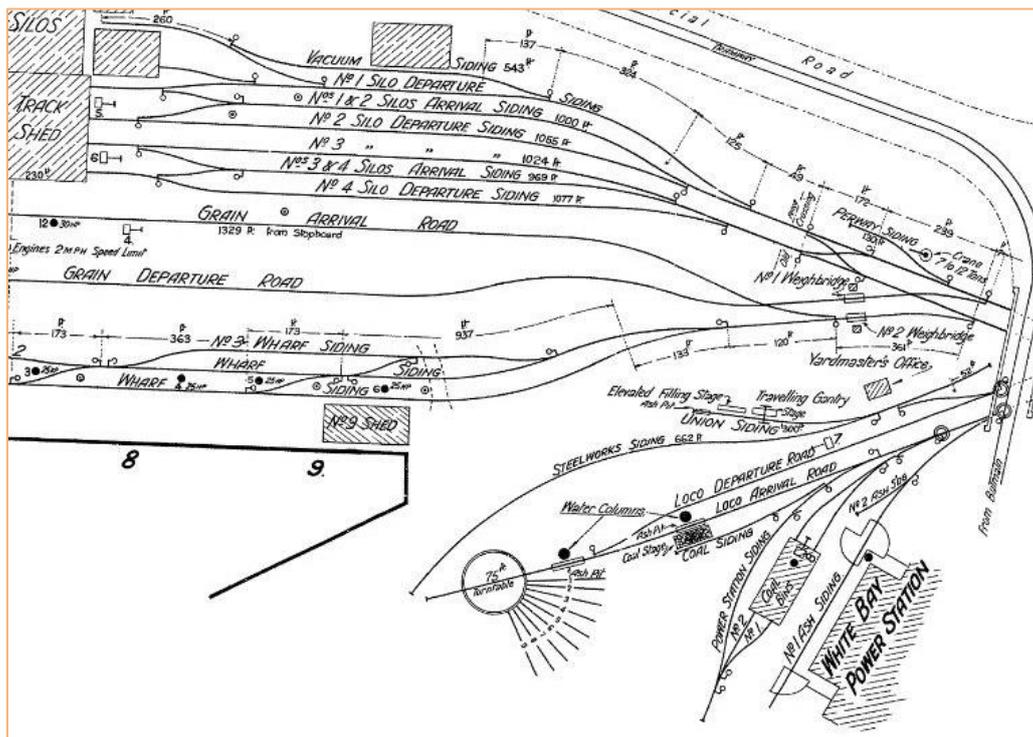


Figure 98: Detail from ‘Department of Railways, New South Wales – Rozelle,’ dated 18 June 1934, by the Office of the Signal Engineer, showing the area of the White Bay Power House and Glebe Island Wharves.²⁷⁸

²⁷⁷ C. J. Goode, “Metropolitan Goods Lines - Rozelle,” NSW Government Railways Circular, no. 28–3 (January 1, 1930).

²⁷⁸ Denniss, “Metropolitan Goods Lines - Sydney Station West Signal-Box to Wardell Road Junction Signal-Box via Darling Island Junction.”



Figure 99: White Bay Power Station site, c1931. This photograph was taken after removal of all the buildings connected with the steel works at the head of the bay. The roundhouse was still standing by that time. Construction of a new long-shore wharf had begun but came to a halt due to financial issues. Source: City of Sydney Archives, SRC352²⁷⁹



Figure 100: Aerial view of the White Bay Power Station site, c1931, by Milton Kent. The incomplete long-shore wharf is visible at the top, while the new Union Siding and Yardmaster's building are shown at centre, circled. Source: SLNSW, ON 447/Box 157, FL8812345²⁸⁰

²⁷⁹ "White Bay Power Station," City of Sydney Archives, accessed August 10, 2021, <https://archives.cityofsydney.nsw.gov.au/nodes/view/568441>.

²⁸⁰ "Item 06: Milton Kent Aerial Views of Alexandria/Erskineville, Beaconsfield, Cockatoo Island, Mascot, Rozelle, 193-," accessed July 23, 2021, <https://archival.sl.nsw.gov.au/Details/archive/110367821>.

2.4.4 Glebe Island and White Bay during World War II

In February 1940, five months after the outbreak of war, the Eastern Command Headquarters at the Victoria Barracks issued a schedule of places that were declared “prohibited areas under the National Security Regulations”, under which it was “unlawful to enter, approach, inspect, pass over or be in the neighbourhood of a prohibited place.”²⁸¹ Places included in the schedule were the Pymont, White Bay, Balmain and Ultimo Power Stations, the Australian Gas Light Company premises at Concord, Alexandria, Canterbury, Pymble and Holroyd, and the North Shore Gas Company Ltd works at Oyster Cove, Neutral Bay and Manly.²⁸² By May 1940, the Central Supply Depot of the Eastern Command Army Services Corps was established at White Bay, however, it was reportedly moved to Marrickville by April the following year.²⁸³

The Glebe Island wharfage facilities became a “major armament and engineer’s supply depot for the US Army”²⁸⁴ which also used to site for dis-embarking and re-embarking troops. The RAAF also used some of the existing facilities for storage, notably No 9 Shed and both the Australian and American troops erected further structures on Glebe Island and the vacant land on White Bay. A photograph likely shows the area just before the first buildings went up, with a concrete platform built in front of the wharf (Figure 103). All the while, Glebe Island continued to be used for storage and export of wheat and other cargo.

The exact location and purpose of new buildings constructed at that time is difficult to ascertain. The National Archives of Australia hold various documents that relate to the period of military occupation of Glebe Island and White Bay, including but not limited to the following:²⁸⁵

Series No.	Control Symbol	Title	Date	Item ID
AWM61	532/1/2064	[Reports - General - Inspection of Supply Depots - Report on visit of inspection, Eastern Command, May 1940; Vacation of White Bay premises]	1940-40	5182433
SP16/4	32	Lease of Storage Accommodation at Glebe Island by Australian Military Forces	1939-41	3166457
SP16/4	362	[Occupation by Australian Military forces of No 1 Shed, No 1 Berth - Glebe Island, Sydney. Includes copies of plans of area to be occupied]	1941-42	3167517
SP857/6	PH/3032	Occupation and use of area at rear of No 9 wharf Glebe Island [Box 904]	1942-42	090775
SP459/1	518/1/4318	White Bay supply stores [Box 242]	1942-44	1539071
MP150/1	569/224/5	Storage accommodation for United States Navy on Glebe Island and at Harris Street, Pymont NSW	1942-44	5937099
AWM193	35 PART 3	[Eastern Command "G" Branch records:] Water supply: Returned stores depot Moorebank; Lead	1942-1945	1803235

²⁸¹ “PROHIBITED AREAS,” *Daily News*, February 26, 1940, 2, <http://nla.gov.au/nla.news-article236365171>.

²⁸² “Public Notices,” *Sydney Morning Herald*, February 26, 1940, 7, <http://nla.gov.au/nla.news-article17654961>.

²⁸³ “ARMY BREAD CONTRACT.,” *Sydney Morning Herald*, April 9, 1941, 5, <http://nla.gov.au/nla.news-article17735656>; “HOLIDAY SUPPLIES FOR MILITARY CAMPS — TRICK RIDER AT SHOW — FINISH OF DONCASTER HANDICAP.,” *Sydney Morning Herald*, March 25, 1940, 10, <http://nla.gov.au/nla.news-article17662453>.

²⁸⁴ Thorp, “Thorp 1994,” 13.

²⁸⁵ Most of the files are held at the Sydney branch of the NAA which were closed due to COVID-19 restrictions at the time of writing.

		depot Glebe Island; Armoured fighting vehicle guard Rutherford; etc		
SP857/6	PH/3108	Requisition of storage area at Glebe Island [Box No 911]	1942-42	1090847
SP155/1	DEF34268G	GLEBE ISLAND Schedule for erection and completion of U.S. Navy store building. 03 March 1943. [Box 35]	1943-43	1683843
SP155/1	DEF34433A	GLEBE ISLAND Schedule for erection and completion of 2 timber framed buildings. 18 March 1943. [Box 35]	1943-43	1683844
A5954	523/22	Division of Import Procurement. Proposed improvements at Glebe Island Wharves. War Cabinet Agendum No. 280/1943	1943-43	679243
A2670	280/1943	War Cabinet Agendum - No 280/1943 - Division of import procurement proposed improvements at Glebe Island wharves	1943-43	9019693
SP155/1	DEF34433H	WHITE BAY Schedule for erection and completion of 2 timber framed buildings. 18 March 1943. [Box 133]	1943-43	1686275
A2671	280/1943	War Cabinet Agendum - No 280/1943 - Proposed improvements at Glebe Island wharves	1943-44	7569557
SP16/4	3379	Glebe Island - Land owned by Maritime Services Board [Hire of White Bay berths 6, 7 & 8 on Glebe Island by the US Navy. Property owned by the Maritime Services Board and required as a net storage area by the US Navy. File includes a large plan of the property] [1cm]	1943-44	3237503
SP857/6	PH/2429	Hiring of land adjoining Wharf 9 Glebe Island [Box 858]	1943-48	1089739
SP857/10	PR/1199	Glebe Island - proposed road adjacent to wharves six to nine [Box No 1199]	1944-44	1047882
SP155/1	DEF40796I	GLEBE ISLAND Specification for alterations and additions to a timber framed building. 22 March 1945. [Box 38]	1945-45	1683922
SP155/1	DEF41893H	GLEBE ISLAND Specification for construction of sealed area and other subsidiary work. 20 August 1945. [Box 39]	1945-45	1683933
SP155/1	DEF41297O	GLEBE ISLAND Specification for erection and completion of a steel and timber framed building complete with all services. 28 May 1945. [Box 39]	1945-45	1683941
SP155/1	DEF42497	GLEBE ISLAND Specification for alterations and additions to the repair shop and pallet storage area building at pallet pool headquarters. 22 February 1946. [Box 39]	1946-46	1683930
SP857/10	PR/1610	Glebe Island - Number nine wharf and adjoining land - RAAF property - lease of properties [Box No 1240]	1946-47	1048427

Based on the headings of documents held by the National Archives, and examination of aerial photographs (Figure 104 and Figure 120), and a site plan dated October 1943 (Figure 105), it appears that the R.A.A.F. occupied No. 9 Wharf at Glebe Island and, by March 1944, had constructed a new building to the south-west of No. 9 Wharf (Figure 106). This galvanised iron shed was noted as the R.A.A.F. mess room. The building was also noted on a Metropolitan Water Board survey, however, it is not visible on the 1943 and 1948 aerial photographs, suggesting that it was only standing for a short period between 1944 and 1948 at the latest. By March 1944 the location of an air raid shelter was also noted south of the concrete platform between No. 8 and No. 7 Wharf. This appears to be visible in the 1943 aerial (Figure 104). The concrete platform was one of several platforms built behind the wharves during the 1940s.

On the White Bay side, the Australian Army appears to have occupied a new, large building on the north-western side of a newly laid 'Commonwealth Siding White Bay'. A building of similar dimensions occupied the south-eastern side of that siding. This and two further buildings, located alongside the No. 1 and No. 2 Balmain Sidings (No. 1 Balmain Wharf), were occupied by the US Army, which had arrived in Australia in March 1942, landing at Glebe Island.²⁸⁶ These buildings appear to have served as massive storage areas for equipment which was shipped around the country as required. The US Army was said to have "helped to move 1,000,000 men and 500,000 tons of equipment" during the war.²⁸⁷ The roundhouse and turntable had been demolished by 1943, and the loco siding was noted as a dead end with an ash pit, coal storage and water column.

In addition to those structures erected for military purposes, works began on 29 March 1943 for provision of a Canteen for workers at the wharves, at an estimated cost of £20,000.²⁸⁸ White Bay/Glebe Island was the first of a series of canteens to be established as per the recommendations of a report submitted to the Wartime Cabinet by the Stevedoring Industry Commission. The report had concluded that "at White Bay lack of nearby meal facilities meant the loss of 325 man-hours a day on the basis of three meal breaks within 24 hours."²⁸⁹

The new canteen building was designed to provide seating accommodation for 390, and kitchen capacity for 500 meals, with plans to build other mess rooms nearby.²⁹⁰ At the time of its opening on 23 July 1943, it was said to be the first canteen to have been built on the Sydney waterfront.²⁹¹ The canteen was located within the enclosed Military area to which it was "necessary to produce a National Security Wharf Pass in order to gain entry" and these restrictions were still in place by March 1945.²⁹² The exact location of the canteen is unclear, however, it is likely that it was not built within the study area.

In January 1946, for the first time ever, relatives were allowed to welcome returning servicemen at a Sydney wharf, when the T.S.S. Canberra returned from Wewak, offloading troops at the Glebe Island Wharves.²⁹³ Later that year, family and friends farewelled troops on board HMAS Manoora at No. 8

²⁸⁶ "First U.S. Troops Landing (Glebe Island Memorial) | Monument Australia," accessed August 12, 2021, <https://monumentaustralia.org.au/themes/conflict/ww2/display/21269-first-u.s.-troops-landing-glebe-island-memorial>.

²⁸⁷ "First U.S. Troops Landing (Glebe Island Memorial) | Monument Australia."

²⁸⁸ "Advertising," *Maritime Worker*, March 20, 1943, 4, <http://nla.gov.au/nla.news-article207305641>.

²⁸⁹ "SHELTER SHEDS AND CANTEENS," *Age*, May 15, 1943, 2, <http://nla.gov.au/nla.news-article206848002>.

²⁹⁰ "WATERSIDE WORKERS' CANTEEN," *Maritime Worker*, June 19, 1943, 4, <http://nla.gov.au/nla.news-article207305748>.

²⁹¹ "Waterfront Canteen Opened," *Maritime Worker*, August 14, 1943, 10, <http://nla.gov.au/nla.news-article207305848>.

²⁹² "SYDNEY," *Maritime Worker*, March 1, 1945, 3, <http://nla.gov.au/nla.news-article207306832>.

²⁹³ "RELATIVES GREET TROOPS AT WHARFSIDE," *Sydney Morning Herald*, January 7, 1946, 3, <http://nla.gov.au/nla.news-article17966068>.

Wharf, Glebe Island, before their departure for Japan to join the British Commonwealth Occupation Force.²⁹⁴

Some of the structures erected for military purposes were purchased by the Maritime Services Board after the war and converted for port purposes.²⁹⁵ Some structures continued to be used for military purposes, including for storage of supplies that were shipped to Japan. This is said to have caused some friction between the military and the port authorities, as civilian cargo shipping began to increase, and storage facilities were needed.

It appears that those buildings that were initially occupied by the US Army were subsequently used by the Commonwealth Handling Equipment Pool (CHEP), formed in 1946 by the Australian government out of the Allied Materials Handling Standing Committee, to deal with the materials handling equipment left behind by the US Army (Figure 121).²⁹⁶ In April 1949, the Pool workshops at Balmain still contained 43 broken-down fork-lift trucks and 47 cranes.²⁹⁷



Figure 101: Photograph depicted in the *Sydney Morning Herald* of 25 March 1940, with the note: “Extra supplies to cover the holidays were transported by a fleet of lorries to military training camps on Saturday morning. The pictures show stores being loaded at the Eastern Command A.S.C. supply depot at White Bay. Note the use of wooden pallets.”²⁹⁸

²⁹⁴ “SYDNEY, NSW. 1946-04-09. FAMILY AND FRIENDS AT NO. 8 WHARF, GLEBE ISLAND, FAREWELLING TROOPS ON ...,” accessed August 3, 2021, //www.awm.gov.au/collection/C230262.

²⁹⁵ *Ibid.*

²⁹⁶ “Our History | CHEP UK,” accessed August 12, 2021, <https://www.chep.com/our-company/our-history>.

²⁹⁷ “Commonwealth Pool Wastes Handling Equipment,” *Smith’s Weekly*, April 9, 1949, 5, <http://nla.gov.au/nla.news-article235979575>.

²⁹⁸ “HOLIDAY SUPPLIES FOR MILITARY CAMPS — TRICK RIDER AT SHOW — FINISH OF DONCASTER HANDICAP.,” 10.



Figure 102: 'Linley Walker Wheat Co loading wheat on Japanese ship', photograph by Sam Hood, 1940, showing No. 9 Wharf at Glebe Island. Source: Australian National Maritime Museum, 000216418²⁹⁹



Figure 103: 'Cargo ship at No. 1 White Bay. GA0588a', dated 1950 but likely showing the site in the early 1940s, with a concrete platform poured in front of the wharf. Source: City of Sydney Archives, A-00077504³⁰⁰

²⁹⁹ "Linley Walker Wheat Co Loading Wheat on Japanese Ship," accessed August 5, 2021, <http://collections.anmm.gov.au/objects/27522/linley-walker-wheat-co-loading-wheat-on-japanese-ship>.

³⁰⁰ "Cargo Ship at N0.1 White Bay. GA0588a.," City of Sydney Archives, accessed August 5, 2021, <https://archives.cityofsydney.nsw.gov.au/nodes/view/698646>.

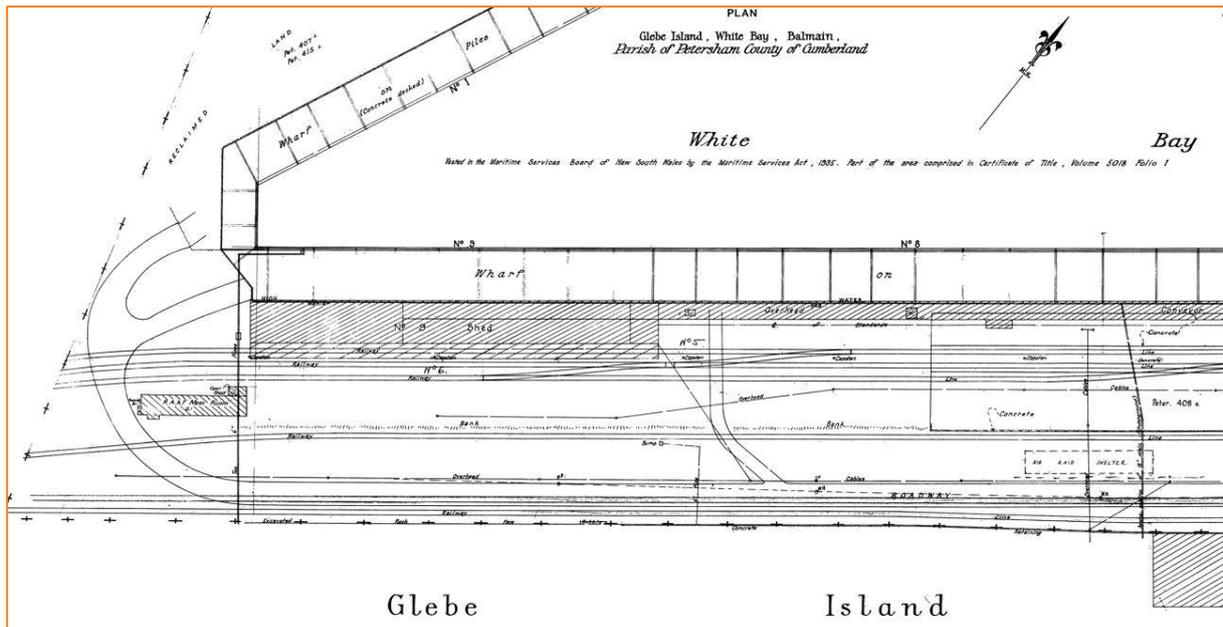


Figure 106: Detail from plan for Glebe Island, White Bay, Balmain, prepared in March 1944 and updated to May 1944, showing the R.A.A.F. mess room on left and the location of the air raid shelter on right. Source: Transport for NSW Plan Room, 0049718.



Figure 107: Survey dated September 1927 and updated to 1953, showing the R.A.A.F. mess room adjacent to Shed No. 9. Source: Sydney Water Archives, BLKWTL 182, MWS & DB Sheet 76



Figure 108: ‘Glebe Island, NSW. 1946-04-30. A convoy of 3 ton trucks from 1 supply reserve depot, waiting to unload cases of food bound for Kure, Japan.’ View from the eastern end of Glebe Island Wharf, looking west. Source: Australian War Memorial, 127455³⁰¹



Figure 109: 1948 aerial photograph showing further buildings constructed during occupation by the US and Australian armed forces, including a large building located alongside No. 1 Balmain Wharf. Source: City of Sydney Historical Atlas of Sydney

³⁰¹ “GLEBE ISLAND, NSW. 1946-04-30. A CONVOY OF 3 TON TRUCKS FROM 1 SUPPLY RESERVE DEPOT, WAITING TO ...,” accessed August 5, 2021, //www.awm.gov.au/collection/C236468.

2.4.5 Historical overlays for phase 2 (1910 – 1950)

Historic plans have been overlaid to demonstrate where the locations of former structures and landscapes in Figure 110 to Figure 115 for phase 2.



Document Path: D:\GIS\GIS_Mapping\21102_Bays_Metro_AR\IMXD\Bays_AR\Master.mxd



1919 Site Plan Power House Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:2,500
SIZE A4
DATE 24/08/2021

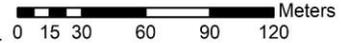
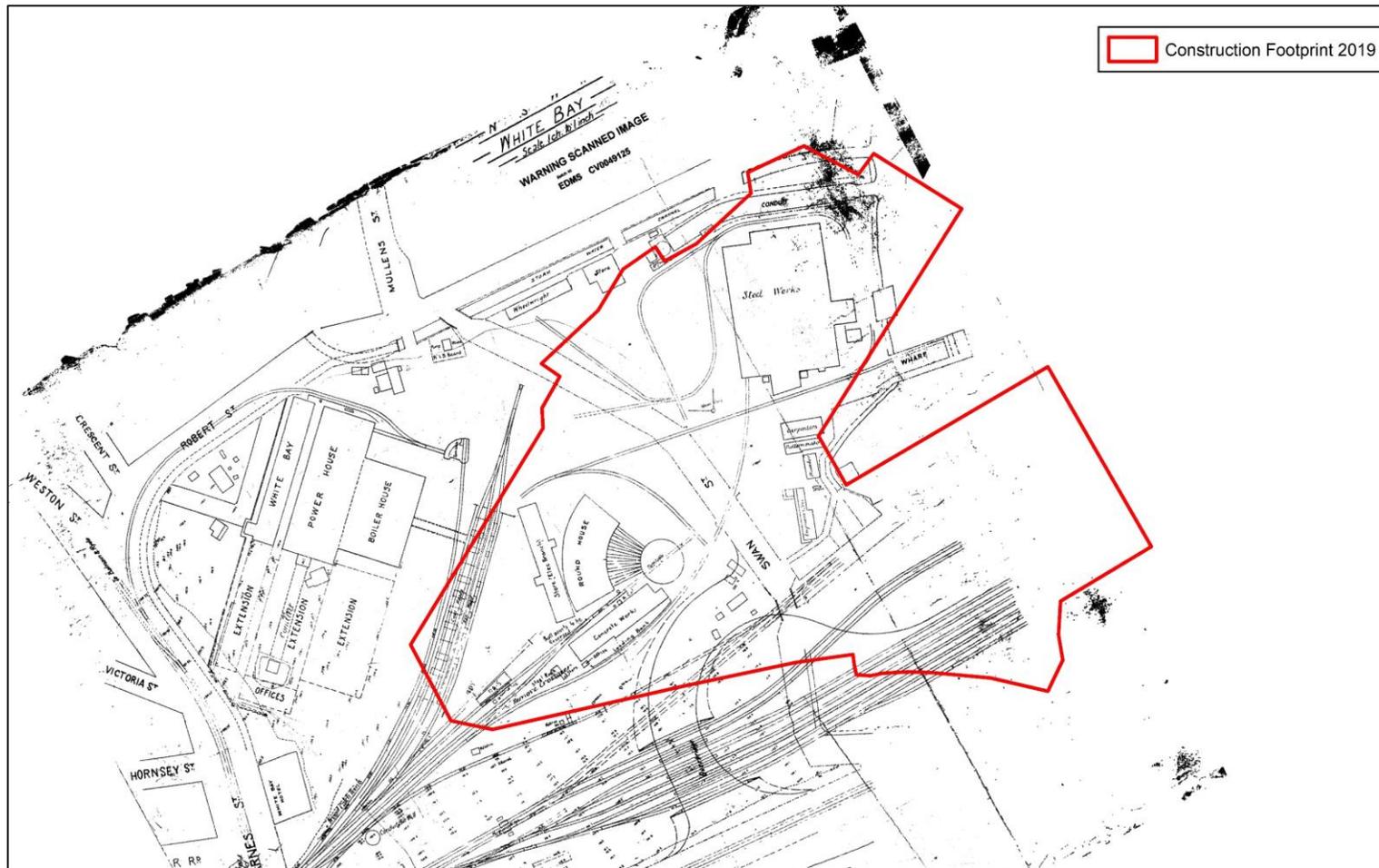


Figure 110: 1919 NSW R. Site Plan Overlay



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1920s Site Plan Power House Extension Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:2,500
SIZE A4
DATE 24/08/2021

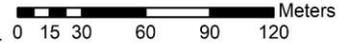
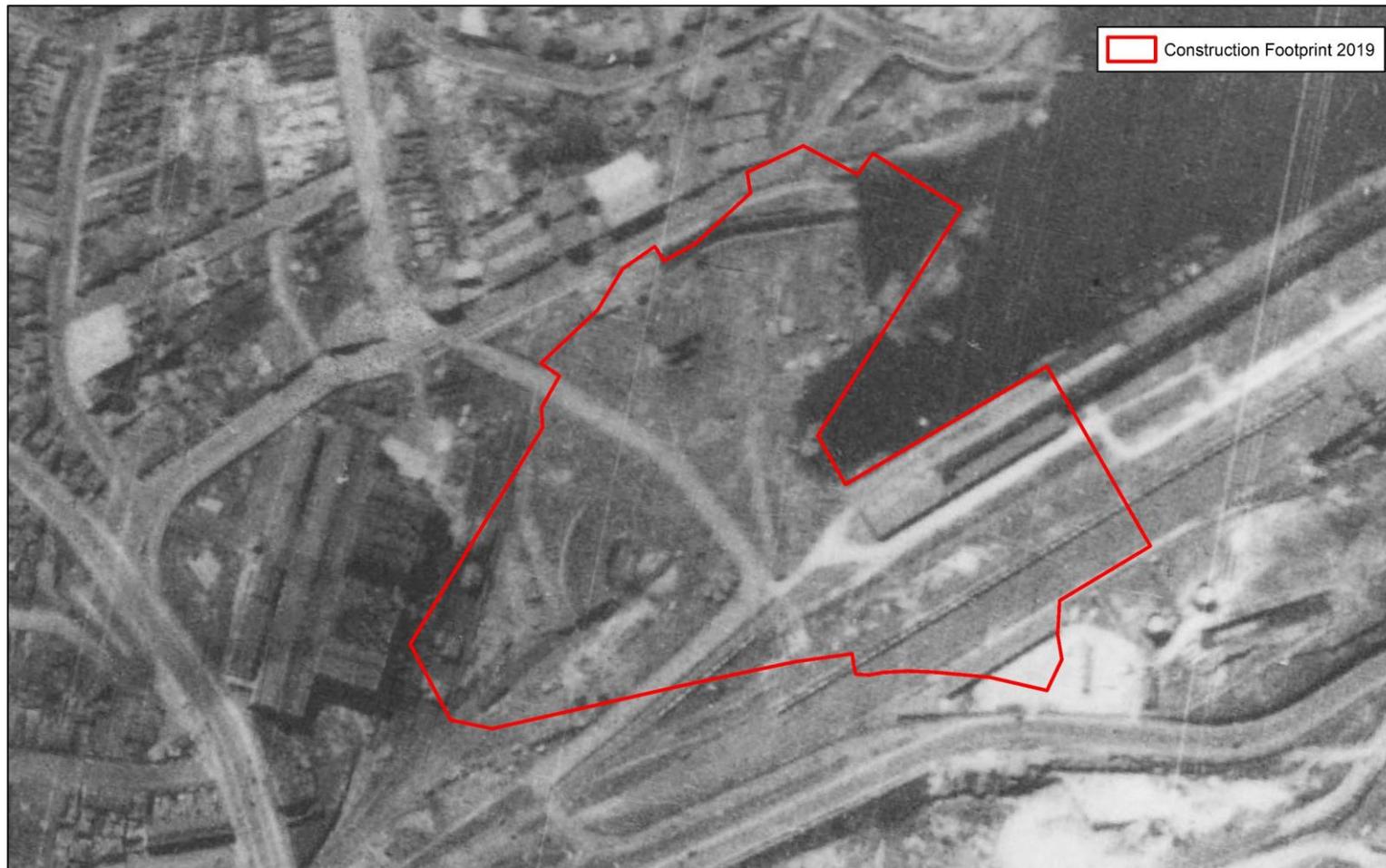


Figure 111: 1920 NSW Site Plan Power House Extension Overlay



Document Path: D:\GIS\GIS_Mapping\21102_Bays_Metro_ARD\IMXD\Bays_ARD_Master.mxd



1 January 1930 Aerial Photograph Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:2,500
SIZE A4
DATE 24/08/2021

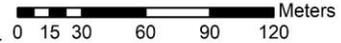
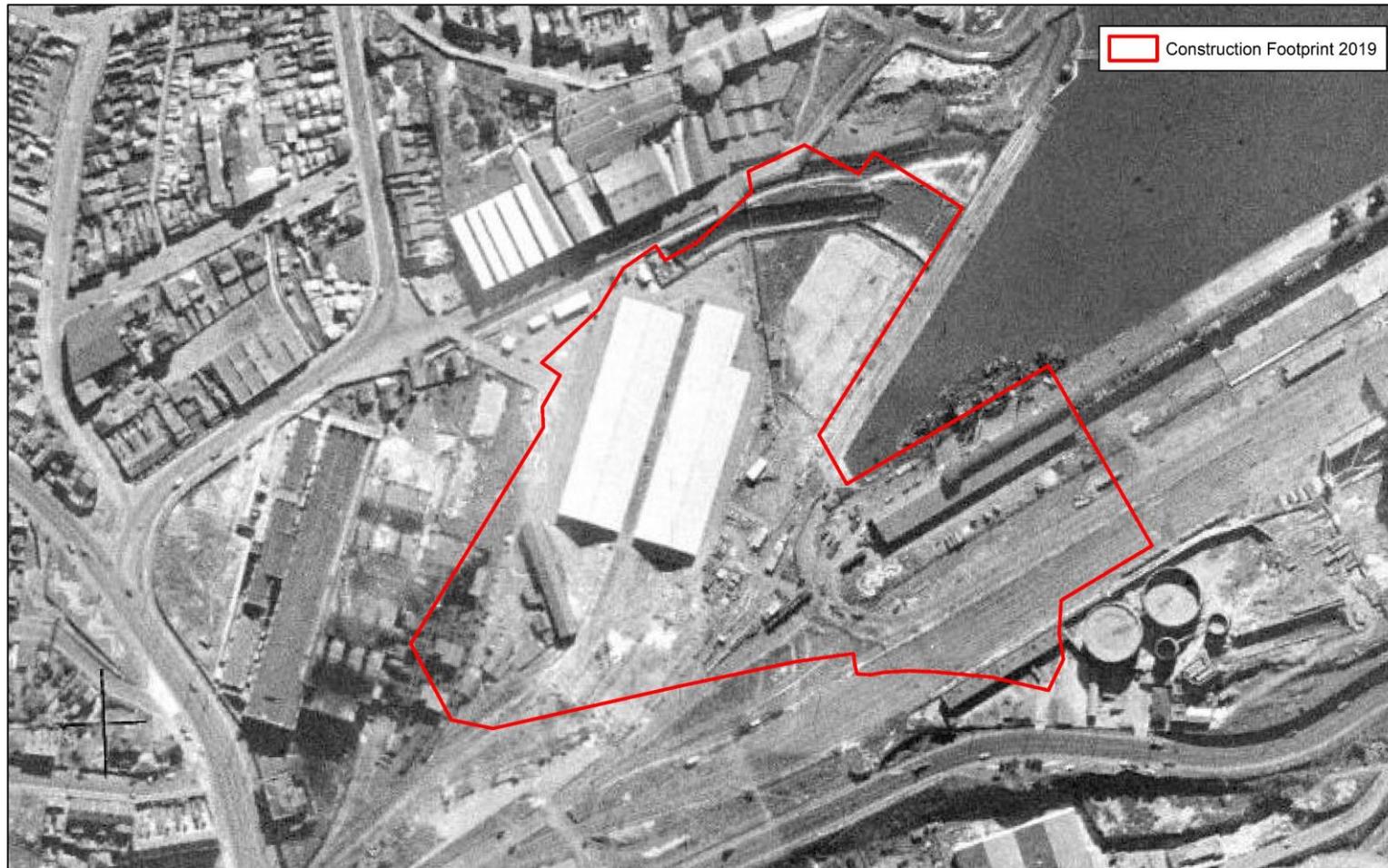


Figure 112: 1930 Aerial Photograph Overlay



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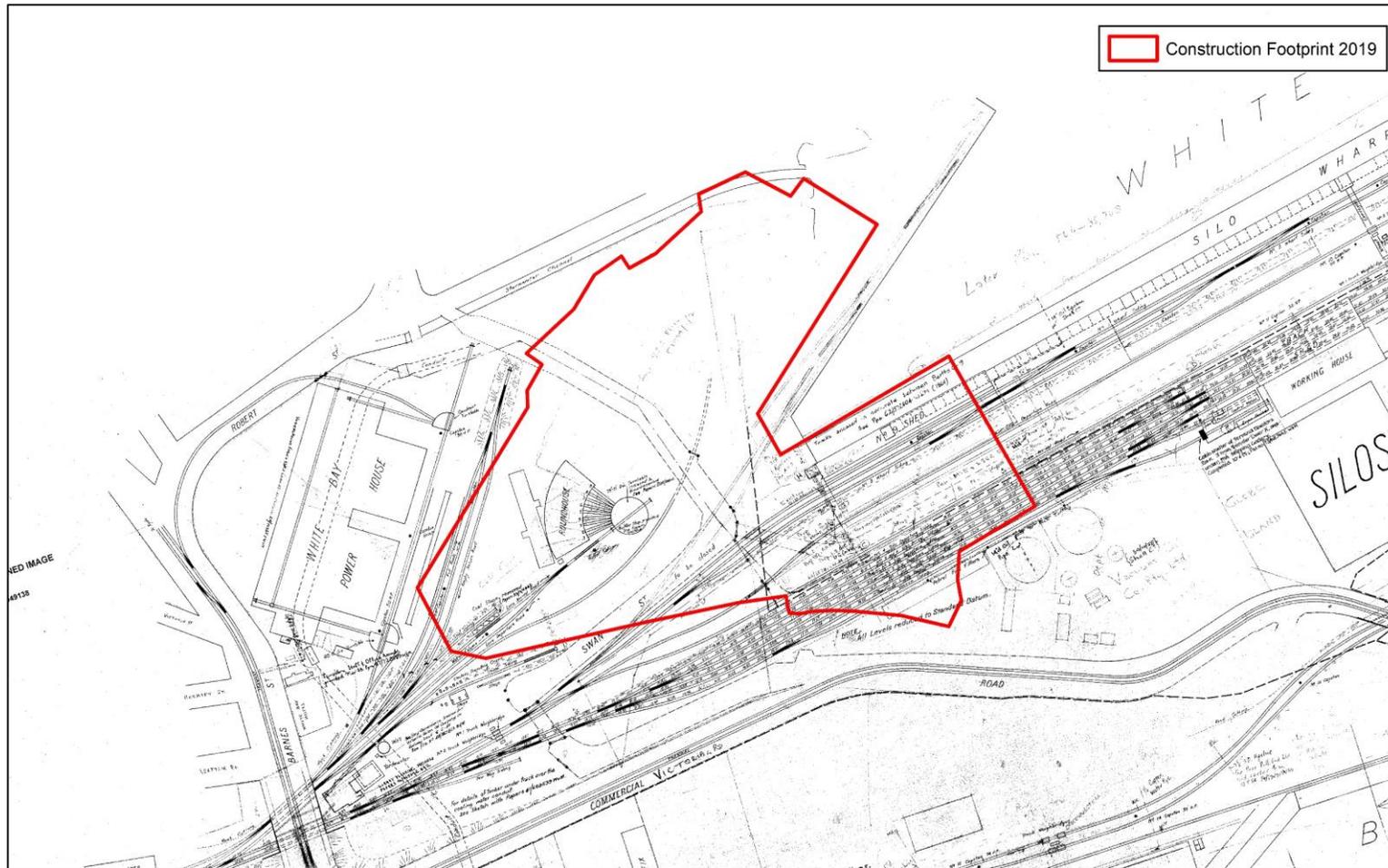
1943 Aerial Photograph Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:2,500
SIZE A4
DATE 24/08/2021



Figure 113: 1943 Historical Aerial Overlay



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1945 Glebe Island Compilation Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:3,000
SIZE A4
DATE 27/08/2021

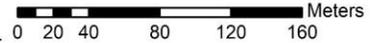


Figure 114: 1945 NSW Glebe Island Overlay



Document Path: D:\GIS\GIS_Mapping\21102_Bays_Metro_ARD\MXD\Bays_ARD_Master.mxd



1948 City of Sydney Aerial Photograph Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:5,000
SIZE A4
DATE 26/08/2021

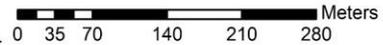


Figure 115: 1948 Aerial Photograph Overlay

2.5 Phase 3: Development for coal and bulk good shipping and handling (1950 – 1970)

2.5.1 Construction of Balmain Coal Loading Wharves (1949-52)

In late 1948, drawings were being prepared for proposed extensions to the existing stormwater and circulating channels at White Bay, as part of plans to provide a two new coal loading berths at White Bay (Figure 116). The easternmost portion of the existing stormwater channel was to be demolished and a new extension was to be provided running in a more north-easterly direction, discharging the water at the far north-eastern end of Wharf No. 1. A new deviation was also provided for the circulating water conduit, running in a more southerly direction, perpendicular with Wharf No. 1.

Photographs show that works for the construction of Balmain No. 2 Wharf were underway by the end of 1949 (Figure 117), and at around the same time, demolition of the large stores began (see Figure 118 and Figure 119). By October 1951, sections of the new circulation conduit and stormwater channel were completed, and construction of screen wells were in progress (Figure 121). As part of the works, the existing oil pipelines on the western side of Wharf No. 1 were to be relocated. These were likely connected with the Atlantic Union Co. siding and appear to have run above ground and underground across the site, running over the stormwater channels and circulating water conduit to the north-east.

By October 1951, the concrete floor of the demolished store was 'covered with piles, bricks, excavated earth and crane parts (wharf cranes)' (Figure 121). The northern portion of the wharf deck was being strengthened under the crane rails at that time, with the southern portion to be strengthened by March 1952 and the existing rails and lead of the earlier wharf to be removed and replaced with new sidings.

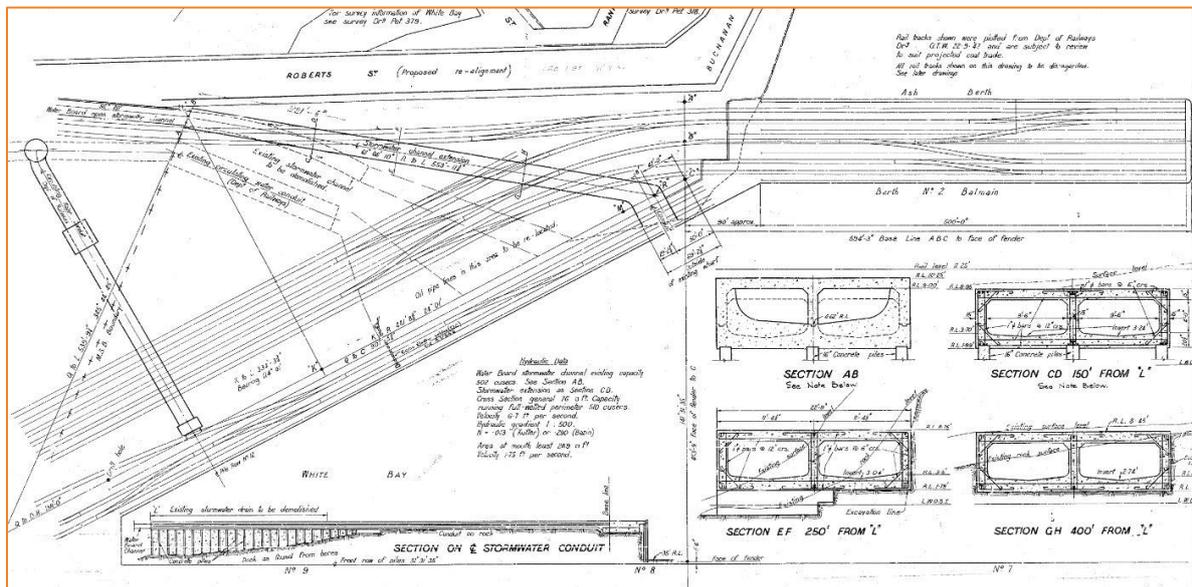


Figure 116: 'White Bay, Berths Nos 1 and 2 Balmain – Proposed Extensions of Circulating and Stormwater Channels', dated 9 November 1948 and updated to 21 September 1950. It shows the new circulating water conduit at left, and the new extension for the stormwater channel at top. Source: Transport for NSW Plan Room, A1/517



Figure 117: ‘Piles in the progress driving,’ 6 October 1949, for Balmain No. Wharf, as catalogued by the State Library of NSW, d1_07840.³⁰² This image is a better-quality version from the NSW State Archives that is wrongly described as ‘View of Demolition wharf at White Bay No. 1’. Source: NSW State Records & Archives, FL423125³⁰³



Figure 118: Aerial photograph by Milton Kent, roughly dated 1924-50 but likely taken in 1949 or 1950. It shows Wharf No. 2 under construction at top centre, and the shed adjacent to Wharf No. 1 being demolished. Source: SLNSW, c11450003, FL8811195³⁰⁴

³⁰² “Balmain No. 2 - Piles in the Progress of Driving,” accessed August 12, 2021, <https://search.sl.nsw.gov.au/permalink/f/1cvjue2/ADLIB110102848>.

³⁰³ “[View of Demolition Wharf at White Bay No.1],” accessed August 10, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE417805.

³⁰⁴ “Item 05: Milton Kent Aerial Views of Glebe Island, Kurnell, Port Kembla, Pulpit Point, Rosehill, between 1924-1950,” accessed August 3, 2021, <https://search.sl.nsw.gov.au/permalink/f/1cvjue2/ADLIB110367774>.



Figure 119: Aerial photograph by Milton Kent, roughly dated 1924-50 but likely taken in 1949 or 1950. Source: SLNSW, c111450001, FL8811193³⁰⁵

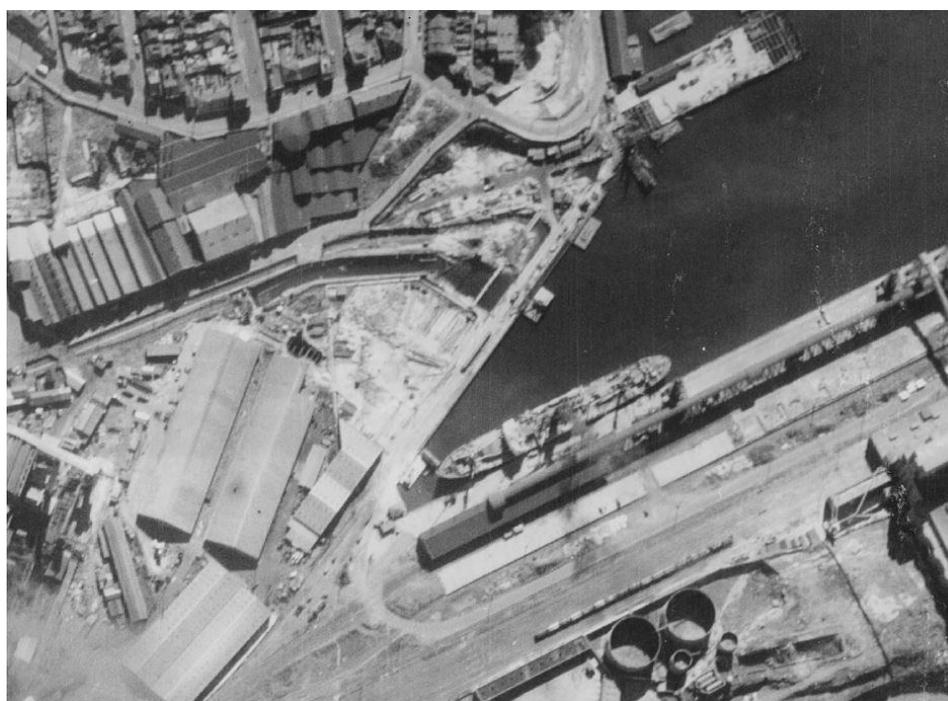


Figure 120: Aerial photograph dated 5 May 1951, showing the store near the circulating water conduit largely demolished and Balmain No. 2 (at top) nearing completion. Source: NSW Spatial Services, Historical Imagery

³⁰⁵ "Item 05: Milton Kent Aerial Views of Glebe Island, Kurnell, Port Kembla, Pulpit Point, Rosehill, between 1924-1950."

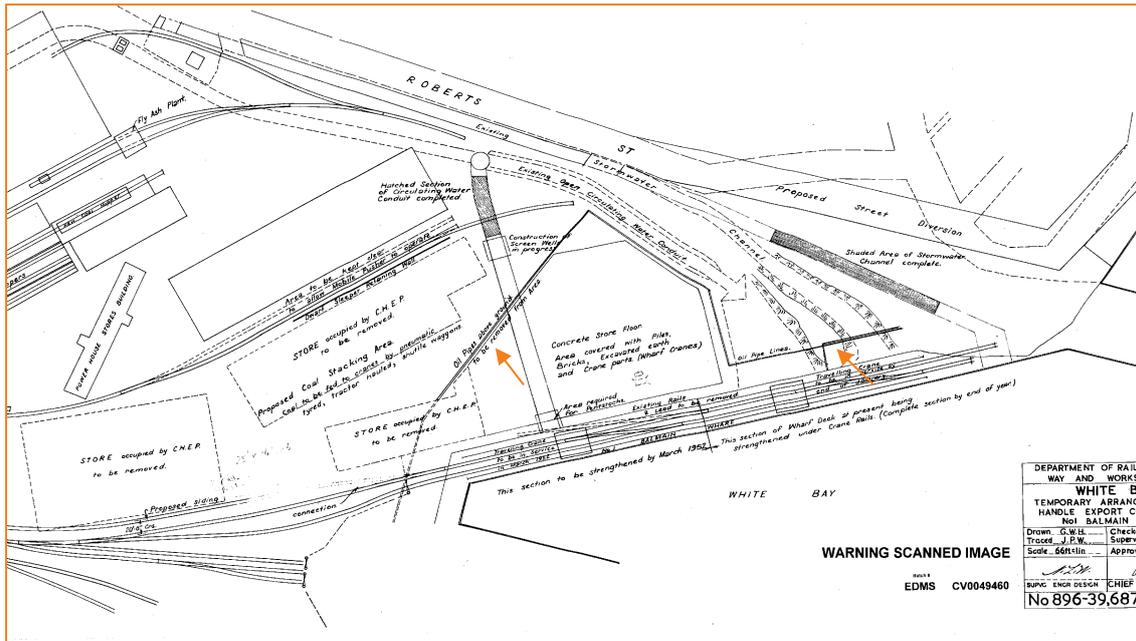


Figure 121: ‘White Bay – Temporary Arrangements to Handle Export Coal from No. 1 Balmain Wharf’, approved 30 October 1951. The diagram shows the proposed removal of stores occupied by CHEP, as well as details for the new wharf. The hatched section of the new circulating water conduit was completed by then. The diagram also shows the oil pipe lines to be removed (noted by the arrow). Source: Transport for NSW Plan Room, 0049460

By mid-1951, amid rapidly expanding coal production, particularly in the Northern coal districts of Newcastle, South Maitland, Muswellbrook, Werris Creek and Gunnedah, the development of Newcastle port “into one of the world’s most modern coal-loading ports”³⁰⁶ was underway, but new and expanded rail and port facilities were required elsewhere to accommodate greater output. Newcastle’s ‘minor rival’ was the planned new coal-loading port at White Bay, where by August 1951 provisions were underway to “shift 500,000 tons of coal a year from the Western district”, for interstate distribution.³⁰⁷ The coal was to be shipped via newly established marshalling yards at Wallerawang across the Blue Mountains. A further shipping and loading facility at Botany Bay was being considered at that time.

Construction of the new coal-loading facilities at White Bay was undertaken by the New South Wales Railways, and “more than 35,000 tons of sandstone, mined from Sydney’s underground railway tunnels,” were used to build new railway embankments for the new coal export centre.³⁰⁸ Work began in March 1951 and proceeded well, involving the demolition of the remaining storage buildings on the site. When the arrival of two 20-ton capacity electric jib cranes was imminent in early July 1952, the processing of coal was described as follows:

“Coal from the western field will be carried in 40-ton hopper trucks. (The railways have ordered 2,750 truck of this type; and 120 are already in service.)

³⁰⁶ “Expanded Rail Facilities For Coal Development,” *Newcastle Morning Herald and Miners’ Advocate*, August 13, 1951, 2, <http://nla.gov.au/nla.news-article134058742>.

³⁰⁷ “Expanded Rail Facilities For Coal Development,” 2.

³⁰⁸ “New Coal-Export Centre Will Move Big Tonnages,” *Sydney Morning Herald*, July 10, 1952, 2, <http://nla.gov.au/nla.news-article18272470>.

The trucks will be shunted into the yard and up a ramp to the unloading hoppers. Some trucks will release their load from the bottom, and others will on to a 'tippler,' which will roll them over and pour the coal into the hoppers.

As the trucks are unloaded they will run down the other side of the ramp, and up a second ramp before returning to an adjoining line, where a locomotive will shunt them to the Rozelle marshalling yard.

Coal from the hoppers will be released so as to fall on a rubber conveyor belt, 4 feet wide and 800 feet in length.

The coal will travel by belt to storage bins, on a ramp, and then fall into 16-ton hopper trucks standing below.

When the trucks reach the wharf, a crane will lift the hopper from each chassis and suspend it over the ship's hold. A pin will be released at the bottom of the hopper, and the coal will cascade into the ship.

By this method, from 250 to 300 tons will be loaded each hour.

When the coal is being stacked, a second conveyor belt will deliver it from the bin-loading belt to the stacking site. Another belt will return it to the bins.

Although the inlet of the harbour in which the ships will berth is known as White Bay the Maritime Services Board and the Railways have adopted the name of 'Balmain No. 1' for the coal-shipping berth."³⁰⁹

Another description noted that "coal is carried to the centre by 40-ton hopper trucks. Of 2750 ordered by the railways, 120 are in service. From the hoppers, coal is carried by a rubber belt, four feet wide and 800 feet long, to 16-ton hoppers, which take it to the wharf. Cranes lift the hoppers over the ships' hold for loading."³¹⁰

The new facilities at the site included new railway tracks, a stacking site, tipping equipment, hoppers, coal storage bins, timber ramps, conveyor belt, cranes and control tower. The two 20-ton cranes were delivered in mid-July 1952, and the works were completed in August 1952.³¹¹ The first test load was shipped on 9 August 1952 by the collier AGE to the Victorian markets via Melbourne.³¹² The load contained 5,600 tons of coal from the mines at Lithgow Valley, Hermitage, Steelworks, Wallerawang, Invincible, Commonwealth and Renown Siding. These Western Collieries formerly had no direct access to a port for export and had to ship via Newcastle or the South Coast.³¹³

³⁰⁹ "New Coal-Export Centre Will Move Big Tonnages," 2.

³¹⁰ "First Coal Cargo At Balmain," *Newcastle Morning Herald and Miners' Advocate*, August 6, 1952, 6, <http://nla.gov.au/nla.news-article133190676>.

³¹¹ "20-TON CRANES TO LOAD COAL," *Newcastle Morning Herald and Miners' Advocate*, July 16, 1952, 6, <http://nla.gov.au/nla.news-article133190962>.

³¹² "Trial For Coal Loading Wharf," *Lithgow Mercury*, August 4, 1952, 1, <http://nla.gov.au/nla.news-article219828144>; "FIRST COAL FROM NEW LOADER," *Newcastle Morning Herald and Miners' Advocate*, August 9, 1952, 6, <http://nla.gov.au/nla.news-article133191852>.

³¹³ Stuart, Iain Malcolm. Desktop Study of Coal Loading Facilities at NSW Ports. Report by JCIS Consultants for Major Property Development, Roads and Maritime Services (Concord: 2016).



Figure 122: 'Loading coal on board SS MERNOO...', 3 November 1952, by Samuel J Hood Studio. Source: ANMM, 00020327³¹⁴



Figure 123: 'Loading coal on board SS MERNOO...', 3 November 1952, by Samuel J Hood Studio. Source: ANMM, 00020326³¹⁵

³¹⁴ "Loading Coal on Board SS MERNOO at Balmain Mine," accessed August 5, 2021, <http://collections.anmm.gov.au/objects/29115/loading-coal-on-board-ss-mernoo-at-balmain-mine>.

³¹⁵ "Loading Coal on Board SS MERNOO at Balmain Mine," accessed August 5, 2021, <http://collections.anmm.gov.au/objects/29114/loading-coal-on-board-ss-mernoo-at-balmain-mine>.



Figure 124: 'Loading coal on board SS MERNOO...', 3 November 1952, by Samuel J Hood Studio. Source: ANMM, 00020328³¹⁶

A drawing prepared in 1954 still shows the new circulating water conduit stormwater outlet as being under construction, with the old and redundant portions of the channels 'to be filled in' (Figure 125). The stacking area was clearly outlined, and the 'outwards conveyor belt' and 'reclamation conveyor belt' noted. Deviation of the stormwater channel was carried out in the late 1950s (Figure 130) and by 1961, filling in of the circulating water conduit had begun (Figure 131), with the works completed by 1965 (Figure 132). By that time, in 1963, the Balmain Coal Loader had already been upgraded to increase its handling capacity.³¹⁷

In 1963 the Maritime Services Board undertook the construction and erection of two shiploaders together with all necessary coal unloading and handling facilities at the Balmain Coal wharf. The shiploaders replaced the existing coal handling system. The new handling facilities allowed for the direct movement of coal from coal wagons to ship or to a stockpile area for later recovery. The movement was by conveyor belts and the wharf cranes were replaced by shiploader conveyors.³¹⁸ A schematic diagram of the new plant is shown in Figure 133.

³¹⁶ "Loading Coal on Board SS MERNOO at Balmain Mine," accessed August 5, 2021, <http://collections.anmm.gov.au/objects/29116/loading-coal-on-board-ss-mernoo-at-balmain-mine>.

³¹⁷ MSB Sydney Ports Authority and Maunsell Pty Ltd, "Draft Port Land Use Strategy 2010," December 1993, 8.

³¹⁸ See Fenwick, Peter. A Heritage Record of the Balmain Coal Loader. Prepared by Peter Fenwick for the Maritime Services Board of NSW (Balmain, NSW: 1992).

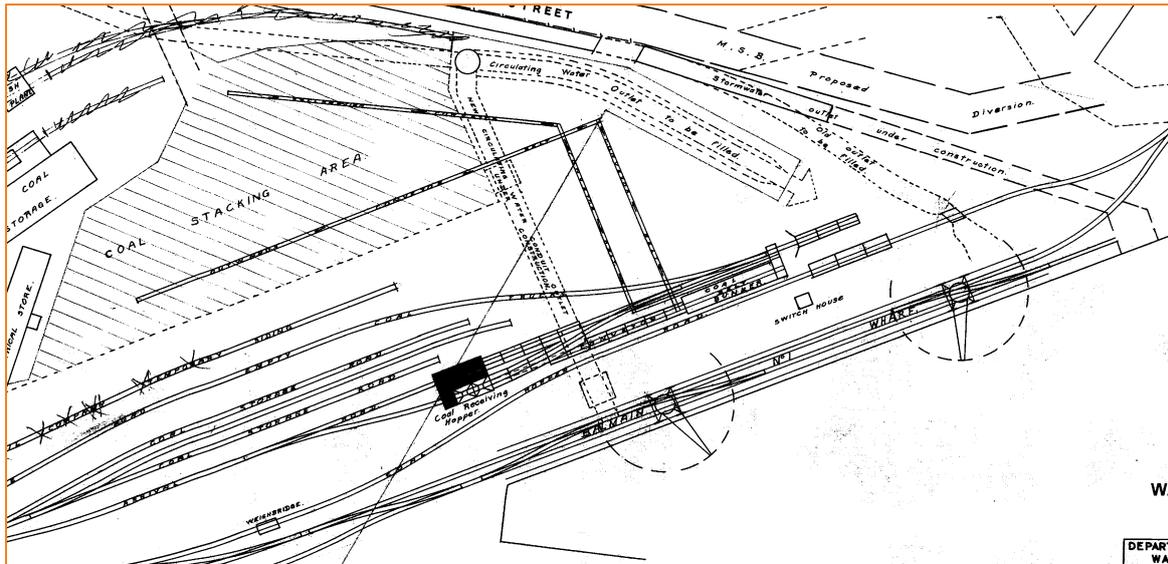


Figure 125: 'White Bay – Sidings Serving Electricity Commission and Power House', by Department of Railways NSW, Way and Works Branch, approved 27 July 1954. The drawing shows existing sections of water channels to be filled, and notes the location of the new sidings, weighbridge, coal receiving hopper, coal bunker and switch house at Wharf No. 1, as well as the coal stacking area to the west. Source: Transport for NSW Plan Room, 0049303



Figure 126: 'Loading Coal from Rail Trucks to Ship at White Bay', 2 December 1958. Source: NSW State Records & Archives, FL2356801³¹⁹

³¹⁹ "Loading Coal from Rail Trucks to Ship at White Bay.," accessed August 13, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE2351897.



Figure 127: 'Loading Coal from Rail Trucks to Ship at White Bay', 2 December 1958. Source: NSW State Records & Archives, FL2357315³²⁰



Figure 128: 'Loading Coal from Rail Trucks to Ship at White Bay', 2 December 1958. Source: NSW State Records & Archives, FL2358217³²¹

³²⁰ "Loading Coal from Rail Trucks to Ship at White Bay.," accessed August 6, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE2351582.

³²¹ "Loading Coal from Rail Trucks to Ship at White Bay.," accessed August 13, 2021, https://content.archives.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=IE2351837.



Figure 129: 'Steamship ERA (1921-1955) at White Bay power station', showing the coal stacking area behind the wharf. The stormwater channel has not yet been redirected. Source: City of Sydney Archives, A-00077504³²²

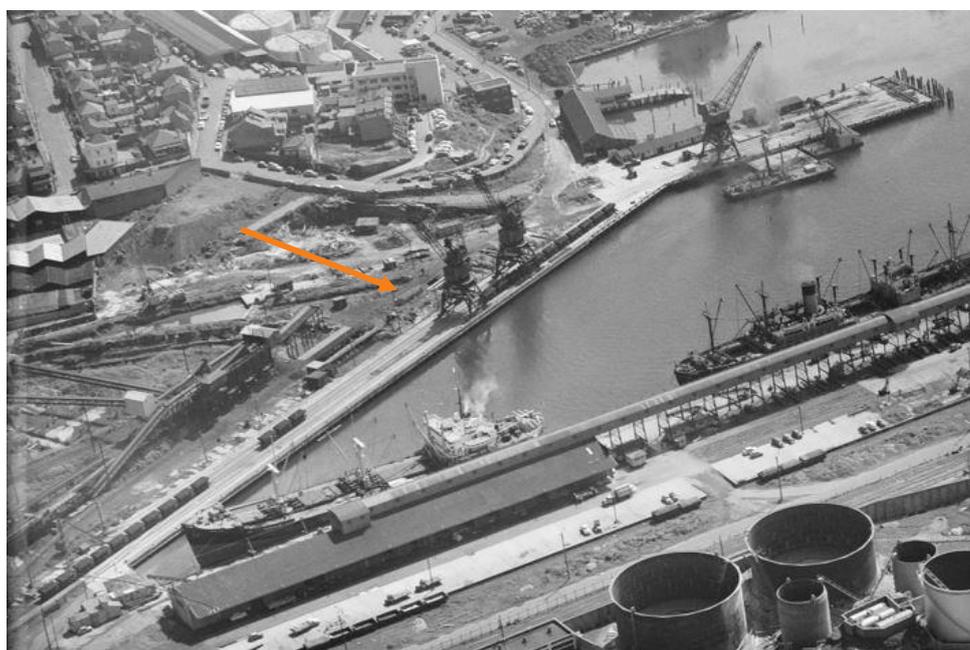


Figure 130: Aerial photograph by Milton Kent, said to have been taken between 1942 and 1952, but likely showing the area in the late 1950s, with construction work going on in the area of the stormwater channel. The outlet of the old circulating water conduit is still there, indicated by the red arrow. Source: SLNSW, FL8810823³²³

³²² "Cargo Ship at N0.1 White Bay. GA0588a."

³²³ "Item 29: Milton Kent Aerial Views of Vacuum Oil at Balls Head, Glebe Island, Newcastle, Port Kembla, Pulpit Point, Rose Hill, between 1942-1952," accessed August 3, 2021, <https://search.sl.nsw.gov.au/permalink/f/1cvjue2/ADLIB110367058>.

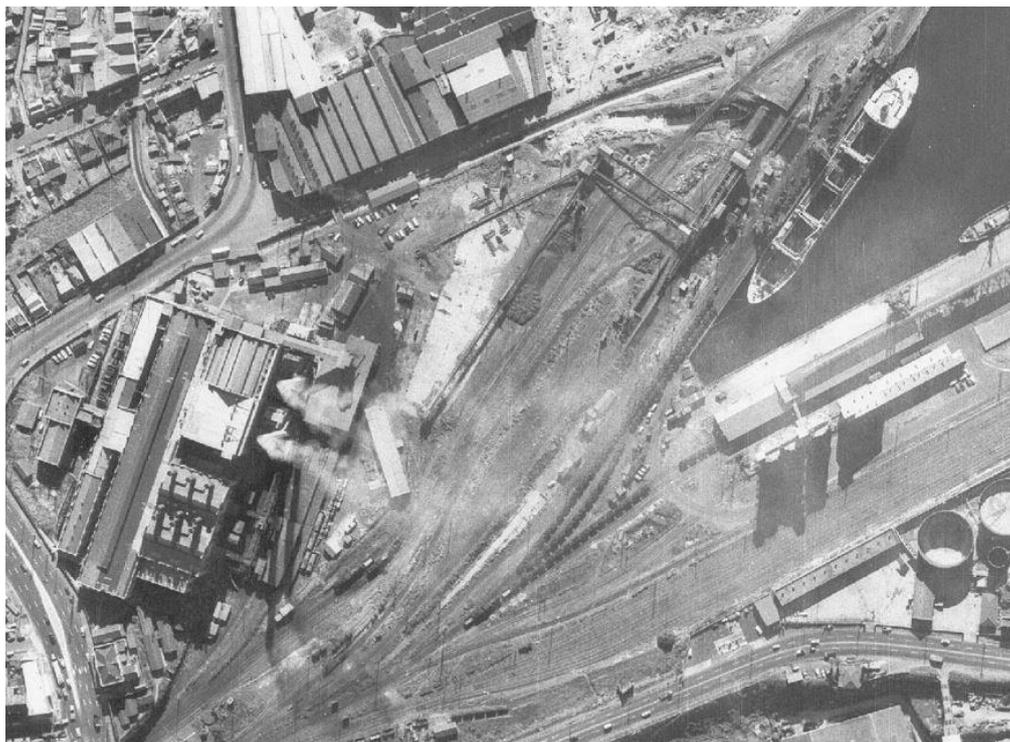


Figure 131: Aerial photograph, 29 June 1961, showing No 1 Balmain Wharf and adjacent stacking area, with the stormwater channel diverted and filling in of the old conduits. Source: NSW Spatial Services, Historical Imagery



Figure 132: Aerial photograph, 29 August 1965, showing No 1 Balmain Wharf and adjacent stacking area. The old stormwater channel and circulating water conduit have been filled in. Source: NSW Spatial Services, Historical Imagery

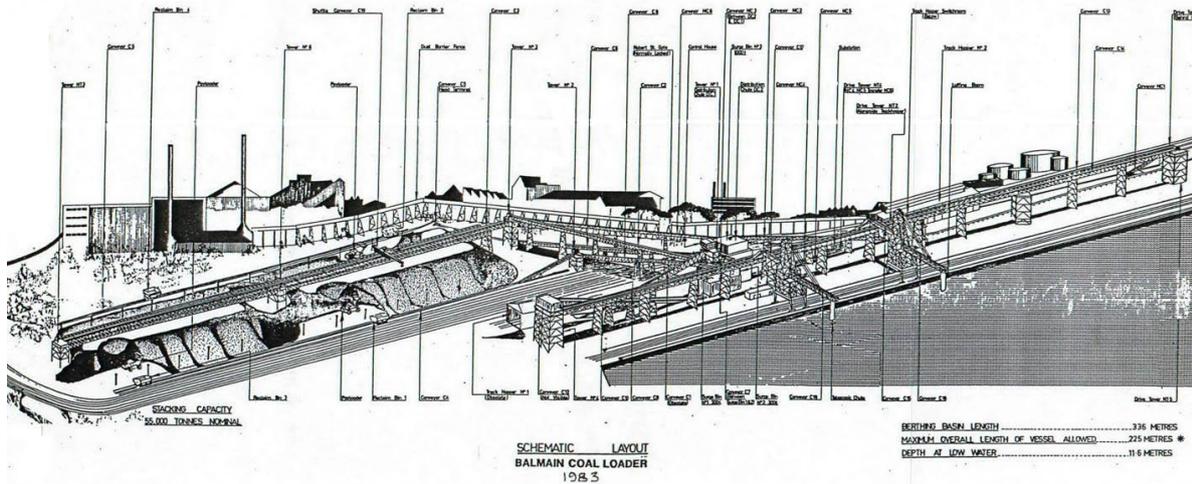


Figure 133 Schematic diagram showing the 1963 shiploader and coal loading facilities replacing the 1953 coal loading facilities Source: Fenrick

2.5.2 Upgrade of White Bay Power House (1950s)

Apart from replacement and upgrading of existing units, no new generating plant had been installed at White Bay Power House between 1928 and 1951.³²⁴ Reinforced concrete air raid shelters were installed in early 1942 as a precaution, but they were progressively removed from early 1944. From 1945 to 1948, the rapidly deteriorating original 25 Hz plant was progressively replaced with new 50 Hz plant from Britain, involving removal of the oldest turbo alternators (nos. 1 and 2) and boilers (nos. 1 and 2). As part of these works, demolition of part of the original Boiler House No. 1 and construction of a new steel framed boiler house with brick infill panels, along with new steel smoke-stacks and new coal and ash handling equipment began.³²⁵ A new control room and 66 kV Switch House were also added at that time. A 1951 aerial photograph (Figure 135) shows the new boiler house, new coal handling plant with covered storage and new overhead ash bins to the east, as well as overhead conveyor connecting the coal handling plant with the new boiler house.

In July 1952, nos. 3 and 4 boilers, the last boilers from the first phase of construction of the White Bay Power House (1912-17), were taken out of service.³²⁶ Later that year, the 11 kV switch house was extended by one floor, providing new staff amenities and a battery room. On 1 January 1953, the White Bay Power House was transferred from the Railway Commissioners to the Electricity Commission for NSW.³²⁷ A detailed survey shows the power house site at that time, noting all buildings as existing, including the remaining portion of Boiler House No. 1, which was no longer in use. In 1958, the new boilers nos. 3 and 4 came into service (boilers nos. 1 and 2 had been put into service in 1951 and 1955, respectively). In 1958, the remaining portion of Boiler House No. 1 had been demolished and replaced by a new building, as shown in (Figure 131).³²⁸

³²⁴ Don Godden and Associates & Heritage Consultants, "The Significance of White Bay and Balmain Power Stations to Sydney's Industrial Heritage. A Report to the Electricity Commission of NSW," 40.

³²⁵ Don Godden and Associates & Heritage Consultants, 42.

³²⁶ Don Godden and Associates & Heritage Consultants, 41.

³²⁷ Don Godden and Associates & Heritage Consultants, 41.

³²⁸ Design 5 Architects Pty Ltd, "White Bay Power Station Conservation Management Plan - Volume II - The Report" (Sydney Harbour Foreshore Authority, March 2013), 39.



Figure 134: Aerial photographs showing the White Bay Power House site in 1943 (left) and 1948 (right), showing a new control room (a) and 66kV Switch House (b) added in the west and new boiler house (c) under construction by 1948. Source: NSW Spatial Services, Historical Imagery

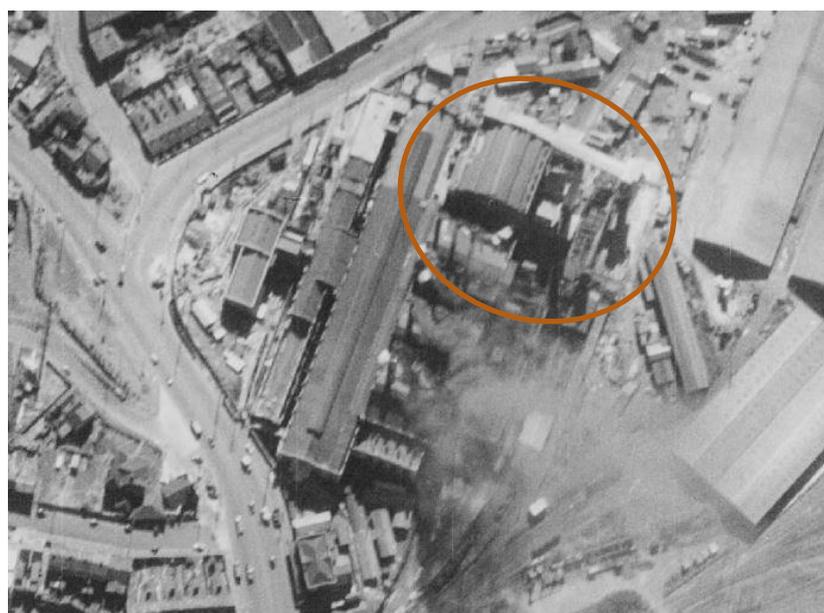


Figure 135: Aerial photograph dated 5 May 1951, with new boiler house and coal handling plant, connected by a new conveyor belt, clearly visible (circled). Source: NSW Spatial Services, Historical Imagery

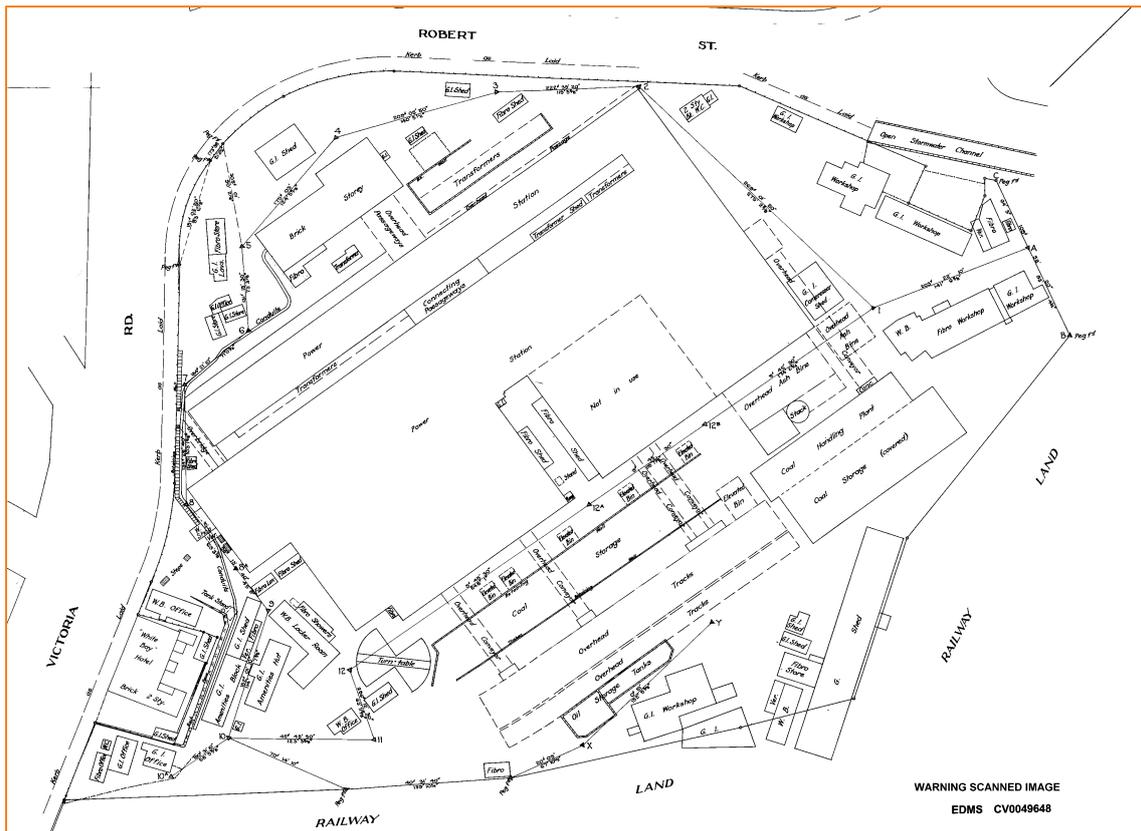


Figure 136: ‘Department of Railways NSW, White Bay Power Station, Detail Survey’, dated July 1953. Source: Transport for NSW Plan Room, 0049648

2.5.3 Dry bulk wharfage and grain silo expansion 1960-1970s

In 1960, the Imperial Chemical Industries of Australia and New Zealand Ltd. (ICIANZ) built a new soda ash facility behind No. 9 Wharf at Glebe Island.³²⁹ It is shown in the aerial photographs in Figure 131 and Figure 132 Soda ash (sodium carbonate) was used in the manufacture of glass, soap and other chemicals.³³⁰

ICI Alkali (Australia) Pty Ltd had been formed by ICIANZ in 1936 for the purpose of establishing a plant producing alkali products, including soda ash, caustic soda, bicarbonate of soda, and the bi-product calcium chloride.³³¹ A large plant was in operation from 1940 at Osborne, near Port Adelaide, South Australia, from where it was shipped around Australia. The Glebe Island facility was used as a bulk terminal wharf and bagging facility.³³²

By 1969, the Maritime Services Board was planning new container facilities at Glebe Island, and preliminary plans were prepared in 1970 for a new container handling area in front of the silos.³³³ As part of these works, the existing shipping galleries and conveyor belts were removed and replaced by a new conveyor belt that extended out at an angle from the south-western corner of the silo to a new

³²⁹ Advertising, Sydney Morning Herald Archive, 11 January 1961, 35; cf. “Fewer Men, Bigger Profits on Wharves,” *Tribune*, February 17, 1960, 8, <http://nla.gov.au/nla.news-article236740264>.

³³⁰ “ICI Australia - Diversified Development,” accessed August 24, 2021, http://www.chemlink.com.au/orica_hist.htm.

³³¹ ICIANZ Ltd, “The Alkali Industry in Australia,” *Overseas Trading* 11, no. 19 (October 7, 1959): 439.

³³² ICI sells soda ash business from \$100m, Sydney Morning Herald Archives, 20 April 1989, 31

³³³ Methods under Fire, Sydney Morning Herald Archives, 25 June 1969, 31; cf. Transport for NSW Plan Room, ‘Glebe Island, Tracks to Serve Proposed Container Berth’, CV0050112

loading facility that ended at Wharf No. 9. The 1971 aerial photograph included in Figure 138 shows the new facility.

At the same time, further berths were also added on the northern shore of White Bay, at Balmain.³³⁴

Plans for the new ‘Seatainer Terminal’ were prepared by Paynter & Dixon Pty Ltd in May 1967, and the berths constructed between 1969 and 1973.³³⁵ Located northeast of Balmain Wharves No. 1 and 2., in the area of the future Passenger Cruise Terminal, these facilities were subsequently known as White Bay Berths 3-6 and were used as a multi-purpose terminal by the 1990s (see Figure 144). As part of the construction of these new container loading facilities, new sidings were constructed, and existing sidings relocated (Figure 137).

Due to increasing output of grain, a new, larger silo facility was constructed to the south-west of the existing silo between 1972 and 1973.³³⁶ Dismantling and demolition of the of the Vacuum Oil facility in that area had been carried out between 1965 and 1968.³³⁷ Between 1973 and 1975, a new checkpoint building and a new plant services building was constructed at Glebe Island.³³⁸

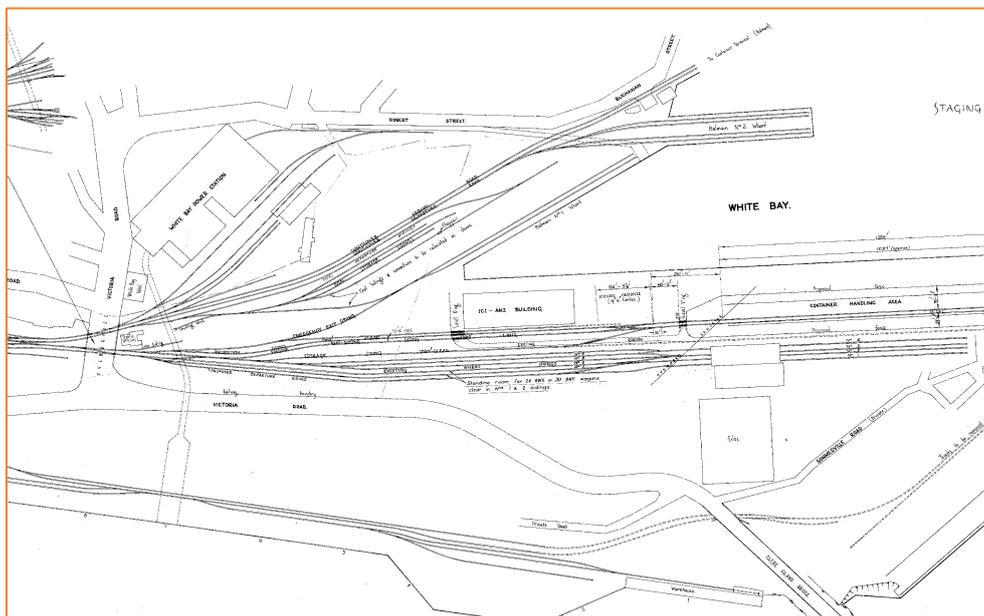


Figure 137: Plan approved in 1971, showing the new and relocated sidings for the new container handling areas on Glebe Island and at Balmain. Source: Transport for NSW Plan Room, ‘Department of Railways NSW, Remodelling of Yard and Proposed Container Sidings’, CV0050116

³³⁴ MSB Sydney Ports Authority and Maunsell Pty Ltd, “Draft Port Land Use Strategy 2010,” 8-9. Fig. No. 5.

³³⁵ *Ibid.*; cf. Transport for NSW Plan Room, ‘Seatainer Terminals Pty Ltd, White Bay, Sydney, Site Plan & Cross Section through site’, CV0264118

³³⁶ Thorp, “Thorp 1994,” 15.

³³⁷ Sydney Morning Herald Archive, 6 July 1968, 63

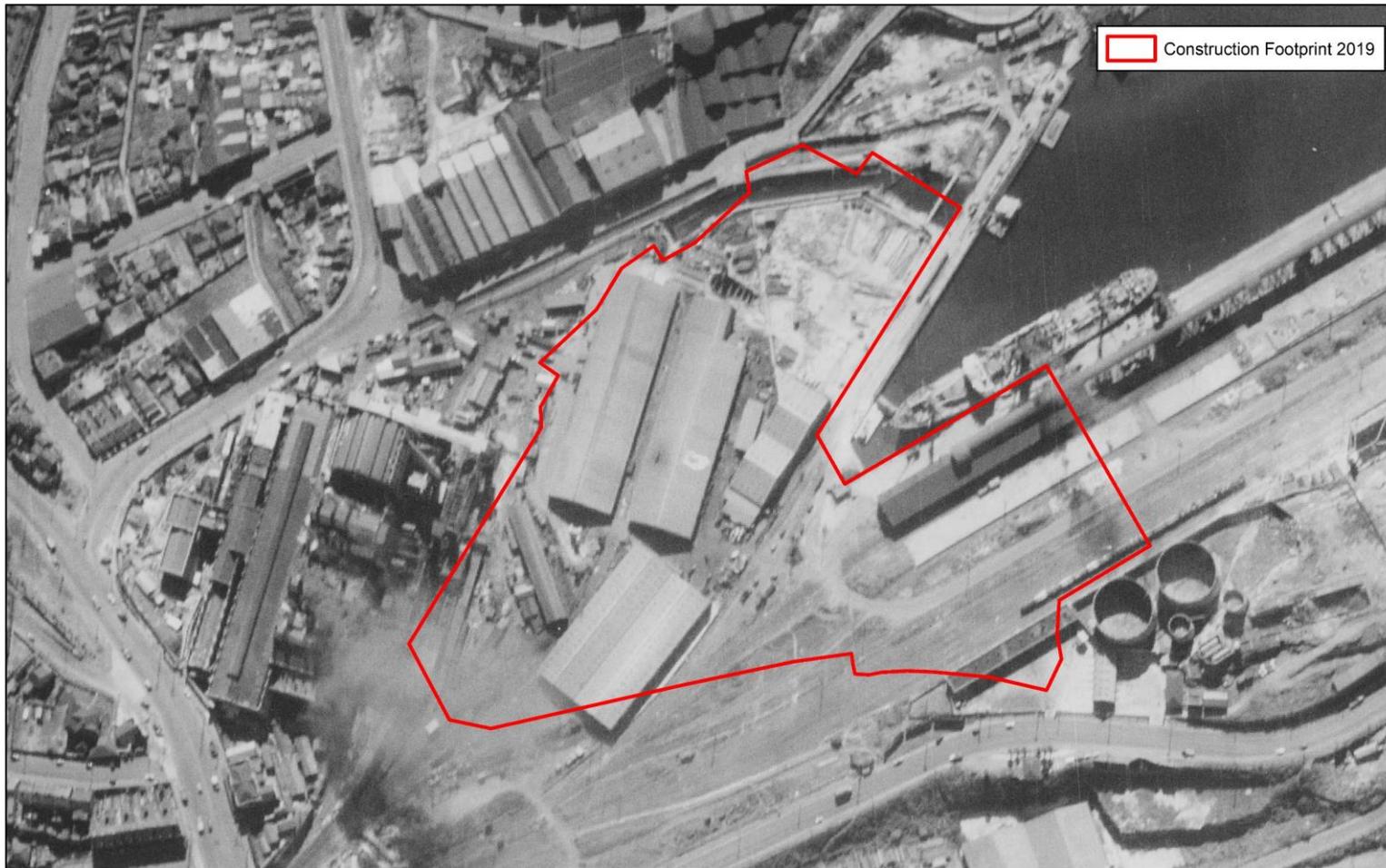
³³⁸ Thorp, “Thorp 1994,” 15.



Figure 138: 6 October 1971 – The original shipping galleries and conveyor belts have been removed and new conveyor belt and dry bulk loading facilities constructed, to provide space for a new container handling facility to the north-east of the silos. Source: NSW Spatial Services, Historical Imagery

2.5.4 Historical overlays for phase 3 (1950 – 1970)

Historic plans have been overlaid to demonstrate where the locations of former structures and landscapes in Figure 139 to Figure 141 for phase 3.



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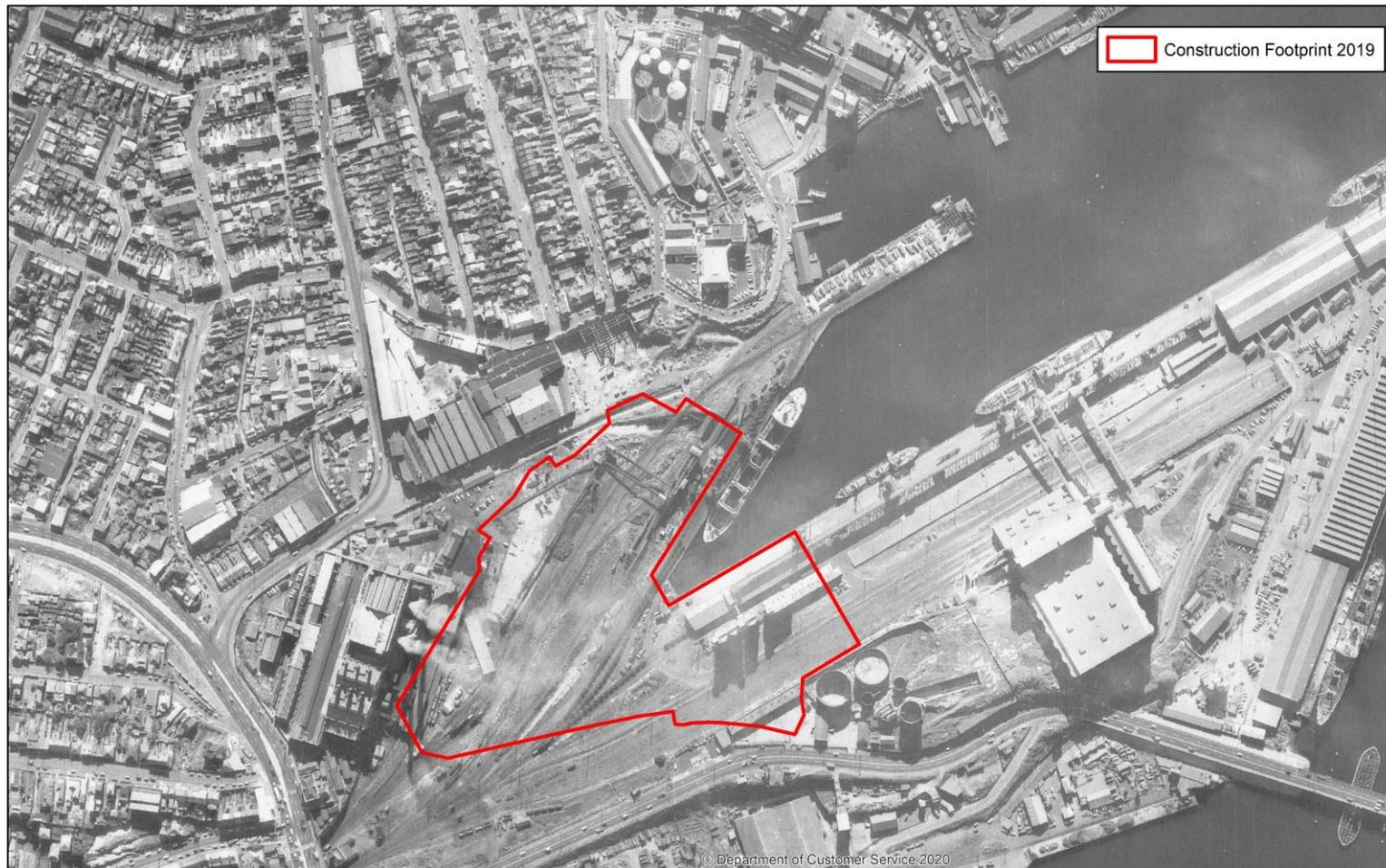
1 May 1951 Aerial Photograph Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:2,500
SIZE A4
DATE 24/08/2021



Figure 139: 1951 Aerial Photograph Overlay



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29 June 1961 Aerial Photograph Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:4,000
SIZE A4
DATE 26/08/2021

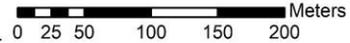
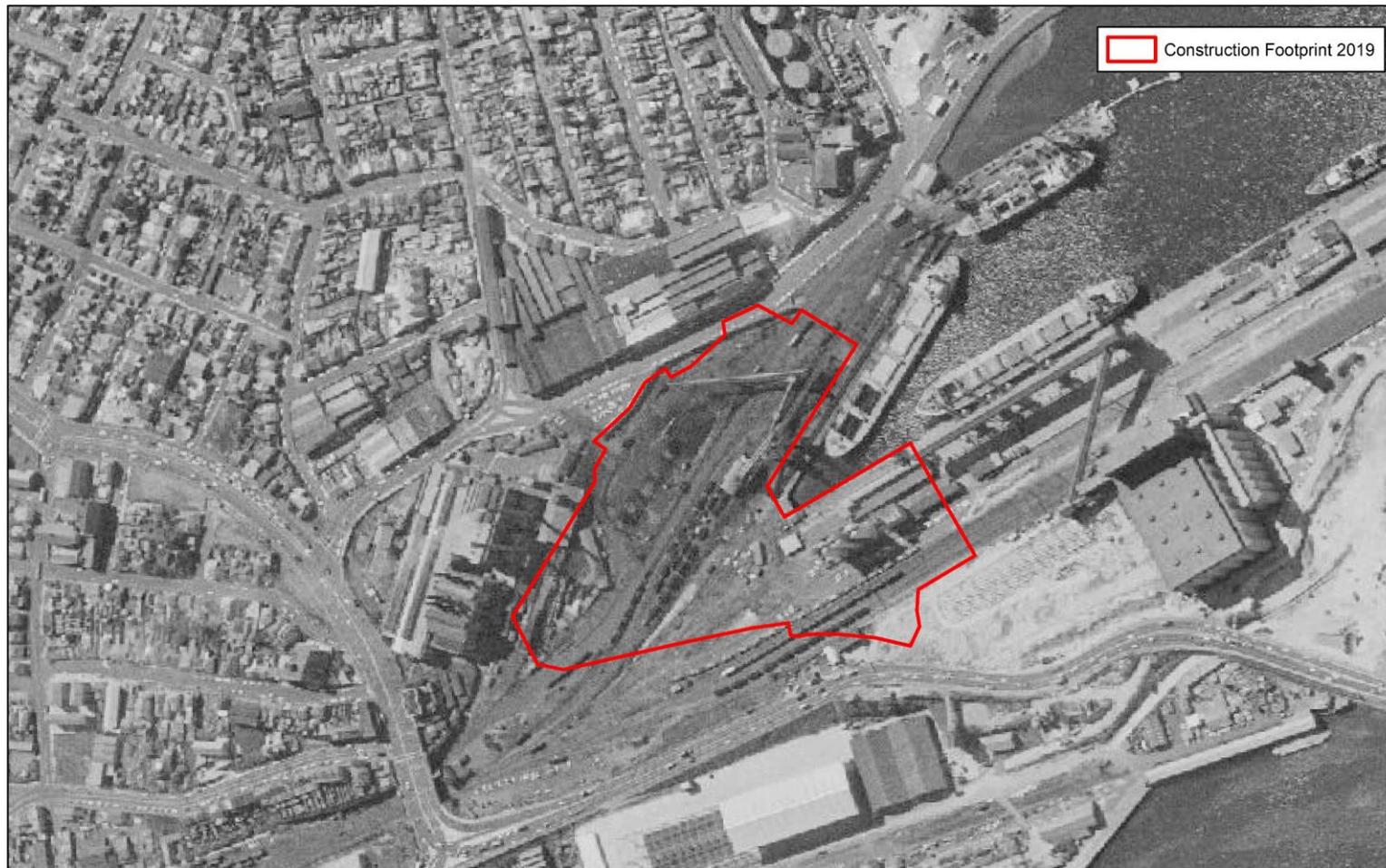


Figure 140: 1961 Aerial Photograph Overlay



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6 October 1971 Aerial Photograph Historical Overlay

21102: The Bays Metro ARD
LGA: Inner West

SCALE 1:4,000
SIZE A4
DATE 26/08/2021

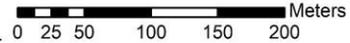


Figure 141: 1971 Aerial Photograph Overlay

2.6 Phase 4: Modern and future use of the site (1970 – Present)

2.6.1 Decommissioning of White Bay Power House site (1970 – 2010)

After the upgrades to the power house during the 1950s, it was not until after 1975 that Boiler House No. 2 was demolished.³³⁹ Two 50 Hz units remained in use until 1982, when they served as emergency backup during shortages caused by the Liddell Power Station breakdowns.³⁴⁰ Those two units were decommissioned in 1983 and the Power House was subsequently closed. The site remained unused until 1992, when the Electricity Commission was split into two operations, Pacific Power and Transgrid. Pacific Power took over the production of electricity at power stations and was in charge of White Bay. By that time, the National Trust of Australia (NSW) had begun investigations and representations regarding the heritage values of the buildings and equipment, while the facility had been mothballed. Only those elements that had been identified for heritage conservation were retained, and even some of those were badly affected by the removal of asbestos insulation and lagging.

In 2000, Pacific Power sold the White Bay Power Station to the newly formed Sydney Harbour Foreshore Authority (SHFA).³⁴¹ Eleven years later, SHFA held several open door events at the facility which proved popular. A Conservation Management Plan for the site was prepared between 2011 and 2013 and endorsed by the Heritage Council of NSW on 2 September 2013. By mid-2012, the White Bay Power Station inlet canal was added to Sydney Ports' Section 170 Heritage and Conservation Register.³⁴² In 2015, the NSW Government began negotiations to redevelop the White Bay Power Station into an international technology hub. Thirteen companies submitted proposals for the project including Google, however these proposals did not come to fruition.³⁴³

The decline of the second White Bay Hotel, constructed in 1916 by Tooth and Co. Brewers adjacent to the Power House, coincided with the closure of the White Bay Power Station during the 1980s and the development of surrounding roads including the City West Link and Victoria Road.³⁴⁴ Having been altered several times, including in 1925 and 1933, the hotel closed in 1992, when it became home to squatters. Redevelopment proposals were suggested between 2006 and 2008, however the hotel was destroyed by fire on 5 September 2008 and the debris was cleared by 2010, when the site was acquired by SFHA.

2.6.2 Rationalisation and new uses (1980 – 2010)

Balmain No. 2 at White Bay, used for bulk liquids and petrochemicals, was demolished in 1980, and a connection between Balmain No. 1 and the container terminal at Balmain was subsequently constructed, involving further land reclamation.³⁴⁵ In 1984, Glebe Island's function as a grain silo ceased.³⁴⁶ At around that time the eastern portion of Shed No. 9 on Glebe Island was demolished (Figure 143). The wharf was still used by ICIANZ for their soda ash distribution, and this wharf was subsequently known as Berth 8. ICI's soda ash production, including its operations in South Australia

³³⁹ Don Godden and Associates & Heritage Consultants, "The Significance of White Bay and Balmain Power Stations to Sydney's Industrial Heritage. A Report to the Electricity Commission of NSW," 42.

³⁴⁰ The following is based on Design 5 Architects Pty Ltd, "White Bay Power Station Conservation Management Plan - Volume II - The Report," 37–38.

³⁴¹ Design 5 Architects Pty Ltd, 37–38.

³⁴² Sydney Ports Corporation, Annual Report, 2011-12, 30

³⁴³ Sarah Gerathy, 2017. 'Google Backs out of plan to turn Sydney's White Bay Power Station into next Silicon Valley'. Accessed 4 July 2019, <https://www.abc.net.au/news/2017-04-12/google-backs-down-on-plans-to-base-itself-at-white-bay/8436686>

³⁴⁴ Design 5 Architects Pty Ltd, "White Bay Power Station Conservation Management Plan - Volume II - The Report," 40–41.

³⁴⁵ MSB Sydney Ports Authority and Maunsell Pty Ltd, "Draft Port Land Use Strategy 2010," 10.

³⁴⁶ Thorp, "Thorp 1994," 15.

and the bulk terminal wharf and bagging facility at Glebe Island, was sold to Penrice Soda Products Pty Ltd in 1989 which continued to operate the facility.³⁴⁷ By 1986, changes had been made to eastern portion of the wharves on the northern side of Glebe Island, where a section of the wharf deck appears to have been removed to the east of Berth 8 (Figure 143).

With the silos no longer used for grain storage and distribution, the wharves were rationalised for other uses during the 1990s, including as a terminal for bulk cement and sugar, while the processing of soda ash products continued at Berth 8. Australian Cement used the 1970s grain silos as a bulk cement terminal from 1991.³⁴⁸

In 1993, the MSB Sydney Port Authority reported that the Balmain Coal Loader (Balmain No. 1) had been demolished that year, ending the site's function as a coal loading facility.³⁴⁹ The wharf, however, remained in use as common user berths, which were essential for transient vessels and cargo which was not handled by the stevedores.³⁵⁰ Glebe Island Berths No. 7 and No. 8 remained in use as dry bulk terminal, with plans to further strengthen this use.³⁵¹ Around that time, the 1970s conveyor belts near Berth 8 were removed and a new loading facility was constructed (Figure 145). A little later, the remaining portion of Shed No. 9 at Berth 8 was removed (see Figure 146). On 1 July 1995, Sydney Ports Corporation was established as the successor of the MSB Sydney Ports Authority, taking over the facilities.³⁵²

In the late 1990s, in the lead up to the 2000 Sydney Olympics, the 1970s Glebe Island silos were painted to mimic Grecian columns, and a large billboard was erected on top of the silos.³⁵³ The advertising space was subsequently leased by Eye Drive, a subsidiary of oOh! Media.³⁵⁴ The old grain silos were demolished in c2001, as they were no longer in use and offered an opportunity to convert around three hectares of land for port use (Figure 147).³⁵⁵ As part of the demolition, a master plan was prepared for the Glebe Island/White Bay precinct, following which expressions of interest were sought for long-term leases of portions of the redeveloped 20-hectare area. At the same time, the motor vehicle import facility established in 1993 on the south-eastern side Glebe Island,³⁵⁶ had become an important part of port operations and was anticipated to remain the premier motor handling location in NSW.³⁵⁷

By 2002, White Bay/Balmain still consisted of four operating berths (Berths 3-6) leased to P&O Ports, and two berths (Berths 1 and 2) used as lay-up berths.³⁵⁸ These handled containers and break bulk (timber, paper, steel) cargoes and remained connected by road and a dedicated freight rail line to Enfield and the metropolitan rail network. Glebe Island had four operational berths (1, 2, 7 and 8). Berths 1 and 2, on the south-eastern side of the island, formed part of the Glebe Island Motor Vehicle Terminal, a 12-hectare facility leased by Australian Automotive Terminals Pty Ltd who were developing the site into an extended specialised motor vehicle handling facility.

Berths 7 and 8, on the northern side of Glebe Island, were dedicated dry bulk berths. Berth 7 was used by Australian Cement Holdings to import bulk cement and by Sugar Australia to import bulk

³⁴⁷ ICI sells soda ash business from \$100m, Sydney Morning Herald Archives, 20 April 1989, 31

³⁴⁸ Reynolds, "Glebe Island | The Dictionary of Sydney."

³⁴⁹ MSB Sydney Ports Authority and Maunsell Pty Ltd, "Draft Port Land Use Strategy 2010," 8.

³⁵⁰ MSB Sydney Ports Authority and Maunsell Pty Ltd, 10.

³⁵¹ MSB Sydney Ports Authority and Maunsell Pty Ltd, 11. 19.

³⁵² Sydney Ports Corporation, Annual Report, 1996, 8

³⁵³ Reynolds, "Glebe Island | The Dictionary of Sydney."

³⁵⁴ Nicole Hasham, "Southern Hemisphere's Biggest Billboard a 'blight' on Sydney," The Sydney Morning Herald, April 9, 2015, <https://www.smh.com.au/national/nsw/southern-hemispheres-biggest-billboard-a-blight-on-sydney-20150408-1mge59.html>.

³⁵⁵ Sydney Ports Corporation, Annual Report, 2001, 14-15

³⁵⁶ Thorp, "Thorp 1994," 15.

³⁵⁷ Sydney Ports Corporation, Annual Report, 2001, 4. 21.

³⁵⁸ URS and Sydney Ports, "Port Botany Expansion Environmental Impact Statement - Volume 1," 2002, 3-3, <https://www.nswports.com.au/sites/default/files/Uploads/Port-Botany-Expansion-EIS-Ch-03-and-Ch-04.pdf>.

sugar. It was equipped with fixed shoreside cement and sugar receiving, storage and distribution infrastructure. Berth 8 was operated by Penrice Soda Products and was primarily used for the storage and distribution of soda ash. By 2002, Gypsum Resources Australia (GRA) had commenced construction of a gypsum discharge, storage and distribution facility on land behind Berth 7. This was completed in 2003 and operations commenced in 2004.³⁵⁹ From 2005, the rooftops of the silos were used as a telecommunications facility.³⁶⁰



Figure 142: 6 May 1978 – The eastern portion of Shed No. 9 has been demolished. Source: NSW Spatial Services, Historical Imagery

³⁵⁹ Sydney Ports Corporation, Annual Report, 2004, 42; Annual Report 2003, 13; cf. “Glebe Island Gypsum Terminal,” *Christie Civil* (blog), accessed August 26, 2021, <https://www.christiecivil.com.au/projects/glebe-island-gypsum-terminal/>.

³⁶⁰ NSW Government, Glebe Island Silo Telecommunications Equipment, Development Application Modification Assessment (DA 6607-2014 MOD 1), March 2019, 3



Figure 143: 3 August 1986 – The eastern portion of Shed No. 9 has been demolished and Balmain No. 1 Wharf connected with the container terminal further north-east (at top centre). This photograph suggests that the wharves in the eastern portion (on right) were shortened by then, involving removal of the deck. Source: NSW Spatial Services, Historical Imagery

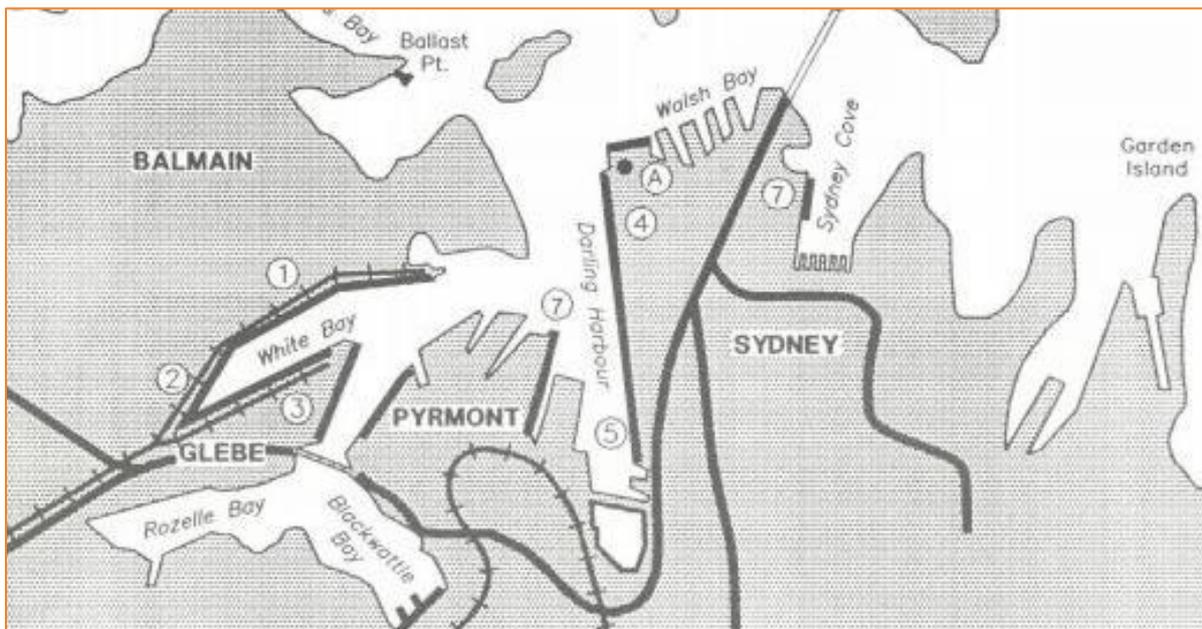


Figure 144: Map showing the MSB Sydney Ports Authority locations in 1993, noting White Bay Berths 3-6 at No. 1, Balmain Berth 1 at No. 2, and Glebe Island 1, 2, 7 and 8 at No. 3. Source: MSB Sydney Ports Authority and Maunsell Pty Ltd, "Draft Port Land Use Strategy 2010," December 1993, Fig. No. 5.



Figure 145: 4 October 1994 – The 1970s conveyor belt and loading facility at Glebe Island has been demolished and replaced. Note the cleared area behind Balmain No. 1 Wharf, where formerly the coal stacking area was located, on left. Source: NSW Spatial Services, Historical Imagery

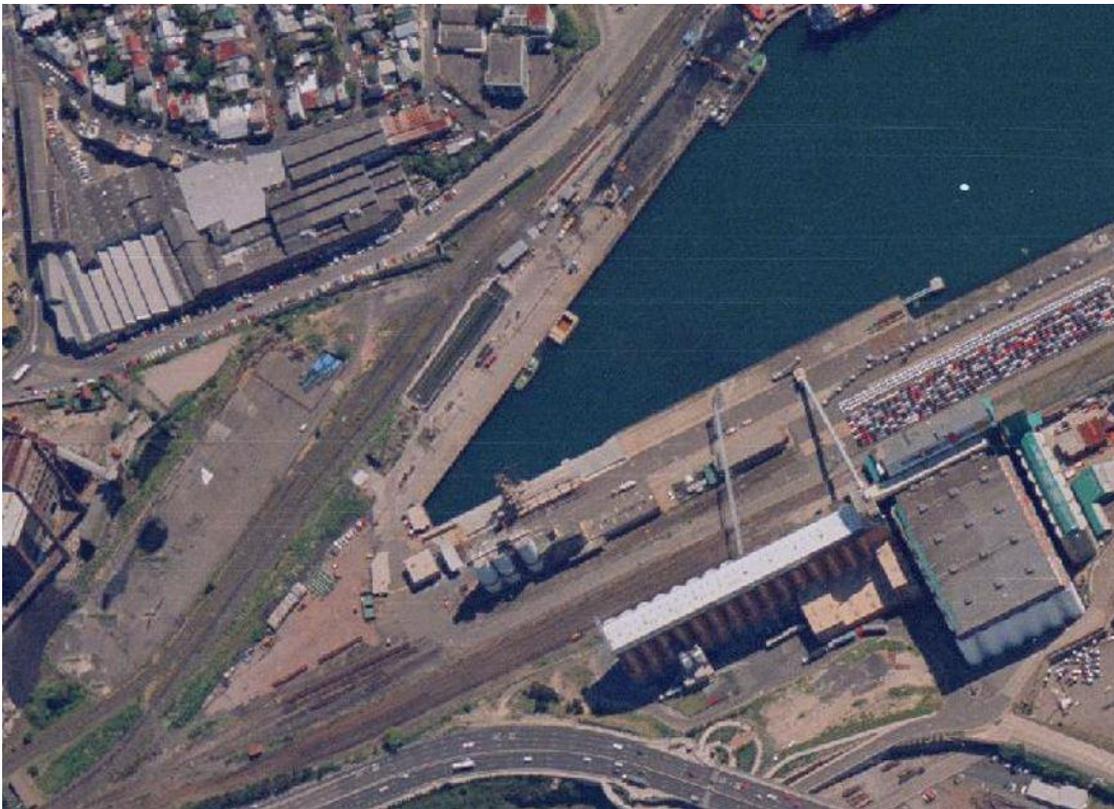


Figure 146: 20 September 1998 – Shed No. 9 at Berth 8, Glebe Island, has been removed.
Source: NSW Spatial Services, Historical Imagery

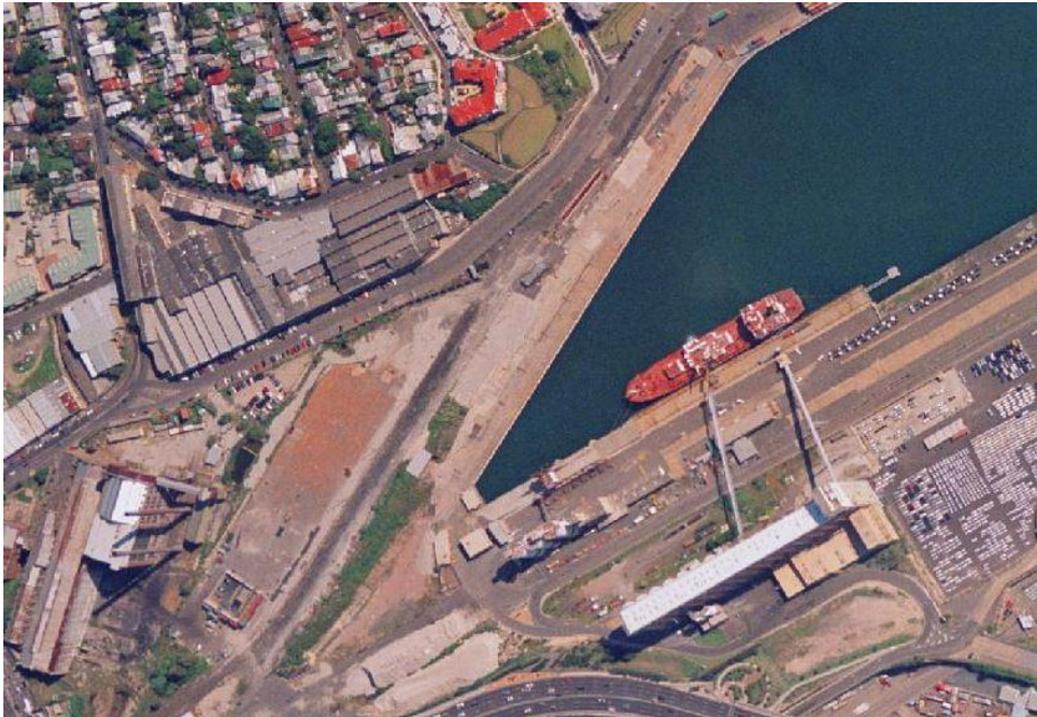


Figure 147: 16 March 2002 – The old grain silos have been demolished. Source: NSW Spatial Services, Historical Imagery

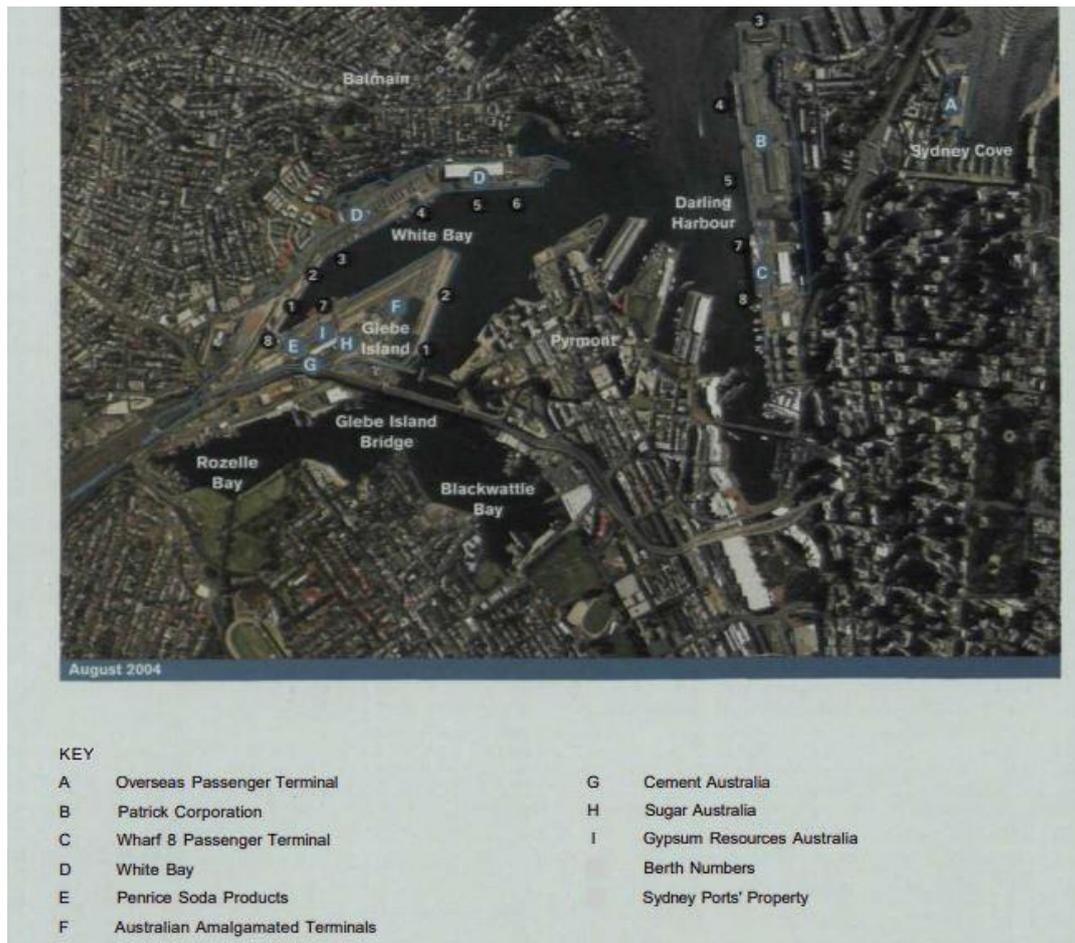


Figure 148: Map dated August 2004, showing facilities at Sydney Ports Corporation sites, including Glebe Island and White Bay. Source: Sydney Ports Corporation, Annual Report, 2004, 42

2.6.3 Current and future uses of White Bay

In 2011-12, with Glebe Island and White Bay being noted as providing the “last remaining deep water berths with backup land in Sydney Harbour,” Sydney Ports made a submission to the NSW Government’s Bays Precinct Taskforce regarding the future development of the port precinct.³⁶¹ In December 2011, construction began for a new passenger cruise terminal on the other side of White Bay, on the eastern side of the Balmain peninsula, which opened in April 2013.³⁶² By mid-2012, the northern side of Glebe Island was occupied by the Sydney Ports Corporation Marine Services (at the eastern end) and Gypsum Resources Australia, with Berths 7 and 8 still being active. It appears that the Penrice Soda Ash facility was no longer in use by then, and Penrice Soda Products ceased all their operations in Australia in June 2014.³⁶³

In 2013, construction began on the interim Sydney Exhibition Centre at Glebe Island, which opened in February 2014 and was decommissioned and removed in 2017 after the redevelopment of the Sydney Convention and Exhibition Centre at Darling Harbour was completed.³⁶⁴ By 2015, the Sydney

³⁶¹ Sydney Ports Corporation, Annual Report, 2011-12, 20

³⁶² Sydney Ports Corporation, Annual Report, 2011-12, 27; cf. Annual Report, 2012-13, 6

³⁶³ “Penrice Soda Ash Plant at Osborne Closing,” *ABC News*, June 24, 2014, <https://www.abc.net.au/news/2014-06-24/penrice-soda-ash-plant-closure-osborne/5546974>.

³⁶⁴ Sydney Ports Corporation, Annual Report, 2013-14, 12; “SYDNEY’S TEMPORARY EXHIBITION CENTRE CLOSES AND NEW ICC SYDNEY PREPARES TO OPEN | Exhibition & Event Association of Australasia,”

Ports Corporation had become the Port Authority of NSW, which reported close to 600 common user berth movements during the financial year 2014-15 at the Glebe Island and White Bay port precinct.³⁶⁵ This included activities such as “refuelling the city’s ferries, harbour charter vessels and ships; servicing marine construction; hosting the import and export of bulk and bulk liquid cargoes; providing space for emergency and planned ship maintenance and repairs; facilitating major harbour events including the world famous New Year’s Eve fireworks and other essential harbour functions.”³⁶⁶

At the same time, Glebe Island’s dry bulk facilities were the geographic heart of a construction boom “comprising \$70 billion of major infrastructure, urban renewal and transport projects within a five kilometre radius of the port,” including projects such as WestConnex, the Second Harbour Rail Crossing, Sydney Metro, Bays Precinct Urban Renewal and Western Harbour Tunnel, which all relied “on the port for the supply of construction materials and disposal of excavated spoil.”³⁶⁷

As part of the Glebe Island Preliminary Business Case developed by UrbanGrowth NSW, options for the future use of Glebe Island were evaluated in 2016-17, with the preferred option being “one that maximised the strategic and economic opportunities at Glebe Island” by integrating a port (ideally with materials handling capability) with an innovation district.³⁶⁸ Community consultation was planned in relation to the construction of a new multi-user terminal that would handle bulk construction materials.³⁶⁹ At the same time, commercial arrangements for establishment of an integrated port facility were explored.

By mid-2018, the port precinct at Glebe Island and White Bay had become a strategic location not only for its working harbour capability but also as an essential component of the WestConnex M4-M5 Link, Western Harbour Tunnel and Sydney Metro projects.³⁷⁰ Planning was ongoing in 2019, when repairs of the Glebe Island Berth 8 Wharf were flagged as part of the 2019-20 financial year, involving replacement of deteriorated timber piles and components with new piles and structural elements, to restore the wharf’s strength and improve the workload capacity of the deck. At that time, the wharf was used by “commercial vessels importing bulk cement products for use in Sydney’s concrete supply chain.”³⁷¹ The common user berths at Glebe Island and White Bay were also used to receive imports of cement, gypsum, salt, sugar and refined oil products, and to facilitate the export of tallow.³⁷²

By mid-2020, the Bays West Precinct was still used as a working harbour, primarily for industrial and maritime purposes, with planning for major NSW Government infrastructure works still ongoing.³⁷³ However, the COVID-19 pandemic and the Australian Government’s response had a major impact on both trade and cruise ships visiting the port. Despite this, construction work for a new common-user facility at Glebe Island Berths 1 and 2 for the construction industry was scheduled to commence in August 2020, with completion anticipated in mid-2021.³⁷⁴

accessed August 25, 2021, <https://eeaa.com.au/sydneys-temporary-exhibition-centre-closes-and-new-icc-sydney-prepares-to-open/>.

³⁶⁵ Port Authority of New South Wales, Annual Report, 2015-16, 41

³⁶⁶ *Ibid.*

³⁶⁷ Port Authority of New South Wales, Annual Report, 2015-16, 41

³⁶⁸ Port Authority of New South Wales, Annual Report, 2016-17, 7

³⁶⁹ Port Authority of New South Wales, Annual Report, 2016-17, 10

³⁷⁰ Port Authority of New South Wales, Annual Report, 2017-18, 39

³⁷¹ Port Authority of New South Wales, Annual Report, 2018-19, 14

³⁷² Port Authority of New South Wales, Annual Report, 2019-20, 48

³⁷³ Port Authority of New South Wales, Annual Report, 2019-20, 11

³⁷⁴ Port Authority of New South Wales, Annual Report, 2019-20, 26-27

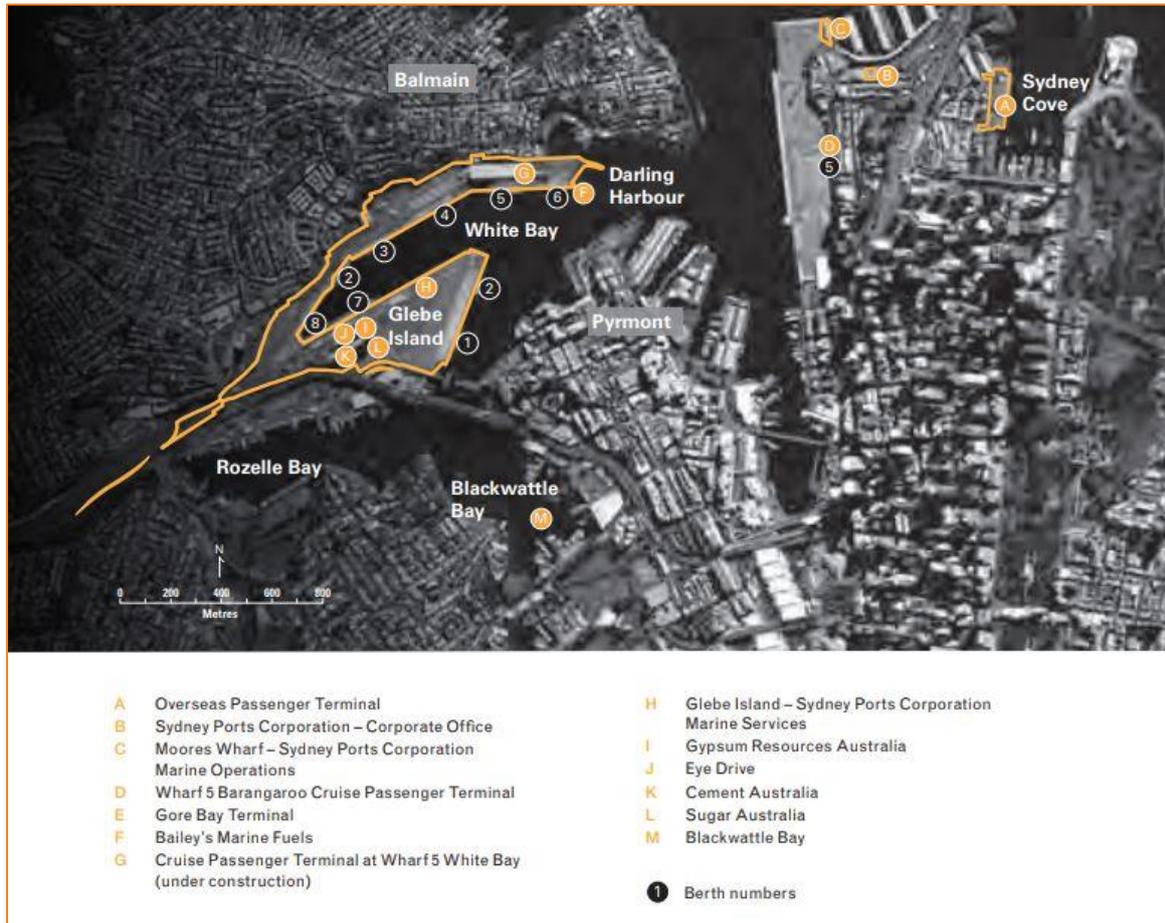


Figure 149: Map published by Sydney Ports Corporation in their 2011-12 Annual Report. Source: Sydney Ports Corporation, *Annual Report, 2011-12*, 33



Figure 150: Aerial photograph showing White Bay and Glebe Island in c2018. Source: Port Authority of NSW, *Annual Report, 2017-18*, 40

3.0 SITE CONTEXT

3.1 Site inspection

3.1.1 Introduction

A site inspection of The Bays construction site for this assessment was conducted on 8 September 2021 by Dr Iain Stuart and Duncan Jones. The site inspection was conducted to understand the ground levels of the site; to identify evidence of ground disturbance and to locate historic fabric which was present at ground level. A photographic record of the landscape, evidence of ground disturbance and relevant inspected features was made during the site inspection.

3.1.2 Site context and setting

The Bays construction site is an area of approximately 7.5 ha located at the south-western end of White Bay. It consists of largely cleared former industrial land located to the east of the White Bay Power Station. The construction site is located within the heritage curtilage of the White Bay Power Station but does not intrude on the physical fabric of the structure of that facility itself.

The site is predominantly flat and levelled overall. The site is bordered on the south by cuttings into the natural sandstone topography of Glebe Island as well as the Glebe Island Silos heritage listed item. The footprint is bounded by Roberts Street to the north. The site is accessed from the Port Access Road which runs from Roberts Street in the north to Somerville Road in the south-east.

Figure 151: View of construction site from Hornsey Street, east aspect.



Figure 152: View of White Bay Power Station from Roberts Street, south-west aspect



Figure 153: View of storage silos and loading facilities on southern side of White Bay, south aspect



Figure 154: View of the western end of White Bay, south-east aspect.



3.1.3 Ground surfaces

The site is predominantly level at between 3 m and 4 m Australian Height Datum (AHD) except for where the ground gently slopes on the southern margin of the site.

The Port Access Road has been raised on artificial embankment and is approximately 1 m higher than the surrounding land on which it was built. The construction of the Port Access Road also included a modified drainage canal on either side of the raised road, as well as new stormwater canals which run underneath the overarching road.

Ground surface modification has been conducted by Westconnex construction works on the immediate southern boundary of the construction site. This has involved the installation of the new Anzac Bridge Access Road flyover directly to the south of the construction site, as well as developing a construction vehicle access road which runs underneath Victoria Road to the west. The construction vehicle access road connects with the Port Access Road and Solomons Way in the south of the construction site.

The remainder of the site is predominantly concrete hardstand. This includes large areas located between the White Bay Power Station in the west and the Port Access Road in the east. This hardstand is not of uniform elevation, with some residual areas of former raised concrete surfaces present, including areas where remnant rail lines are exposed at ground level.

An area in the southern portion of the construction site, directly to the north of the Westconnex construction access road consists of exposed local ground which was previously used for stockpiling of materials during road realignment works for the Bays Road Relocation project.

There is an area of weedy vegetation regrowth located in the western portion of the construction site, located directly to the south and east of the power station, as well as a small area of weedy regrowth vegetation to the south of the Westconnex construction access road. There is a fenced off section in the north of the construction site which is also overgrown with regrowth vegetation; the northern penstock is located within this fenced off enclosure. The margin of the Port Access Road has been laid with turfed grass.

Figure 155: View of raised embankment of Port Access Road, northeast aspect



Figure 156: View Westconnex construction vehicle access road showing regrowth vegetation on southern side, west aspect

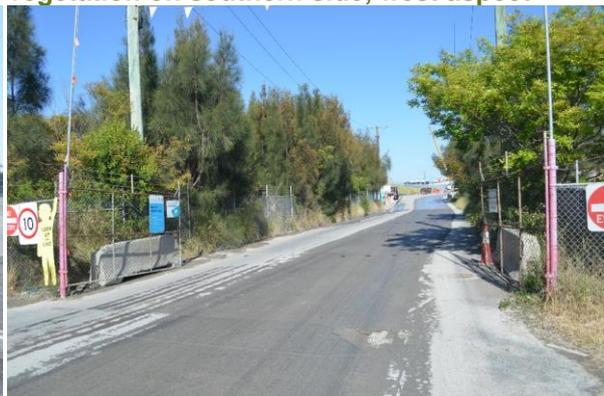


Figure 157: View of hardstand to the south of White Bay Power Station showing remnant rail, west aspect



Figure 158: View of area of cleared ground for former stockpiling works, Port Access Road embankment with new stormwater outlet visible in background. East aspect.



3.1.4 Foreshore frontage

The White Bay foreshore is an artificial construction with variable elevations. The southern portion of the foreshore of the construction site consists of a timber piled jetty with concrete hardstand overlying it. This jetty is approximately 3.2 m AHD, roughly 2.5 m above the median high tide at White Bay. The timber piled jetty runs for approximately 10 m south and transitions to infilled ground at an indeterminate point to the north of the Port Access Road.

The foreshore at the western and northern margin of the construction site consists of a sloped embankment of sandstone rip rap, and the ground surface at the edge of the rip rap is approximately 2.2 m AHD, or roughly 1.5 m above the median high tide at White Bay. The immediate foreshore in this area is concrete hard stand with frequent weedy growth for approximately 12 m from the foreshore. Remnant rail is visible at ground level in this area. Behind this is a modern raised asphalted hard stand at higher elevation (between 3.2 m AHD and 4.2 m AHD) of new truck taxiing and parking areas as well as demountable offices.

The southern outlet for the Outlet Canal of the water circulating system for White Bay Power Station is located within the construction site, approximately 30 m northeast of the western end of the bay. This consists of precast concrete abutments flanking the underground canal exit point at water level. The outlet has large, rusted steel access plates over the top of it and is fenced off from pedestrian access.

Figure 159: View of timber jetty in southern part of the construction site, southeast aspect



Figure 160: View of concrete hardstand foreshore in north-eastern portion of the construction site. Outlet canal visible in right background. Northeast aspect



Figure 161: View of new raised carpark and truck turning area near foreshore. East aspect.



Figure 162: View of outlet canal metal plates and protective fencing. South aspect.



3.2 Previous geotechnical investigations

Sydney Metro conducted extensive geotechnical and contamination investigation of the Bays site in 2020 and 2021.³⁷⁵ Geotechnical information provided in these investigations is discussed here while a summary of ground contamination from these investigations is provided in Section 3.3 below.

Investigation consisted of 56 augured boreholes across the majority of the construction site, as well as NDD service investigation and excavation for soil sample collection. These investigations provide a detailed sub-surface stratigraphic profile which this archaeological research design seeks to investigate.

Ground water monitoring was conducted as part of the subsoil investigations. Water infill information across borehole logs indicate that water infill occurred at between 0.5 m AHD and 1.4 m AHD. In general, this was located at least 2 m below the ground level in most locations of the construction site.

Stratigraphic data outlined in geotechnical logs showed a consistent general stratigraphic profile with significant specific variation of soil contexts across site. The general stratigraphic profile of the construction site confirms the historical understanding of the reclamation process at White Bay – ‘fill’ materials, consisting of sand and sandy clays, often with frequent gravels, were identified typically up to 3 m to 4 m below ground level across site. Below these layers, silty sand and sand deposits were typically identified overlying clays and sandstone bedrock at depth. Where sandstone bedrock was identified, it was around 8 m or greater in depth, except for the southern portion of the construction site located on the footprint of Glebe Island, where bedrock was encountered at less than 1 m depth in some locations.

However, variation between the ‘fill’ layers identified in borehole records was relatively high. Of note were the following material observations:

- Upper profiles of fill layers (up to 0.5 m below ground level) often had frequent gravels, concrete (either surfaces or fragments), asphalt and ash, consistent with the current surface of the site and known resurfacing events throughout the twentieth century
- Some boreholes showed the presence of small fragments of glass, wood, brick, and metal fragments at between 0.5 m and 2 m depth below ground. These materials were identified as often ‘trace’ quantities and did not spatially correlate specifically with suspected archaeological

³⁷⁵ Senversa May 2021. *Factual Contamination Investigation Report – The Bays*. Report prepared for Sydney Metro.

remains (i.e., these materials are suspected to be suspended within fill deposits, and not indicative of discrete deposits which were detected during coring)

- A mix of sand and sandy clays as the primary soil matrix, indicative of infilling with seafloor materials from dredging within White Bay
- The semi-frequent presence of small shells in sand fill deposits, again indicative of infilled estuarine sands and silts from dredging in White Bay
- The presence of “fur – suspected cow fur” in some sand deposits (both identified ‘fills’ and potential natural sand deposits at greater depth). A micrograph of the suspected cow fur was provided in the Senversa report (Figure 163). The presence of cow fur is consistent with deposition of off-cut materials and furs from abattoir activities that then deposited on the floor of White Bay. These fur strands were then either infilled over by later reclamation activities, or were dredged and redeposited in reclamation fills during early twentieth century reclamation activities.



Figure 163: Micrograph of suspected cow fur identified in geotechnical soil deposits, at low (x50) power.³⁷⁶

³⁷⁶ Senversa May 2021. Appendix D Photograph Log, Photo 24 p.12.

3.3 Summary of contamination investigations

Contamination investigation of soil samples throughout the construction identified the presence of a variety of industrial chemicals present within the ground. The presence of potentially toxic industrial chemicals is consistent with the long industrial history and use of the site.

Bonded and non-bonded asbestos has been identified in eight of the ground investigation locations undertaken for the project. Asbestos consisted of fibrous asbestos embedded in soil deposits or as discrete small sections of asbestos cement sheeting.

The proposed excavation methodology includes protocols for managing potentially harmful soil deposits and asbestos containing materials, on conjunction with contract crews and hygienists, and is described in Section 7.7.

4.0 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

4.1 Introduction

This section discusses previous archaeological investigations as a way of understanding sub-surface conditions and as a guide to predicting likely archaeological remains within the study area. Some of the work near the study area has not yet been reported on however the work was undertaken by Artefact and the Excavation Director for these works Dr Iain Stuart is an author for this report and has provided information on located finds.

4.2 Glebe Island Grain Terminal

In April 1994 the City West Development Corporation commissioned Wayne McPhee and Associates to assess the Glebe Island Grain Terminal.³⁷⁷ The scope of the report was defined as assessing the heritage significance of the Glebe Island Silos, Blocks 'D' and "E", and determining the most appropriate future management options for them. The assessment did not consider wharfage or rail transport although these were obviously key elements in the working of the site.

The silos were assessed to be of high heritage significance for its historical role in the development of bulk handling of wheat in Australia, introduction of new technology, landmark qualities and rarity. Despite this assessment, the earlier silo blocks D along with the working house and other early facilities were demolished leaving only the 1970s era blocks A, B and C. Rail access to these facilities were removed.

The only evidence from this site likely to be within the study area are the remains of the railway tracks, arrival, and departure roads to the discharge point at the terminal.

4.3 Balmain Coal Loader

In 1992 Peter Fenwick, an industrial archaeologist, was commissioned by the Maritime Services Board to record the Balmain Coal Loader prior to its demolition.³⁷⁸ The recording which included some material from technical manuals, provided a record of the Balmain Coal Loader in 1992 and gave an indication of 1963 and 1952 development on the site. A limited amount of historical information was provided, and no assessment of heritage values was made.

In a review of the evidence for export coal loading facilities in NSW no evidence of the Balmain Coal loader was noted.³⁷⁹ The site was not heritage listed and was removed in the mid-1990s.

The study area north of the station box covers much of the site of the Balmain Coal Loader, although the station box covers only parts of a coal stack and railway tracks. The industrial archaeological work was one of recording rather than detailed assessment and focused on the above ground level facilities.

³⁷⁷ Wayne McPhee Architects, Thorpe Wendy, and Iain Stuart. The Glebe Island Grain Silos Heritage Assessment Report, Report for PSG Citywest Development Corporation by Wayne McPhee & Associates Pty Ltd. (Sydney: 1994). See also Pollard, Neville. "Silo to Seaboard: Bulk Handling the Golden Grain." Australian Railway History 63, no. 895 (2012): 3-11 for a more detailed historical context.

³⁷⁸ Fenwick, Peter. A Heritage Record of the Balmain Coal Loader. Prepared by Peter Fenwick for the Maritime Services Board of NSW (Balmain, NSW: 1992).

³⁷⁹ Stuart, Iain Malcolm. Desktop Study of Coal Loading Facilities at NSW Ports. Report by JCIS Consultants for Major Property Development, Roads and Maritime Services (Concord: 2016).

As far as can be ascertained the recording was all the heritage work undertaken on the Balmain Coal Loader prior to its demolition.

4.4 White Bay Power Station

The heritage values of the White Bay Power Station began to be recognised in the late 1980s when the then Electricity Commission of NSW began a master planning process for the deacquisition of Pyrmont, Balmain and White Bay Power Stations which were decommissioned. A detailed study of the site was undertaken by Don Godden and Associates in 1989 which identified that the place had state level heritage significance. The work of identification was essentially industrial archaeology although no archaeological excavation was undertaken.³⁸⁰

A more comprehensive Conservation Management Plan (CMP) was undertaken under the auspices of Design 5 in 2002 with the final plan being endorsed in 2004. Subsequently the plan was revised in 2011 to include the site of the former White Bay Hotel with the final of this plan being endorsed in 2013.³⁸¹

The report notes that a number of site surveys were undertaken of the White Bay Power Station during June--July 2002 and February 2003 to identify the full extent of the extant machinery at the station and to assess the condition of its fabric. The report states that no machinery was dismantled or operated, and operational status has not been explored in this report. No destructive intervention of fabric was carried out. It appears that no archaeological investigations involving excavation were undertaken.³⁸²

The CMP however did consider archaeological potential in Section 5.13.1 where the potential of the remains of the White Bay hotel are very briefly discussed as are the site of building fronting Roberts Street and Crescent Street. The areas of archaeological potential mapped in Figure 5.13.1.1 seem to include a road alignment where obviously there were no buildings. This supports the need for further research and assessment identified in Police 5.13.1 of the CMP.³⁸³

The CMP however does not discuss the archaeological potential of the filled ground on which part of the Power Station is constructed the potential of the site to contain redundant and below ground railway infrastructure.

4.5 Assessment of White Bay Western Harbour Tunnel and Beaches Link

The Western Harbour Tunnel and Beaches Link is a New South Wales (NSW) Government initiative to provide additional road network capacity across Sydney Harbour and to improve connectivity with Sydney's Northern Beaches. This includes the Western Harbour Tunnel and Warringah Freeway Upgrade project. As part of the project a construction support site is proposed at White Bay

Cosmos Archaeology Pty Ltd was engaged to undertake the maritime archaeological work to fulfill the Secretary's Environmental Assessment Requirements for this project.³⁸⁴ The research by Cosmos is

³⁸⁰ Don Godden and Associates. The Significance of White Bay and Balmain Power Stations to Sydney's Industrial Heritage. Report to report to the Electricity Commission of NSW by Don Godden and Associates (1989).

³⁸¹ Design 5 Architects Pty Ltd. White Bay Power Station, Robert Street, Rozelle, NSW: Conservation Management Plan, Volumes 1-6. Prepared for The Sydney Harbour Foreshore Authority by a team led by Design 5 Architects Pty Ltd (2013).

³⁸² Design 5 Architects Pty Ltd. White Bay Power Station, Volume 5, White Bay Power Station Historic Machinery Inventory and Conservation Strategies p2.

³⁸³ Design 5 Architects Pty Ltd. White Bay Power Station, Volume 2, The Report, p197-198

³⁸⁴ Cosmos Archaeology Pty Ltd. "Appendix K - Maritime Heritage." In Western Harbour Tunnel and Warringah Freeway Upgrade Technical Working Paper: Prepared for Roads and Maritime Services by Cosmos Archaeology Pty Ltd, 2020.

of interest as a maritime archaeology perspective is applied to the landscape and archaeology at White Bay, expanding upon the landward scope that has been previously employed by other archaeologists and heritage specialists.

This assessment identified that due to the frequent dredging in White Bay to maintain it as an operational harbour, maritime archaeological deposits would not be anticipated on the floor of the harbour directly adjacent to the study area, with the exception of relatively modern discard of material from maritime vessels in White Bay. However, the assessment identified that artefactual and structural remains within reclaimed areas was considered 'very likely' and that reclamation fills usually preserved buried remains in these contexts.

4.6 Sydney Metro West Power Enabling Works: The Bays Station Construction Site Revised Historical Archaeological Research Design

The SMW Power Enabling Works (PEW) project at Rozelle involves the installation of a 33kV electrical conduit between the Rozelle substation and The Bays Station construction site. The PEW works involve installing 33kV electrical conduits between the Rozelle substation and The Bays Station construction site. Works within The Bays Station construction site involve installing conduits below ground under an exit road leading from Port Access Road to Robert Street, and under a verge to the immediate west of this exit road.

This impact of this work on the Circulating Water system for the White Bay Power station was assessed by GML Heritage in early 2021.³⁸⁵ It is not clear why the impact on the Beattie Street Stormwater Channel, listed on Sydney Waters Section 170 register was not assessed as well; it is presumed that this impact is discussed elsewhere.

The circulating water system was an important part of the operations of the White Bay Power station as it cooled the turbines and the fresh water circulating in the system used to create the steam that drove the turbines. The original outlet for the cooling water was in White Bay and consisted of reinforced concrete boxed sections leading to an open channel running into White Bay.

The construction of the outlet was in land previously reclaimed, and the outlet ran into muddy flats at the then head of White Bay. The 1948 aerial image showed these flats being at the landward side of a wharf, Balmain No 1 constructed in the 1940s.

The GML report notes that the outlet was realigned in the early 1950s – 1954 is the likely date. The cause for the relocation and that of the Beattie Street drain was the development of Balmain No 1 wharf for mechanical coal loading, not as GML suggests the expansion of the Power Station.³⁸⁶

The site history focused on the circulation water canal and does not deal with the history of the coal loaders which immediately abutted the outlet and which later covered the site of the inlet. There is also limited discussion of the impact of the removal of the coal loader and subsequent site rectification on whether archaeological remains would be present within this area.

The archaeological assessment divided the site history into five phases and identified that there was the potential for archaeological remains from all phases to be located in the proposed area of works. It was considered that the period from the construction of the Balmain Power Station to the present

³⁸⁵ GML Heritage. Sydney Metro West Power Enabling Works the Bays Station Construction Site Revised Historical Archaeological Research Design & Excavation Methodology. Report by GML Heritage for Quickway (2021).

³⁸⁶ Department of Railways 1954 White Bay Sidings serving electricity Commission Power House, 27th July 1954 EMS No 49303, Virtual Plan Room TfNSW, SMWSDDS-SMD-TBY-HE-DWG-007083

had the greatest potential to contain archaeological evidence mainly in the form of fills and abandoned infrastructure from the first outlet canal.

The assessment of potential concludes “There is high potential for reclamation fills and for evidence of the occupation of the site of Sydney Harbour Trust to be present within the study area. There is high potential for the Inlet Canal, part of the White Bay Power Station Circulating Water System, to be present within the study area.”³⁸⁷

To date the archaeological works proposed in the assessment, namely test excavation followed by salvage excavation, have not been implemented.

4.7 Bays Road Relocation Project

Sydney Metro is reconfiguring the internal port road network at Rozelle in order to facilitate the orderly urban renewal of the Bays West area while maintaining access to the White Bay Cruise Terminal and other port operations at Glebe Island and White Bay.

Some of the work near the study area has not yet been reported on however the work was undertaken by Artefact and the Excavation Director for these works Dr Iain Stuart is an author of this report and is able to indicate what was located.

The main finding is the remains of the Penrice later ICI soda ash unloading facility at White Bay – this consisted of a concrete slab, which may have been the original No 9 Shed and a pit for the unloader and the base of silos. These date from c1960 until around 2014 and are not considered heritage significant.

Rail tracks were also located given the extensive sidings used to serve the wharf and the Glebe Island Grain Terminal. Railway tracks aligned with known rail lines identified in historical plans and aerials.

Ephemeral remains of what could be a sandstone drain were located at relative depth (over 1 m) but it was concluded that these remains may have been disturbed. These remains were not impacted by the works.

4.8 Barangaroo South Archaeological Excavation, 2010 – 2012

Archaeological excavations were undertaken between 2010 and 2012 for the development of Barangaroo South by Lend Lease. Despite being beyond the vicinity of The Bays Station construction site, these excavations reveal information regarding potential archaeological remains associated with land reclamation along the Sydney Harbour foreshore.³⁸⁸

The Barangaroo South excavations revealed quarry marks within natural bedrock as part of later nineteenth-century modifications to the natural landscape. They also discovered evidence of the reclamation process, including the deposition of rubble sandstone to form a platform to the high water level, and compacted sands and clays to form a new ground about one metre above the high tide level. The remains of a boat ramp or skid consisting of sloping sandstone pavers were located at the high tide mark, with sandstock brick piers and postholes further up the slope indicating that a timber element had once been present for small vessels. A thin, timber-rich silt surface with a high frequency of copper nails also overlaid the reclamations fills. The excavation demonstrated that multiple phases of historical occupation are clearly identifiable and preserved below reclamation fills.

³⁸⁷ GML Heritage 2021 p32

³⁸⁸ Casey & Lowe, 2012. *Archaeological Excavation: Barangaroo South, preliminary results*. Lend Lease, Sydney.

4.9 Barangaroo Headland Park Archaeological Excavation, 2013 – 2015

Archaeological excavations were undertaken by Austral Archaeology between 2013 and 2015 around Barangaroo Headland Park ahead of proposed developments to the area³⁸⁹. While these excavations also occurred beyond the vicinity of The Bays Station, they provide an appropriate comparison as the site they were conducted in represents another area in use since the nineteenth century, that was subjected to land reclamation works and saw various phases of land use.

These excavations observed stratigraphic evidence indicating numerous reclamation acts during the 19th and early-20th centuries. Subsequently, the Barangaroo Headland Park excavations prove to be a useful resource as they provide numerous examples of types of land reclamation cuts and the processes involved in creating these, as well as discussion of stratigraphy within reclamation fills that serve as useful comparative materials.

The excavation report also describes some 10,000 historical artefacts that were uncovered during this archaeological program. The finds associated with reclamation layers that are described within are useful in helping to predict the types of materials that could be present within the reclamation fill layers of White Bay.

4.10 Woolpack Inn, Haymarket Archaeological Investigation, 2011

As part of broader archaeological excavations at 710-722 George Street, Haymarket, Casey & Lowe excavated the site of the former Woolpack Inn³⁹⁰. This public house operated between the 1820s and until at least 1880, after which time it was demolished, and various other developments were constructed on top of it. Initially, the area encompassing the Woolpack Inn was believed to possess no archaeological potential, but subsequent testing and archaeological excavation demonstrated otherwise.

Portions of the Inn's footings were located within the northern and southern borders of the area termed Lot 2, adjacent to George Street, although subsequent disturbance had damaged the middle portion of the structure. Structural elements such as postholes, walls, fireplaces and a drain were discernible, along with artefactual deposits. The artefacts recovered from this site, which include those found in underfloor deposits included glass and ceramic items, and faunal remains.

The excavations also uncovered external elements associated with the Woolpack Inn, specifically a drain and a cesspit. The sandstone brick drain, dated to between 1800 and 1850 and measuring more than 25m in length, had not previously been included on the available historical maps for the site. The cesspit was only included on plans after 1865, although it was believed to have been constructed prior to 1830 and was overlooked in earlier plans. The cesspit was backfilled prior to the Inn's demolition and contained artefacts identified as the pub's refuse.

³⁸⁹ Austral Archaeology 2016. *Barangaroo Headland Park, Historical Archaeological Excavation, Sydney, Volumes 1-5*. Lend Lease, Sydney.

³⁹⁰ Casey & Lowe 2011. *Archaeological Investigation 710-722 George Street, Haymarket, Volumes 1-5*. Inmark, Sydney.

5.0 ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL AND SIGNIFICANCE

5.1 Assessment of archaeological potential

The assessment of historical archaeological potential discusses the study area’s potential to contain historical archaeological resources. This assessment is based on consideration of historic land use, current ground conditions, analysis of the historical development of the study area, and considering whether subsequent actions (either natural or human) may have impacted on archaeological evidence for these former land uses.

‘Archaeological potential’ refers to the likelihood that an area contains physical remains associated with an earlier phase of occupation, activity or development of that area. This is distinct from ‘archaeological significance’ and ‘archaeological research potential’. ‘Archaeological significance’ refers to the cultural value of the known items within an area, whilst ‘archaeological research potential’ refers to the cultural value of the potential archaeological remains in an area.

Knowledge of previous archaeological investigations, and an understanding of the potential archaeological remains have been assessed with due consideration of the historic land use and previous ground disturbance that may have impacted any subsurface archaeological remains. This is presented using the grades of archaeological potential provided in Table 3.

Table 3. Grades of archaeological potential

Grading	Justification
Nil	No evidence of historical development or use, or where previous impacts such as deep basement structures would have removed all archaeological potential.
Low	Little or low intensity historical development, or where there have been substantial previous impacts, disturbance and truncation in locations where some archaeological remains such as deep subsurface features (privies, cesspits or wells) may survive.
Moderate	Known historical development and some previous impacts, but it is likely that archaeological remains survive with some localised truncation and disturbance.
High	Evidence of multiple phases of historical development and structures with minimal or localised later development impacts, and it is likely the archaeological resource would be largely intact.

5.2 Research potential and archaeological significance

In 1984, Bickford and Sullivan³⁹¹ examined the concept and assessment of archaeological research potential; that is, the extent to which archaeological resources can address research questions. They developed three questions which can be used to assess the research potential of an archaeological site:

- Can the site contribute knowledge that no other resource can?
- Can the site contribute knowledge that no other site can?

³⁹¹ Bickford, A. and S. Sullivan, 1984. “Assessing the research potential of historic sites” in *Sites Surveys and Significance Assessment in Australian Archaeology*.

- Is this knowledge relevant to:
 - General questions about human history?
 - Other substantive questions relating to Australian history?
 - Other major research questions?

In the 2009 guidelines *Assessing Significance for Historical Archaeological Sites and 'Relics'*, the NSW Heritage Division has since provided a broader approach to assessing the archaeological significance of sites, which includes consideration of a site's intactness, rarity, representativeness, and whether many similar sites have already been recorded, as well as other factors. This document acknowledges the difficulty of assessing the significance of potential subsurface remains, because the assessment must rely on predicted rather than known attributes.³⁹² A site can have high potential for archaeological remains, and yet still be of low research potential if those remains are unlikely to provide significant information or make contributions to our current state of knowledge.

In addition, these archaeological guidelines address the potential significance of archaeological remains against the NSW Heritage Assessment Criteria. A discussion of how these criteria apply to assessments of archaeological remains has been extracted from the 2009 guidelines and provided in Table 4.

Table 4. NSW Heritage criteria for assessing significance related to archaeological sites and relics³⁹³

Criteria	Discussion
Archaeological research potential (criterion E)	<p>Archaeological research potential is the ability of archaeological evidence, through analysis and interpretation, to provide information about a site that could not be derived from any other source and which contributes to the archaeological significance of that site and its 'relics'.</p> <p>The integrity of the site, the state of preservation of archaeological material and deposits will also be relevant.</p>
Associations with individuals, events or groups of historical importance (criteria A, B & D)	<p>Archaeological remains may have particular associations with individuals, groups and events which may transform mundane places or objects into significant items through the association with important historical occurrences.</p>
Aesthetic or technical significance (criterion C)	<p>Whilst the technical value of archaeology is usually considered as 'research potential' aesthetic values are not usually considered to be relevant to archaeological sites. This is often because until a site has been excavated, its actual features and attributes may remain unknown. It is also because aesthetic is often interpreted to mean attractive, as opposed to the broader sense of sensory perception or 'feeling' as expressed in the Burra Charter.</p> <p>Nevertheless, archaeological excavations which reveal highly intact and legible remains in the form of aesthetically attractive artefacts, aged and worn fabric and remnant structures, may allow both professionals and the community to connect with the past through tangible physical evidence.</p>

³⁹² NSW Heritage Branch 2009

³⁹³ *ibid*

Criteria	Discussion
Ability to demonstrate the past through archaeological remains (criteria A, C, F & G)	<p>Archaeological remains have an ability to demonstrate how a site was used, what processes occurred, how work was undertaken and the scale of an industrial practice or other historic occupation. They can demonstrate the principal characteristics of a place or process that may be rare or common.</p> <p>A site may best demonstrate these aspects at the time of excavation. It may also be possible to explain the nature of the site and demonstrate past practices via public interpretation either before, during, or after excavation.</p>

5.3 Overview of significant archaeological remains

The history of the construction site has been broken into discrete historical phases to discuss potential archaeological remains. Within each historic phase specific remains are assessed for their archaeological potential and archaeological significance in accordance with the methodology provided in Section 5.1 and Section 5.2. These assessments are provided in inventory sheets for each specific archaeological item, which are provided in Appendix A of this report.

A summary of the historical phases and descriptions of inventory sheets for each phase is outlined in Table 5.

A summary of the location and potential of significant non-Aboriginal archaeological remains is outlined in Section 5.4.

Table 5: Summary of historic phases and archaeological inventory sheets from each phase

Phase	Date Range	Use of site	Archaeological Inventory Sheets
Phase 1	1800 – 1910	William Balmain Estate, land clearing, subdivision, construction of the Glebe Island causeway and Abattoir, successive reclamation fill events within White Bay, construction and use of First White Bay Hotel on edge of site	<ul style="list-style-type: none"> • Reclamation Fills (Section 8.1) • First White Bay Hotel and associated structures (Section 8.2) • Timber Yard (Section 8.3) • Rubble Ballast Dyke (Section 8.4)
Phase 2	1910 – 1950	Construction of White Bay Power Station, establishment of grain island terminal and permanent wharf facilities, development of locomotive facilities and railhead, reduction of Glebe Island topography, use of White Bay of wartime storage and wharfage	<ul style="list-style-type: none"> • Roundhouse, turntable and locomotive siding (Section 8.5) • Railway Infrastructure (Section 8.6) • White Bay Steel Works (Section 8.7) • Coal Loading and Ash Handling Facilities (Section 8.8) • No. 9 Shed (Section 8.9) • US Army Warehouses and RAAF Mess Hall (Section 8.10) • Circulating Water Conduit (Section 8.11)

Phase	Date Range	Use of site	Archaeological Inventory Sheets
			<ul style="list-style-type: none"> Beattie Street Stormwater Canal (Section 8.12)
Phase 3	1950 – 1970	Development of coal shipping and handling, expansion of White Bay Power Station, use of site for handling and loading of bulk goods	<ul style="list-style-type: none"> Balmain Coal Loader (Section 8.13)
Phase 4	1970 - Present	Decommissioning of power station and reduction in bulk goods wharfage.	No archaeological items of significance have been identified from this phase

5.4 Significant archaeological remains

5.4.1 Archaeological remains identified in phase 1

Based on archaeological assessments of potential and significance undertaken in Appendix A, the significance of predicted archaeological remains in phase 1 (1800 - 1910) is shown in Figure 164. The location of these remains is illustrated in Figure 164.

Table 6: Summary of archaeological remains identified in phase 1 (1800 – 1910)

Archaeological Item (Inventory Sheet)	Potential	Significance
Reclamation Fills (Section 8.1)	<ul style="list-style-type: none"> Bulk fill materials – High Potential Undocumented industrial and maritime rubbish or equipment – Low Potential 	<ul style="list-style-type: none"> Bulk fill materials – Local Significance Undocumented industrial and maritime rubbish or equipment – Local to State Significance depending on the nature of the individual items
First White Bay Hotel and associated structures (Section 8.2)	Low	Local
Timber Yard (Section 8.3)	Low	Not significant
Rubble Ballast Dyke (Section 8.4)	Moderate	Local

5.4.2 Archaeological remains identified in phase 2

Based on archaeological assessments of potential and significance undertaken in Appendix A, the significance of predicted archaeological remains in phase 2 (1910 – 1950) is shown in Table 7. The location of these remains is illustrated in Figure 165.

Table 7: Summary of archaeological remains identified in phase 2 (1910 – 1950)

Archaeological Item (Inventory Sheet)	Potential	Significance
Roundhouse, turntable and locomotive siding (Section 8.5)	Moderate	Local
Railway Infrastructure (Section 8.6)	High	Not Significant
White Bay Steel Works (Section 8.7)	Low	Local
Coal Loading and Ash Handling Facilities of the White Bay Power Station (Section 8.8)	Low	Local / State if in good state of intactness
No. 9 Shed (Section 8.9)	Low	Not Significant
US Army Warehouses and RAAF Mess Hall (Section 8.10)	Low	Local
Circulating Water Conduit (Section 8.11)	High	State
Beattie Street Stormwater Canal (Section 8.12)	High	Local

5.4.3 Archaeological remains identified in phase 3

Based archaeological assessments of potential and significance undertaken in Appendix A, the significance of predicted archaeological remains in phase 3 (1950 – 1970) is shown in Table 8. .

Table 8: Summary of archaeological remains identified in phase 3 (1950 – 1970)

Archaeological Item (Inventory Sheet)	Potential	Significance
Balmain Coal Loader (Section 8.13)	Moderate	Not significant



Document Path: D:\GIS\GIS_Mapping\21102_Bays_Metro_Ard\IMXD\Phase_1_Arch_Pot.mxd



Archaeological Significance and Potential
Phase 1 (1800 - 1910)
21102: The Bays Metro ARD
 LGA: Inner West

SCALE 1:2,000
 SIZE A4
 DATE 29/10/2021

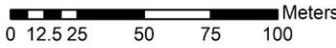
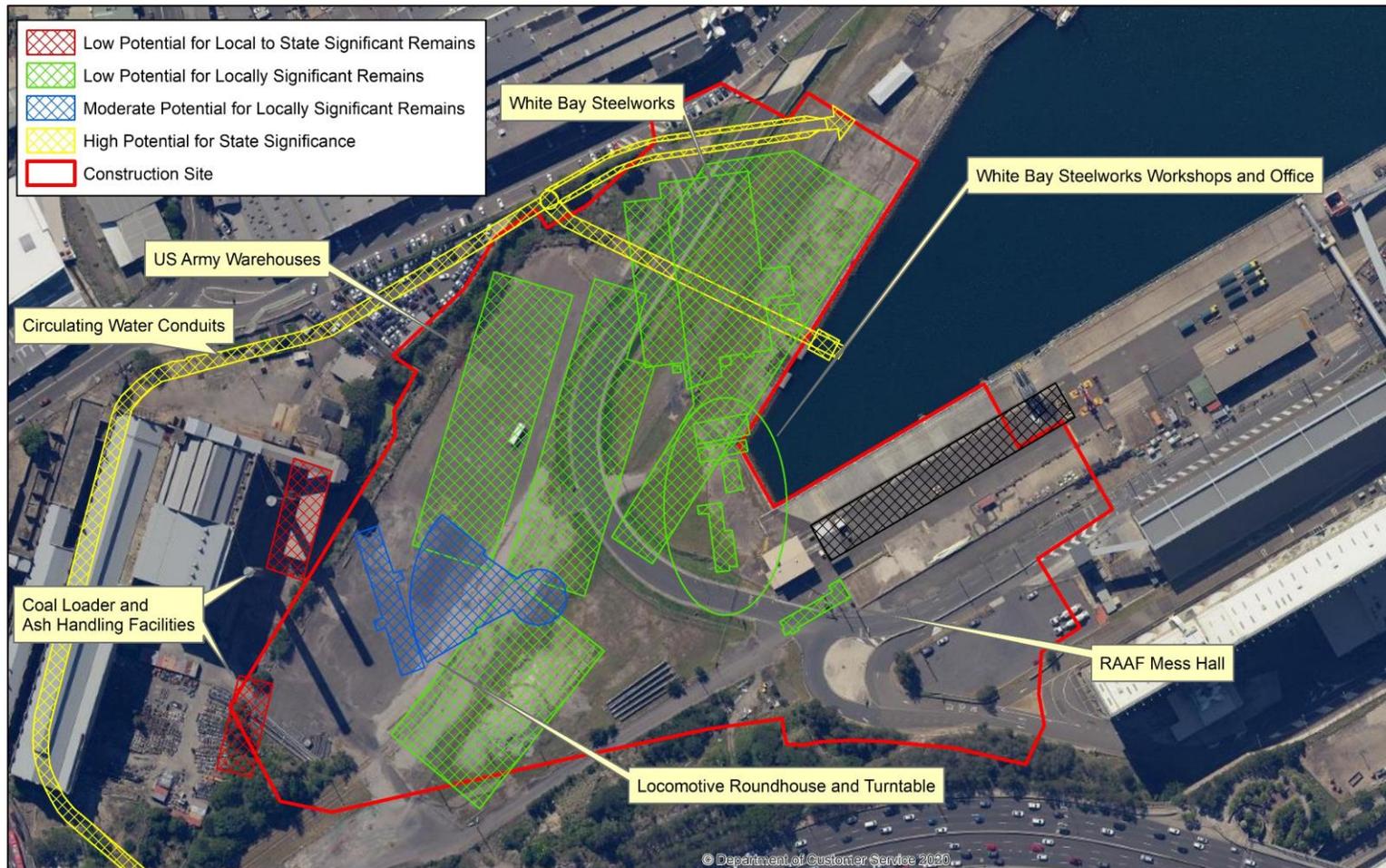


Figure 164: Location of significant archaeological remains for phase 1



Document Path: D:\GIS\GIS_Mapping\21102_Bays_Metro_Metro_Arch\Phase_2_Arch_Pot.mxd



Archaeological Significance and Potential
Phase 2 (1910 - 1950)
21102: The Bays Metro ARD
 LGA: Inner West

SCALE 1:2,000
 SIZE A4
 DATE 2/11/2021



Figure 165: Location of significant archaeological remains for phase 2

6.0 RESEARCH DESIGN

6.1 Historic themes

Contextual analysis is undertaken to place the history of a particular site within relevant historical contexts, in order to gauge how typical or unique the history of a particular site actually is. This is usually ascertained by gaining an understanding of the history of a site in relation to the broad historical themes characterising Australia at the time. Such themes have been established by the Australian Heritage Commission and the NSW Heritage Office and are outlined in synoptic form in *New South Wales Historical Themes*, issued by the NSW Heritage Office.

6.1.1 Summary of relevant themes

After considering the history of the study area, five relevant historical themes were identified. This is presented in Table 9. Each theme will be discussed in turn to contextualise the site history and identify potential archaeological evidence. Historic themes and their descriptions have been derived from the Heritage Council of NSW Historical themes guidelines.³⁹⁴

Table 9: Historic themes relevant for the predicted archaeological remains

National Theme	NSW Theme	Notes	Examples of evidence in the study area
3 Developing local, regional and national economies	Environment – cultural landscape	Activities associated with the interactions between humans, human societies and the shaping of their physical surroundings	Alteration of Glebe Island to create level platforms for infrastructure such as the Abattoir, Grain silos and the Vacuum Oil site. Filling of the area at the head of White Bay in several phases. Cutting of the area along Roberts Street and Crescent Street to create a space for the White Bay Power Station Drainage of Balmain/Rozelle via the Beatie Street drain.
3 Developing local, regional and national economies	Transport	Activities associated with the moving of people and goods from one place to another, and systems for the provision of such movements	Transport of grain to the Grain Terminal. Transport of coal to White Bay Power Station. Transport of coal for export Transport of other goods inwards and outwards by sea. Variation of material handling over time e.g., bagged wheat to bulk movement, coal in hoppers versus bulk coal via McMyler Hoist, pallets.

³⁹⁴ Heritage Council of NSW 2001. *New South Wales Historical Themes*. Heritage Office guidelines. Accessed online 20 September 2021: <https://www.heritage.nsw.gov.au/assets/Uploads/a-z-publications/g-i/Historical-Themes.pdf>

3 Developing local, regional and national economies	Industry	Activities associated with the manufacture, production and distribution of goods	Construction and operation of the White Bay Steel Works, use and development of the rail yards and loading wharves
4 Building settlements, towns and cities	Utilities	Activities associated with the provision of services, especially on a communal basis	Construction and operation of the White Bay Power Station. Drainage of Balmain/Rozelle via the Beatie Street drain.
7 Governing	Government and administration	Activities associated with the governance of local areas, regions, the State and the nation, and the administration of public programs – includes both principled and corrupt activities	All industrial and utility activities at the site are controlled by the government from 1910. Administration becomes further privatised towards the late 20 th century when the facilities are decommissioned.
7 Governing	Defence	Activities associated with defending places from hostile takeover and occupation	Dock facilities at Glebe Island occupied by the AMF from c1940 onwards. US Navy facilities (stores) erected at the head of White Bay from 1943 to c1950
8 Developing Australia's cultural life	Leisure	Activities associated with recreation and relaxation	First White Bay Hotel and its associated structures' use as a place of leisure by White Bay's working class.

6.1.2 Developing local, regional and national economies: Environment – cultural landscape

This theme covers the interactions between humans and their environment focusing on the creation of cultural landscapes that demonstrate the historical process at work.

In the case of the study area the historical evidence shows a clear utilitarian view of the study area over time where White Bay and Glebe Island are valued for how they can be exploited and turned into productive land rather than for their aesthetics or other values. Glebe Island for example was seen as a suitable place for a noxious industry and its shores were relentlessly quarried initially to supply ballast and probably dimensioned stone and then quarried to make level areas to facilitate Glebe Islands use for wharfs and associated features such as the grain silos.

The construction of the Beatie Street channel is another example where the channel was constructed to control a natural drainage feature and prevent flooding so that the land in the catchment can be utilised with less risk of flooding. This activity was similar to other drainage schemes for example the canalising of O'Shea's Creek and the construction of concrete drains in Alexandria.

The filling of the head of White Bay has produced the most extensive archaeological manifestation of this approach of turning the natural landscape into a productive landscape although this is not immediately apparent. Most of the study area is constructed on the filled area.

The filling of bays and coves on the foreshore of Sydney Harbour was very common and has been researched by Birch³⁹⁵ looking at contamination of the Harbour and McLoughlin looking at vegetation and conservation.³⁹⁶ McLoughlan, referring to historical records, has noted increased sedimentation in catchment caused by the clearing and development of catchments and that this led in some cases to the need to dredge estuaries. She refers to an 1866 report Commission into the Condition of the Harbour of Port Jackson the evidence to which revealed “an extraordinary rate of sedimentation. In specific locations around the edges of Sydney Cove and Darling Harbour, witnesses described shoaling by as much as 1.5 m in 10 years, 1 m in 3 years, 3 m in 11 years, and almost 4 m in 30 years.”³⁹⁷ While some saw sedimentation as an issue others used it as the basis for reclamation projects and the Commission was generally favourable to reclamation schemes.

There were in general two types of scheme – private and public. Private reclamation was encouraged where title ran to the low water mark but in other cases a licence to reclaim could be obtained and an area reclaimed. Once reclaimed the land became unalienated Crown Land and could be purchased under the provisions of the Crown Land Act. This happened at White Bay with the Australian Gas Light works and when public reclamation occurred to owners of lots in Sections 18 and 19. This process was quite common and unexceptional.

Public reclamation schemes were more common from the 1860s onwards and the work was generally funded by the State government. These were larger areas – at Balmain there was White Bay and Snails Bay (now Birchgrove Park). McLoughlan lists 28 such projects including White Bay.³⁹⁸ These projects were ones where mechanical and later suction dredging was used to pump sediment into the areas being reclaimed.³⁹⁹

There is more interest in the nature of the fill especially as contaminant leaching from fill can be a source of pollutants. Birch et al cite a Public Works Department report from 1889 as saying that “reclamation was seen as an effective means of garbage disposal and was described as the ‘tumbling into the water all the old boilers and other rubbish that could be raked together’.”⁴⁰⁰ In contrast sediment pumping would introduce sediments of a consistent size and nature as only sediment of a certain size would be able to go through the pumps.

White Bay is certainly a public funded reclamation program undertaken over a short period of time 1890 to 1892 by sediment from mechanical and suction dredges. It contrasts to the earlier filling of areas along Darling Harbour which was undertaken by individuals and over small area and at varying times. Filling at Darling Harbour seems not to have been using dredged material.

6.1.3 Developing local, regional and national economies: Transport

Clearly the transport of goods was critical in developing an economy and in NSW the transport of goods was compounded by the geography and the dispersed nature of settlement. The development of rail transportation linked rural settlements and extractive industries with the commercial and ort

³⁹⁵ Birch, Gavin. "A Short Geological and Environmental History of the Sydney Estuary , Australia." 214-43, 2006; Birch, Gavin F., Orla Murray, Ian Johnson, and Andrew Wilson. "Reclamation in Sydney Estuary, 1788–2002." *Australian Geographer* 40, no. 3 (2009): 347-68.

³⁹⁶ E.g. McLoughlin, Lynette C. "Shaping Sydney Harbour: Sedimentation, Dredging and Reclamation 1788-1990s,." *Australian Geographer* 31, no. 2 (2010): 37-41.

³⁹⁷ McLoughlin, Lynette C. "Shaping Sydney Harbour : Sedimentation , Dredging and Reclamation 1788-1990s,." *Australian Geographer* 31, no. 2 (2010),p189. As the report is a Parliamentary Paper it is unable to be accessed due to Libraries closing for Covid 19.

³⁹⁸ McLoughlan 2000: Table 2.

³⁹⁹ See Portus, A.B. "Centrifugal pump dredging in New South Wales, *Journal and Proceeding of the Royal Society of NSW* 30, 1896; 110-130.

⁴⁰⁰ Birch, Gavin F., Orla Murray, Ian Johnson, and Andrew Wilson. "Reclamation in Sydney Estuary, 1788–2002." *Australian Geographer* 40, no. 3 (2009): 347-68.

facilities at Sydney. White Bay from c1910 developed into an example of an intermodal interchange and an exemplar of technological changes in the transport industry.

In Section 2.4.1.1 of the history in this report, the Metropolitan Goods Line was discussed. This was an alternative access to the port facilities developed by the newly established Sydney Harbour Trust at Darling Harbour and Pyrmont. Until that time access to Darling Harbour was via the Goods Line through Central Station and train paths had to compete with paths for Suburban and Country trains.⁴⁰¹

The Metropolitan Goods Line connected to the Pyrmont end of Darling Harbour where the Harbour Trust was developing new wharfs and good sheds, including some bulk handling facilities for coal and grain.⁴⁰² The Rozelle Goods Yard formed a storage area for inwards and outwards goods and the sidings to White Bay, Glebe Island and Balmain served the wharfs and the White Bay Power House. The wharf were to be developed by the Sydney Harbour Trust and a birds-eye view of how this was supposed to be developed was issued by the Sydney Harbour Trust in 1912.

The plan shows Glebe Island as having the two McMyler Hoists as well as sheds for general goods. White Bay is shown as having general goods wharfs along the Balmain Shore and nothing at the head of the Bay.

What actually happened was that the McMyler hoists were not erected, and the area was used for the Glebe Island Grain Terminal. Why the McMyler hoists were not erected is obscure at the moment. The broad picture is that the Commonwealth, in effect, nationalised the export of wheat in 1915/16 and created a wheat pool to sell export wheat to the United Kingdom and a shipping line to transport the wheat. Storage of wheat was required and the system of bulk handling which has been recommended for NSW at least since 1904 was adopted and partially funded by the Commonwealth.⁴⁰³ It is not clear precisely why Glebe Island was chosen for the terminal but it seems likely that the wharfs and the availability of space (gained by removing more of Glebe Island) to erect the buildings and bulk loading infrastructure was one factor another would have been space to store trains of wheat wagons inwards and outwards in the Rozelle Goods Yard. The space taken for the terminal silo and for bulk loading shipping that the effect of forcing the plans for the coal loading facilities to be put on hold.

In addition to the bulk loading facilities there were sheds for loading bagged wheat. Not all the farms in NSW moved to bult loading and it was not until 1953 that the NSWGR ceased hauling wheat in bag. Debenham in describing the bulk handling facilities noted "that every vessel taking a cargo of bulk wheat requires to " top up " with a certain amount of bagged wheat" and it was best to have both facilities co-located.⁴⁰⁴

Development of export coal loading facilities was further delayed by the onset of the depression which then limited money for public works and reduced coal exports. This left the Port of Sydney with the coal loader at Pyrmont which was limited in the coal it could handle. Deb writing in 1927 noted plans to construct "a large jetty in White Bay equipped probably with modern electric cranes. The jetty will be capable of dealing with three or four vessels simultaneously".⁴⁰⁵ As noted earlier, work

⁴⁰¹ McKillop, Bob, Sydney's Metropolitan Goods Lines, Dictionary of Sydney, 2017, http://dictionaryofsydney.org/entry/sydneys_metropolitan_goods_lines, viewed 12 Sep 2021

Proudfoot, Peter R. "The Extension of Maritime Activity in Sydney: Pyrmont, Glebe Island and Balmain, 1890-1950." *The Great Circle* 10, no. 2 (1988): 110-35.

⁴⁰² Proudfoot 1988:112.

⁴⁰³ Pollard, Neville. "Silo to Seaboard: Bulk Handling the Golden Grain." *Australian Railway History* 63, no. 895 (2012): 3-11.

⁴⁰⁴ Debenham, Arthur John. "The Port of Sydney." *Transactions of the Institution of Engineers, Australia* 8 (1927): 283-327

⁴⁰⁵ Debenham 1927 p301.

commenced on Balmain Wharf in 1936 but images of the site in the early 1940s (e.g., Figure 104) do not show any coal loading facilities such as cranes or sidings for coal hoppers.

The development of the Balmain Coal loader in the early 1950s moved the focus on export coal loading from Pyrmont and Balls Head (both of which had problems) to White Bay. The site had excellent connections to the Western Coal mines and some of the Southern (the Metropolitan Colliery exported through Sydney Harbour for example). However as will be discussed below, the technology of materials handling was outdated, and it was not until the second coal loader was installed that the coal loading facilities could be considered “modern.”⁴⁰⁶

One theme regarding transport that the history of transportation at White Bay touches on is material handling on wharfs. Malcolm Tull has commented that in contrast to technological developments in shipping “the world's ports remained much as they were in the 19th century, congested access, cluttered storage and general reliance on a large labour force.”⁴⁰⁷

Coal loading in Australia was by discharge from saithes, introduced in 1828 by the AACo in Newcastle or by removable hoppers where the hopper section of the railway wagon was lifted out of the wagon frame and discharged into a ship's hold. This technology was introduced c1863 and remained in use into the 1970s.⁴⁰⁸

The McMyler Hoists were an attempt to mechanise coal handling which was not successful. The Balls Head coal loader was heavily mechanised and introduced coal handling technology developed for the rapid filling of bunkers on ships rather than for export. The Balmain Coal loader was not much of a technological advance, coal arrived and could be directly unloaded if required and transported in 4 wheel hoppers with removal bodies or unloaded into coal storage from where the coal would be moved by conveyor so it could be loaded into 4 wheel hoppers with removal bodies. The hoppers would then be lifted by crane and discharged into ships holds as they had been doing it since 1863.

The 1963 coal loader did away with the cranes and hoppers and loaded directly into a ship. However, the technology was not new. The Port of Gladstone, for example, opened its first ship loader in 1954 a decade earlier.

The Glebe Island Grain terminal introduced bulk handling for wheat and other grains. Again, the technology was new for Australia but in common use in the USA and Canada.

In contrast the use of pallets in stevedoring was new and as Australia was linked by a common military purpose with the USA the introduction of pallets in the USA inevitably meant that the pallet was introduced in Australia and ultimately lead to CHEP and its domination of the pallet market through America and Europe.

6.1.4 Developing local, regional and national economies: Industry

The former White Bay Steel Works was constructed in the early twentieth century and was one of the major steel cutting and exporting producers in Sydney at that time. While the steel works were only present for approximately 20 years, they supplied a large volume of cut steel, girders and joists through the jetty then present at White Bay for their use. Their products were used for the

⁴⁰⁶ Some of this commentary draw upon research undertaken for Stuart, Iain Malcolm. Desktop Study of Coal Loading Facilities at NSW Ports. Report by JCIS Consultants for Major Property Development, Roads and Maritime Services (Concord: 2016).

⁴⁰⁷ Tull, Malcolm. "Blood on the Cargo: Cargo-Handling and Working Conditions on the Waterfront at Fremantle, 1900-1939." Labour History, no. 52 (1987):p15.

⁴⁰⁸ Stuart 2016

construction of prominent public works in Sydney in the early twentieth century, including Sydney Central Station and expansions to the Art Gallery of NSW.

The White Bay area also operated as an important rail head for the shipment and loading of industrial materials, principally coal, throughout much of the twentieth century. Remains related to the former railway turntable and roundhouse would also be demonstrative of this theme.

6.1.5 Building settlements, towns and cities: Utilities

Utilities are important for maintaining the economic and social life of cities. Typically, they are provided by Government at various levels for the common good of the community. In an adjoining the study area there are two examples of utilities.

The Beattie Street Stormwater Channel (No 15) was constructed as one of nine stormwater channels in inner Sydney, constructed as an emergency measure by the Public Works Department while the main sewers were constructed. The relevant Minister Bruce Scott MLA considered that if the stormwater portion of the general scheme for sewerage in Sydney was carried out then these channels could carry away sewerage and other matter that had accumulate in fetid pools within the stream channels.⁴⁰⁹ The completion of the sewerage works would later divert sewerage from the channels.

The channels were constructed by the Public Works Department and the Beattie street Channel was completed in 1893 and the whole nine completed by 1897. They were then transferred to the Metropolitan Water and Sewerage Board in 1898. The channel itself was constructed in unreinforced concrete an early use of mass concrete.

By the 1870's, the Sydney Harbour had become grossly polluted and this caused outbreaks of Enteric Fever (Typhoid) throughout the period 1870s- 1890s. In response the NSW Government created the Sydney City and Suburban Health Board to investigate an alternative means of disposing of the city's sewage. This led to the construction of two gravitation sewers in 1889 by the Public Works Department: a northern sewer being the Bondi Ocean Outfall Sewer and a southern sewer draining to a sewage farm at Botany Bay.

Due to Sydney's steeply undulating terrain low lying areas around the Harbour which could not gravitate to the new outfall sewers continued to drain to the old sewers or into the Harbour. Low level pumping stations used to collect sewage from low lying areas and pump it by means of additional sewers known as rising mains, to the main gravitation system.

The first comprehensive low level sewerage system began at the end of the 19th century when the Public Works Department built a network of 20 low level pumping stations around the foreshores of the inner harbour and handed them over to the Metropolitan Board of Water Supply and Sewerage in 1904. SP0007 Rozelle was built in 1902 and was among the original 20. SPS007 served the waterfront around White Bay. There were five other Sewerage Pumping Stations constructed in Balmain at this time.⁴¹⁰

One of the design briefs for the Sewerage Pumping Station was to make them relatively inconspicuous and so the design treatment reflected the adjacent architectural styles of the time and neighbourhood.

⁴⁰⁹ Aird, W. V. *The Water Supply, Sewerage and Drainage of Sydney*. Sydney: Metropolitan Water Sewerage and Drainage Board, 1961, p202.

⁴¹⁰ Henry, F.J.J. *The Water Supply and Sewerage of Sydney*. Sydney: Metropolitan Drainage Water and Sewerage Board, 1939.

The White Bay Power Station is another form of utility that is the provision of electricity

Electricity first emerged in the 1870s as a form of novelty but by 1900 the technology had developed to an extent that electricity provided an important source of lighting, transport (mostly trams) and industrial power in factories. All major cities had electricity supplied either by municipal undertaking or private companies. Most of the electricity generating plants installed were D.C generators driven by reciprocating steam engines. Fuel for these generators was sourced mainly from NSW coalfields.

The NSW Parliament considered six different bills between 1887 and 1896, variously trying to establish the right to reticulate electricity in the Sydney region. The first power house to commence construction was that of the Sydney Municipal Council who in 1900 commenced the design and construction of power distribution system including a large coal-fired power house at Pyrmont, finally opened in July, 1904.

In 1899 the Railway and Tramway Department became a significant generator of electricity from their the Ultimo Power House which was constructed to provide power for tramway purposes. From 1912, the Railways Department were allowed by the Government to sell excess bulk electricity supplies for general purposes. The White Bay Powerhouse was the Railways second power house and was constructed in anticipation of the increased power demand due to the planned electrification of the Railways. The Railways also supplied bulk power to local councils and had power stations in Lithgow and Newcastle supplying railways and domestic demands.⁴¹¹

Few authorities adequately assessed the rapid growth in demand, and early power stations quickly reached the limit of their capacity and had to be expanded. However, by the start of WWII and with the interconnection program of the early war years it appeared that demand could be satisfied. However, demand increased by 139MW or 49 per cent in the five years to 1945, but only 110MW of new plant was installed, and all of that in the period 1940–1942 leaving an inherent shortfall in production as the War ended. Post-war demand increased by 31 per cent while the maximum effective generation fell by four per cent as older plant was retired and new plant constructed fell short of demand. A reliable supply of steaming coal to the NSW electricity generation industry was also an important factor in the industry's supply problems with major industrial actions on the South Maitland field leading to the 1948 miners' strike. Thus from 1946, power restrictions and blackouts became frequent as the industry increasingly became unable to provide a reliable and secure supply.⁴¹²

In this context of crisis, it is not surprising that the Electricity Commission was formed by the NSW labour government in May 1950 with the aim of sorting out the problem. The 335 MW of generating assets of the Department of Railways were formally transferred in January 1953 to the Electricity Commission.

One of the solutions was improving the technology of existing power stations to increase output. Thornton points to improvements in boiler stoking, the use of pulverised coal and improved boiler design. He also points to the adoption of the unit system of supplying steam to the turbines. This resulted in greater production from the existing plant and in new plant being more efficient and economic.⁴¹³

The second solutions was to expand the generation capacity between May 1950 and the commissioning of over 200MW of new generating plant between mid-1953 extra generating units

⁴¹¹ Godden Mckay. *Industrial Heritage of Power Generation: A Framework for Heritage Management : Volume 2.* Report prepared for the Electricity Supply Association of Australia (Australian Electricity Supply Industry Research Board) by Godden Mackay (Surry Hills, NSW: 1995).

⁴¹² Thornton, Ken. "'Political Immorality' or an Engineering Solution: Resolving the Electricity Crisis in Postwar New South Wales." *History Australia* 17, no. 1 (2020): 152-71.

⁴¹³ Thornton, Kenneth David. "The Electricity Commission of New South Wales and Its Place in the Rise of Centralised Coordination of Bulk Electricity Generation and Transmission 1888 - 2003." Doctor of Philosophy (History), University of Newcastle, 2015.

were commissioned at White Bay, Pyrmont and Balmain and a number of small coal-fired and diesel-powered stations, the so called 'Package' Power Stations were quickly constructed various locations such as Penrith, Port Kembla, Liverpool, and Maitland.⁴¹⁴ This eased the supply situation until the larger power stations such as Wallerawang and Liddell came on line.

6.1.6 Governing – Defence

As discussed earlier the study area was used by defence during World War Two. The history of the occupation of the study area by defence is one of the areas that has been unable to be researched in this report due to the closure of the National Archives, which has a number of significant holdings relating to this matter. Understandably, for security reasons, there was little information about the use of White Bay during the war in the newspapers.

It is understood that the Australian military forces occupied Wharfing facilities at Glebe Island from 1940. These were sheds 1, 4 & 5 which are outside the study area.

With the advent of the Pacific War a number of vessels bound for the United States military in the Philippines were diverted to ports in Australia due to the success of the Japanese. Some of these arrived in Sydney and off located stores and munitions at White Bay. The US Navy hired berths 6, 7 and 8 from the Maritime Services Board and the RAAF used Shed No 9.

Additional stores sheds for the US Navy were designed and constructed in the area to the landward of Balmain Berth 1 in the area formerly occupied by the Railway Department Steel Works (White Bay Steel Works) until 1928. Associated with the stores were railway sidings the, obviously, facilitated transport of the stores to their ultimate destination.

As part of the US military's practice for moving equipment and stores items were moved on wooden pallets rather than individually handled as was much of the material on the waterfront at this time. The pallets were moved by fork lift trucks and small cranes. This was a revolutionary change from previous techniques of materials handling and was implemented mostly in the Pacific theatre from 1942-43.

Towards the end of World War II. The Australian government formed Allied Materials Handling Standing Committee during the latter part of the War and with the ending of the war this committee worked to secure pallets and forklifts ex US Army stocks in Australia and in the Pacific. These former Commonwealth Handling Equipment Pool, or CHEP.⁴¹⁵ CHEP utilised all of some of the sheds at White Bay. CHEP was privatised in 1949 and then acquired by Brambles in 1958.

All the sheds except No 9 Shed were removed by 1951 to make way for the construction of the first Balmain Coal loader.

There are two main points of comparison to consider: firstly, the role of these sheds and the site as a whole in the context of World War II and secondly, the nature and constructions of the sheds.

Without detailed knowledge of the AMF and US forces involvement which presumably can be found in the NAA files it is hard to answer the first question.⁴¹⁶ It is likely that there would have been an initial use to support the War effort up until late 1941. With the onset of the Pacific War, it is clear that White Bay was part of the immense effort undertaken to improve the docks and transport networks firstly to

⁴¹⁴ Thornton 2015 p150.

⁴¹⁵ 'Our History CHEP Australia'. Accessed 7 September 2021. <https://www.chep.com/au/en/consumer-goods/about-us/global-chep/history-chep>.

⁴¹⁶ A brief search of the Official Histories of World War II and the Report of the Allied Works Council did not yield any specific mention of White Bay.

support the build-up of military forces and then to reorientate facilities to support military activities in New Guinea and the Pacific.

With the ending of the war the role of the sheds did not change except there were goods coming back from the Pacific rather than going out and the sheds were used by CHEP presumably to store pallets.

It would be of historical interest if the materials handling process within the building could be established to see how it compared with US practice and 1940s era Australian dockside handling.

The second context is that of the nature of construction of the buildings. In particular, the use of timber and other non-strategic building materials such as asbestos cement (aka Fibro) has been studied by Greg Nolan⁴¹⁷ and others.⁴¹⁸ The design and construction of the buildings as documented in the NAA files will be of interest in this context. The physical evidence on the ground may be less yielding as typically it would be remains of posts and concrete which may be difficult to interpret.

6.1.7 Governing Government and Administration

The role of Government also needs to be considered. Virtually all the historical activity in the study area: the Abattoirs, Harbour Facilities, Railway lines, the White Bay Powerhouse, the drains and sewers and the reclamation were all directed by Government agencies and were part of the process of Governing NSW.

In particular, over time from the 1850s the change from Government at arm's length to increasing reliance on Government and the emergence of Government Agencies such as the Sydney Harbour Trust, the Public Works Department, the Grain Elevators Board and the Electricity Commission can be seen. This period is often termed "State Socialism". In more recent years the movement of Government away from direct involvement in managing assets by private sector so called privatisation has involved a different form of management. This overall trend in administration has been researched by Golder⁴¹⁹ and by Tyler⁴²⁰.

It is difficult to pick up an artefact such as a rail spike and relate it to changes in administration in the railways but on the other hand looking at the whole site as a cultural landscape the hand of Government is there in every process that creates the landscape.

6.1.8 Developing Australia's cultural life: Leisure

Leisure is an important human activity that occurs in a variety of forms. Hotels have come to be seen as a form of recreation and relaxation that are intricately connected to Australia's cultural life, particularly amongst its working class.

The First White Bay Hotel was developed and operated as a means to provide recreational community needs for the local inhabitants and workers. While the main Hotel structure is outside the study area, ancillary structures connected with its operation reside within the construction footprint of The Bays Station and artefactual remains of the activities of the former patrons and publicans may be archaeologically identified. During the later nineteenth century, the working class population of the

⁴¹⁷ Department of Architecture, University of Tasmania. Department of Defence Timber Buildings 1939 to 1945: Final Report by the Department of Architecture, University of Tasmania to the Department of Defence (Tasmania: 1995).

⁴¹⁸ E.g. Stuart, Iain Malcolm. Heritage Assessment of the Former Ammunition Depot at Bogan Gate, NSW. Prepared for: Department of Defence Corporate Services and Infrastructure (2002).

⁴¹⁹ Golder, Hilary. Politics, Patronage and Public Works : The Administration of the New South Wales: 1842-1900. Sydney: UNSW Press, 2005.

⁴²⁰ Tyler, Peter J. Humble and Obedient Servants : The Administration of New South Wales, 1901-1960. Sydney: UNSW Press, 2006.

area grew dramatically both from the increase in maritime trades in Rozelle and Balmain as well as the operation of the Glebe Island Abattoir. Individuals placed within this social class have almost exclusively been characterised by their relationship to industry and labour, which neglects other aspects of their lives. Within the past few decades, interrogation of archaeological materials has suggested that Sydney's working class possessed more depth and agency than has previously been attested⁴²¹.

In acknowledging this shift in perception, researchers can then attempt to reframe their understanding of Sydney's working class during the nineteenth and early twentieth century. Remains of the White Bay Hotel's associated structures may help broaden our understanding of this social group more broadly through their material remains.

6.2 Archaeological research questions

6.2.1 Methodology

"Archaeological research potential is the ability of archaeological evidence, through analysis and interpretation, to provide information about a site that could not be derived from any other source, and which contributes to the archaeological significance of that site and its 'relics'⁴²² .

There is some issue with the phrase "that could not be derived from any other source" because it is not clear how this could be assessed without knowledge of all the other sources that might be used and therefore it is unknowable thing. As an aside such a view places a low priority of archaeologically derived research as this is only to be undertaken after any other source is assessed.

However, the key elements of archaeological research questions would seem to be

- What ability does the archaeological evidence at a place or landscape (or potentially at a place of landscape) have to provide information about the past?
- How could this be done?
- How important is that information in the context of historical research into the past?

Physical evidence on a site might also demonstrate a particular historical event or process. It also might have associations with historical events but that is not necessarily archaeological research potential.

The process of assessing research potential is by generating questions about the past which can be examined through the process of undertaking archaeological work. Having established the history of the study area and contextualised it by discussing the site in relation to historic themes and finally examined the archaeological potential we are also in a position to consider how archaeological research might also fit into the historic themes.

The overall research agenda for the archaeological program is focussed on a number of broad investigative questions - about infilling the foreshore in Port Jackson, the development of maritime and power production industries, the modification of the natural environment and, overall - examining the long term environmental impacts of European settlement of Port Jackson. These investigations have been focussed on the historic themes of the predicted archaeological remains. There were

⁴²¹ Karskens Grace. 2006. 'Making City Lives: Urban Archaeology and Australian Social, Cultural and Urban history', in Green A; Leech R (ed.), *Cities in the World 1500-2000*, edn. 1, Maney, UK, pp. 269 – 281; Crook, P. 2011. Rethinking Assemblage Analysis: New Approaches to the Archaeology of Working-Class Neighbourhoods. *Int J Histor Archaeol* 15, 582–593. <https://doi.org/10.1007/s10761-011-0158-6>.

⁴²² Heritage Branch, Department of Planning NSW. Assessing Significance for Historical Archaeological Sites and 'Relics'. ENDORSED by the Heritage Council of NSW in December 2009 p11.

seven historical themes identified which were pertinent to the archaeological assessment within the construction site:

- Developing local, regional and national economies: Environment
- Developing local, regional and national economies: Transport
- Developing local, regional and national economies: Industry
- Building settlements, towns and cities: Utilities
- Governing: Defence
- Governing: Government and administration
- Developing Australia's cultural life: Leisure

6.2.2 Developing local, regional and national economies: Environment

Foreshore reclamation activities were conducted throughout the nineteenth and twentieth centuries and drastically reshaped the harbour for development of maritime industries. Opportunities to explore large-scale and relatively early (late nineteenth century) reclamation areas are rare. Research questions related to exploring this archaeological resource are provided below.

What is the sequence of filling?

The historical evidence suggests that White Bay was initially filled by sediment which formed the muddy flats and then it was filled by pumped sediment. The filling ceased and a land surface was formed which lasted about 10 years before being turned into a railway yard. From historical evidence a simple stratigraphic sequence can be considered but archaeologically does this hold true and is the sequence consistent across the site? Were there multiple phases of reclamation across the site which are not represented in historic plans or accounts? How much did the twentieth century redevelopment of White Bay as an industrial site alter the stratigraphy and content of previous phases of reclamation in the late nineteenth century? Is there evidence of early nineteenth century reclamation events, however minor, as the foreshore and creeks around the entrance to White Bay become formalised?

What's in the fill?

The historical evidence suggests anything from old boilers and boats to offal from the abattoirs. Can archaeological recording of the fill contents reveal more about the process of filling and where items came from? The historical evidence suggests that it would be small items as the sediment would have to fit through a sand pump so this prediction would form an initial understanding of the fill to be tested against the physical evidence as excavated. However, excavation of comparable reclamation fills at Barangaroo have yielded items determined to be state significant, so might similarly similar high significance items be contained within the fill layers of White Bay? What could such items reveal about the human activities occurring in White Bay prior to the early twentieth century? Moreover, is there enough stratigraphic integrity within the fill layers to accurately date any significant material remains contained within? Or will the fill deposition layers represent a poorly stratified palimpsest of soils and artefactual debris?

What is the physical nature of the dyke?

In order for the filling to occur a dyke constructed from ballast stone was built across the head of White Bay but details of the dyke, how it was constructed, and the source of the ballast stone used are unknown. Is there evidence of its construction technique or design? How does the material and construction method of the dyke compare with extant foreshore infrastructure elsewhere on Sydney Harbour? Is the dyke an example of ad hoc or deliberately short-life-span expectations, and how does

it compare with more robust retaining wall structures around Sydney Harbour. Is the rubble dyke specifically representative of reclamation activities in the late nineteenth century in Sydney Harbour?

6.2.3 Developing local, regional and national economies: Transport

In the case of the theme of transport there is a considerable body of documentary evidence on the nature and layout of the wharfs, roads and rail track. This evidence is in the form of plans and specifications which fix the location and construction of transport infrastructure over time. Furthermore, much of the archaeological evidence is limited because a lot of the infrastructure, such as the coal loaders was above ground and as such have been removed and the footings which might remain have a limited ability answer research questions beyond establishing the location of items, which are already documented.

What is the nature of the locomotive roundhouse?

One item of transport infrastructure which is not well documented is the railway roundhouse which was on the site from c1919 to c1943. The upper structure was demolished, and it is known that the 75ft Turntable was removed to the Broadmeadows Depot. However, it is likely that the turntable pit remains and it is possible that the floor of the roundhouse and possible under-roads may survive.

Is there structural or artefactual evidence present of the operational use of the turntable and locomotive roundhouse?

The former turntable was utilised for approximately 30 years for manoeuvring coal loaded locomotives to and from the power station in the constrained industrial environment at the time. The roundhouse would have been the locus of locomotive maintenance and repair at the industrial site. Can remains provide information on technical and labour practices at the site?

Are remains of the former turntable and roundhouse demonstrative of the former industrial and transport uses of the site?

Robust physical remains of the former turntable and roundhouse, if present, would be strongly demonstrative of the former industrial use of the site. Are the remains robust enough to provide information for interpretive material for the future public at the Bays station, or be preserved as part of redevelopment of the site?

6.2.4 Developing local, regional and national economies: Industry

White Bay served as a centre for industry for much of its history. Many of the structures and infrastructure within the area was devoted towards this purpose.

Can remains of the Steel Works shed light on working conditions within?

The White Bay Steel Works was one of the largest steels works in early twentieth century Sydney and provided cut steel for major construction projects around Sydney. Demand for steel products across NSW increased as the twentieth century progressed, but did this increased demand adversely affect the workers employed in the steel industry? Are Having been in operation during the early decades of the twentieth century, can extant archaeological remains of the Steel Works create an image of the inside of the structure and illuminate what conditions were like?

6.2.5 Building settlements, towns and cities: Utilities

Is there evidence of the construction and canalisation of former creeks which were converted into the Beattie Street stormwater canal?

The Beattie Street stormwater canal is located in part over the former alignment of an unnamed creek that entered White Bay in the construction site. Is there evidence of the former creek located below or as part of archaeological contexts of the current canal?

Do archaeological remains of the water circulating canal show phases of use and change to the structure?

Is there evidence of alterations to the outlet canal from when it was re-routed in the 1950s? What is the material composition of the circulating canal?

6.2.6 Governing: Defence

By 1951 the buildings were being demolished as demolition can be seen in the aerial image of 1 May 1951 (Figure 120). It is not clear how extensive the demolition was. It is possible that concrete slabs remained in situ in some areas as they were subsequently used for coal storage. The construction of the second coal loader would have altered the grades and may have removed much of the evidence of earlier buildings under the conveyor and sidings.

Document the construction of the sheds

If archaeological remains of the sheds these need to be documented to record the nature of the construction of the sheds and place it in the context of the Australia's timber building program. Archaeological investigation would be further assisted by renewed access to National Archives should they become available over the lifespan of the project. If by any chance remains of an original US pallet are recovered then they will have historical significance and the nature of the timber used in their construction should be investigated.

Do the former US Army and RAAF Mess Hall buildings provide archaeological remains which would be of demonstrative value to public appreciation of the site?

While structural remains of the former storehouses and halls are not anticipated to further a detailed archaeological research agenda, the history of the White Bay site during World War 2 is of high public interest, and physical remains of the use of the site during the war is likely to be of public interest.

6.2.7 Governing: Government and administration

This historical theme is not readily demonstrated from material archaeological remains and no archaeological research questions have been developed for this historical theme.

6.2.8 Developing Australia's cultural life: Leisure

While White Bay largely served as an industrial area, it also featured residential and non-industrial structures during the nineteenth and early twentieth centuries. The First White Bay Hotel would have served as a focal point of socialisation in this area for decades and would have been patronised by White Bay's working-class residents. As such, it presents an opportunity to gain more insight into the lives of Sydney's working class, particularly their relaxation and recreation habits, which have generally received less scholarly attention.

Can extant remains of the First White Bay Hotel and its associated structures reveal more about the lives of the working class, in particular their leisure activities.?

Are there physical remains of these structures or remnant materials that can inform us about the operations of the Hotel or its patrons? If so, can they contribute to a more detailed understanding of the lives of Sydney's working class during the mid-nineteenth to early twentieth centuries?

What activities were taking place outside the White Bay Hotel and around its associated structures?

Historical evidence describes stables and outhouse structures surrounding the White Bay Hotel, but were these structures being used for any other purposes by the operators or patrons of the hotel? Furthermore, is there evidence to identify if and what activities were taking space between the Hotel itself and its auxiliary structures?

Are cisterns or privies archaeologically present?

Former cisterns and privies have the potential for being rubbish discard locations which are often archaeologically sealed. Artefactual remains within former cisterns or toilets can be highly valuable artefactual data sets which can be analysed for material practices of the past occupants and patrons of the pub. Are cisterns or privies archaeologically present? Are they intact enough to respond to comparative material studies about class, leisure and consumption?

6.2.9 Unexpected finds (known unknowns)

Reclamation activities often involved casual or deliberate discard of rubbish into the infilled area, sometimes including items of great size. Unwanted material or equipment, or obsolete buildings or land modifications were rarely removed prior to reclamation and were instead buried in the infill. It is considered likely that unexpected archaeological finds would be located within the reclamation deposits, however it is unknown precisely where, and what, would be located in the fill.

The archaeological research question around unexpected finds are primarily to do with identification. Once identified, further questions can be proposed.

What is this?

Archaeological research would be undertaken to identify the nature, construction, and function of an unexpected find. Once this research had been conducted, the recovered find would be placed into an appropriate archaeological or historic context and may suggest further historic themes or research questions, which would then be archaeologically explored.

7.0 EXCAVATION METHODOLOGY

7.1 Heritage induction

Archaeological heritage would be included in the general project induction as described in the Project CEMP. Additional site specific archaeological inductions would be provided to staff and contractors at the Bays. At a minimum this process would include an overview of the project obligations and archaeological areas of potential, the role of the archaeological team, and the project unexpected finds procedure including typical potential archaeological remains identified in this assessment.

Location maps and archaeological inventory sheets for predicted areas of archaeological potential would be made available to all relevant contractor personnel. A visual guide of potential archaeological items would be provided to all work crews to assist with potential unexpected heritage find identification. The visual guide of potential archaeological items would be updated with significant finds identified during archaeological management at The Bays is conducted throughout the project.

Contact details for the Excavation Director and Site Director would be provided to all necessary work managers and environmental assessment personnel.

7.2 Work Method Statements

This archaeological research design and excavation methodology has been prepared prior to the finalisation and assessment of specific construction methodologies. As such, for each defined scope of ground-disturbing work within an area that requires archaeological management, a Work Method Statement (WMS) would be prepared. The WMS statement is designed to facilitate on site implementation of archaeological management required in this document. The WMS would not require consultation under CoA D25 as it would adhere to the methodologies outlined in the approved ARDEM (this document). The WMS would be provided to Sydney Metro for review prior to implementation.

Each WMS would refer to the historical research and archaeological assessment provided in this archaeological research design. An WMS would only include additional research and assessment where on-ground investigation (geotechnical information, results of previous archaeological monitoring or excavation) was undertaken following the completion of this archaeological research design report. The WMS would be a brief document focused on the practical implementation of the archaeological methodology.

An WMS would identify which of the proposed archaeological investigation methodologies would be appropriate for the specific scope of work assessed. The selection of an appropriate archaeological investigation methodology would be based on the following considerations:

- Where proposed ground disturbing works are being conducted (i.e., whether they are in an area of predicted significant archaeological remains)
- The method and scale of excavation proposed – noting that smaller and less aggressive excavation techniques such as Non-Destructive Digging (NDD) of slit-trenches or potholes would warrant a less involved archaeological response compared to open-area machine excavation
- The degree of impact to a predicted archaeological resource. Excavation to a small area of a large archaeological resource may require a less detailed archaeological response than ground disturbing works which would remove a whole predicted deposit

- Whether the ground disturbing works would provide an opportunity for investigation of predicted archaeological remains to improve the assessment of the potential or significance of a deposit
- Whether ground disturbing works provide opportunities for addressing the research questions of this archaeological research design.

The preparation of an WMS would involve the following activities:

- Review any available updated geotechnical data, existing services surveys and the results of previous archaeological investigation at The Bays as required
- Review detailed design, scope of works, construction program and methodology
- Provide an assessment of impacts to significant archaeological resources based on construction methodology and program
- Archaeological remains would be managed in accordance with their significance
- Identify opportunity for in situ conservation of archaeological remains, such as altering construction methodology to avoid impacts, if and where possible
- Confirm appropriate archaeological investigation methodology to mitigate various impacts, based on excavation methodologies and research questions provided in this document
- Where targeted test excavation is proposed, test trench excavation areas would be spatially mapped in the WMS based on archaeological potential maps provided in this report

It is understood that non-destructive digging (NDD) with high pressure water and vacuum suction excavation methods would be conducted throughout the archaeological and construction activities for the project. These works are required to ensure safe excavation in the vicinity of active services. Archaeological management of all NDD in areas of potential archaeological deposits would be provided in all WMS' prepared for the project.

7.3 Archaeological team

7.3.1 Excavation Director

Archaeological investigations would be managed by a suitably qualified Excavation Director who would meet the NSW Heritage Council criteria for locally significant archaeological sites. The Excavation Director would be responsible for overseeing the archaeological investigation program. The approved Excavation Director for this project is Dr Iain Stuart.

The Site Director is a skilled archaeologist who supports the Excavation Director on site. The proposed Site Directors for the project are Duncan Jones and Jayden van Beek.

The Aboriginal Archaeological Excavation Director is Duncan Jones.

7.3.2 On site archaeologists

Archaeological excavation and monitoring tasks would be conducted by appropriately trained archaeologists under the coordination of the Excavation Director and Site Director.

7.4 Archaeological investigations

Specific archaeological investigations are proposed in the subsections below. The aims of these archaeological investigations are to apply research questions proposed in Section 6.2 of this report to specific anticipated archaeological remains which are located within likely areas of impact.

7.4.1 Water circulating system and Beattie Street canal investigative works

Should potential impacts to the White Bay Power Station water circulating system or the Beattie Street Canal be proposed, a program of non-destructive digging (NDD) would be conducted, under archaeological direction, to identify the precise location and condition of items in accordance with project approval CoA D26. Investigation of these items would only occur at the locations where these items are predicted to cross into the construction footprint. NDD excavation would aim to expose regularly spaced investigation locations. At each location, accurate survey of the canal system would be conducted along with complete archaeological recording of the exposed structural features of the item.

Georeferenced archaeological plans and photogrammetry would then be provided to the contractor and design teams and Sydney Metro. Following completion of physical investigations of the water circulating system or canal, design teams would endeavour to avoid impacting the items once the precise surveyed information is known.

All works which would have the potential to impact the water circulating system would be discussed in consultation with Place Management NSW prior to commencing.

7.4.2 Archaeological strategy for station box bulk excavation

The station box excavation provides an opportunity for archaeological investigation of the reclamation fill deposits to significant depth, an opportunity not available for other scope of construction work due to the benching and shoring requirements for open area excavation below approximately 1 m in depth. While archaeological monitoring on other portions of the site would allow opportunities to investigate relatively shallow archaeological remains (largely, but not wholly, associated with identifying whether remains of twentieth century structures remain intact), the station box excavation allows for comprehensive stratigraphic profiling of the reclamation deposit to significant depth (up to 6 m and the purported base of the reclamation fill deposits).

A program of targeted archaeological test excavation trenches would be conducted at sequential benched depths as a vertical running section as the bulk earthwork proceeds. In addition to this targeted testing program, archaeological monitoring would be conducted at the commencement of bulk earthworks for station box excavation, after which the unexpected finds procedure would be undertaken for the duration of station box excavation works.

Should excavation reveal intact and significant archaeological remains – particularly related to discarded industrial or maritime equipment, a program of archaeological salvage excavation would be developed by the Excavation Director for those significant remains in consultation with contractor staff and Sydney Metro.

Excavation at depth within the station box is likely to consist of the removal of a large degree of contaminated soils and rigorous contamination protection controls would be in place for all workers. Contamination protocols are provided in section 7.7 below, and safety controls would be developed in consultation with environmental and hygienist staff for the project.

An WMS would be prepared for the investigation of reclamation fills within the station box once detailed construction methodologies have been prepared and provided. It is understood that an exclusion zone would be established for the sequential excavation of a 10 m trench within the station box during the progressive mass-excavation of this station box. Test trenching would occur every 1 m whenever the surrounding ground level was benched down to the next depth required to continue the vertical profile. Indicative trench locations for the proposed test excavation within the station box is provided in Figure 166. Excavation methodologies for this investigation would adhere to the archaeological methodologies outlined in sections 7.5 to 7.11 of this document.

7.4.3 Archaeological investigation for the former roundhouse and turntable

It is also predicted that archaeological remains of the former locomotive roundhouse and turntable would be situated within the station box footprint. A program of archaeological test and salvage excavation would be conducted prior to the commencement of bulk excavation earthworks and outlined in detail for future WMS for these works.

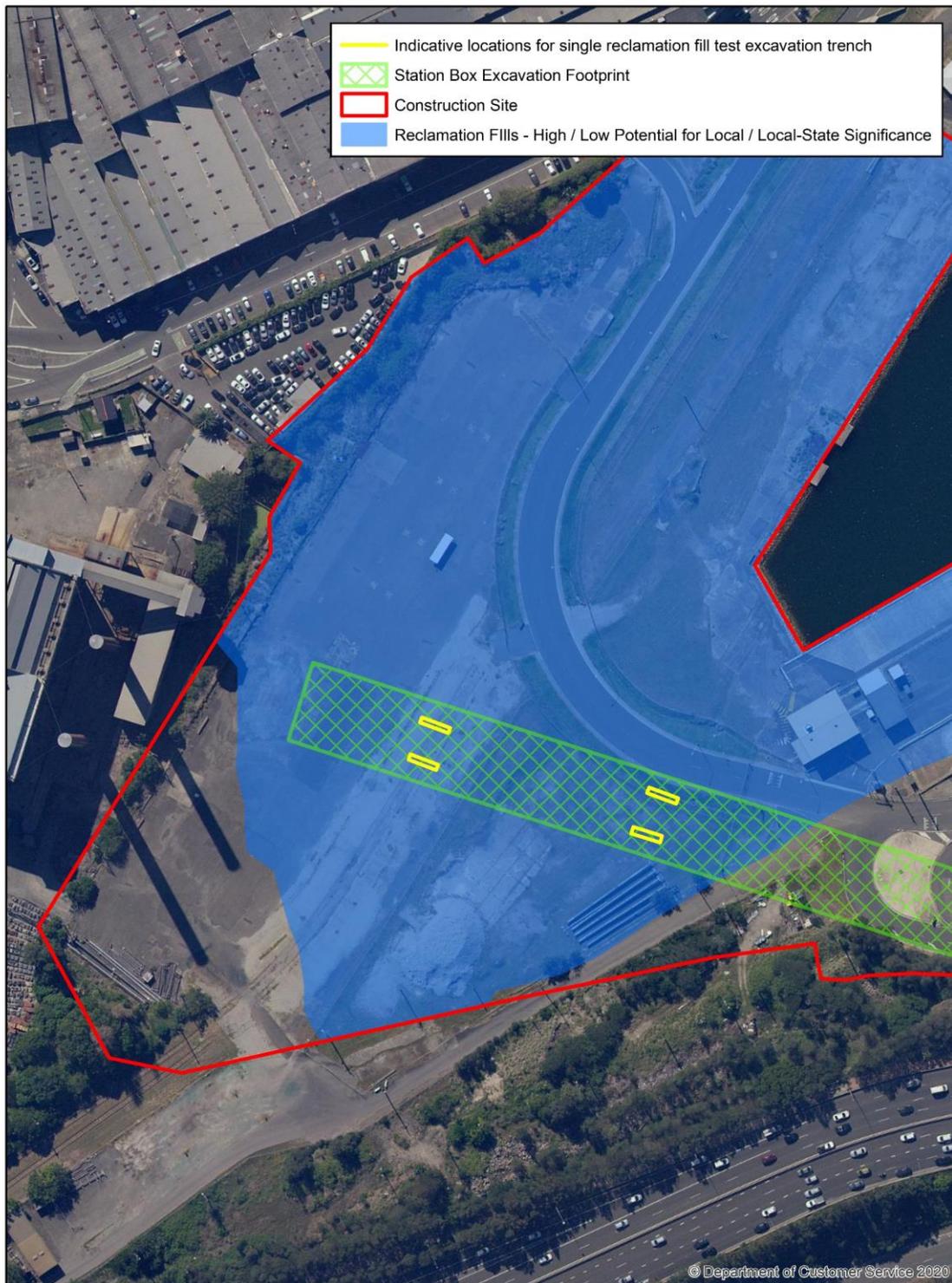
The test excavation would be conducted in accordance with test excavation protocols outlined in section 7.5.2 this document. Should significant and robust archaeological features be identified during archaeological excavation, salvage excavation would be proposed to the extent of the feature where it coincides with the area of proposed impact.

Indicative test trench locations for archaeological test excavation of the former roundhouse and turntable are provided in Figure 167. Archaeological test excavation locations have been situated to best capture primary structural features as well as ground-truthing the extent of these items. Once these features had been identified and surveyed during test excavation, further archaeological salvage would be conducted.

7.4.4 Archaeological management of significant low potential remains

A number of former structures at the Bays construction site were identified from historical and archaeological research, however due to the degree of disturbance at the site the potential for these remains to remain present and intact is predicted to be low. It is also uncertain how deep these remains would be below ground as the current ground level is up to 4 m AHD and previous historical ground surfaces may have been at a lower elevation.

Construction works which are proposed in areas of predicted low potential remains would be primarily managed with archaeological monitoring, unless the Excavation Director identifies an area of interest for active investigation, or the extent of ground excavation would result in a major impact to a specific low potential archaeological resource. Should archaeological monitoring identify a potentially significant archaeological resource, salvage excavation would be conducted to completely record the archaeological item.



Document Path: D:\GIS\GIS_Mapping\21102_Bays_Metro_ARDMXD\Inventory_Maps\Reclamation_Fills.mxd

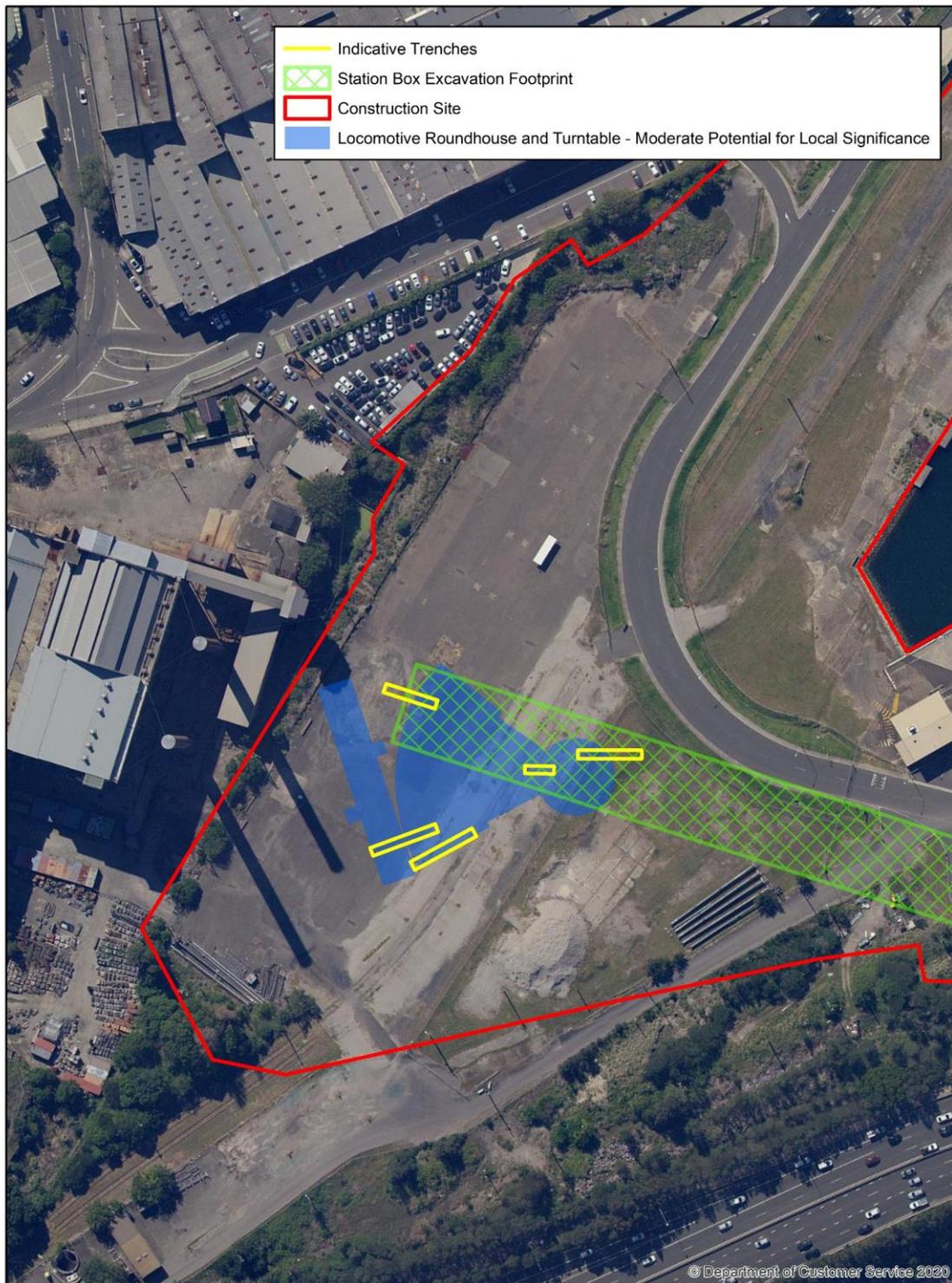
© Department of Customer Service 2020

Reclamation Fill Indicative Trench Locations
 21102 The Bays ARD
 LGA: Inner West

SCALE 1:1,500
 SIZE A4
 DATE 29/10/2021



Figure 166: Indicative locations for proposed single test trench to examine the vertical profile of reclamation fills within the station box excavation area



**Roundhouse and Turntable
 Indicative Trench Locations**
 21102 The Bays ARD
 LGA: Inner West

SCALE 1:1,500
 SIZE A4
 DATE 2/11/2021

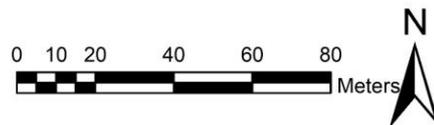


Figure 167: Indicative locations for proposed test trenches to identify locomotive turntable and roundhouse remains

7.5 Archaeological excavation methodologies

7.5.1 Archaeological monitoring

Archaeological monitoring is where an archaeologist is in attendance and supervising construction excavation work with the potential to expose or impact archaeological remains. Monitoring is generally undertaken where there is lower potential for significant archaeological remains and/or where minor excavation work is in an area of archaeological sensitivity.

Archaeological monitoring would be conducted by on site archaeologists who would be coordinated by the Site Director and Excavation Director.

The on site archaeologist would supervise excavation but would also be able to direct machine excavation contractors in consultation with contractor supervisors, to excavate areas of interest under their direction, so long as excavation does not exceed the approved impact area for the scope of work. Should construction excavation work endanger potential archaeological deposits, the machine excavation contractor must cease excavation if advised by the monitoring archaeologist.

If archaeological remains are identified during archaeological monitoring, they would be recorded and assessed to determine if further investigation is required. Localised stoppages in the construction work would be required to facilitate this process. Works would not recommence until the monitoring archaeologist has completed the recording and the Excavation Director is satisfied that further investigation is not required.

If significant and intact archaeological remains are identified, then further investigation such as salvage would be required prior to construction impacts occurring to the item. Assessments of significance of all finds would be supervised and confirmed by the Excavation Director.

7.5.2 Test excavation

Archaeological test excavation involves excavation of small sample trenches within a potential archaeological site. Testing is usually undertaken prior to construction to clarify the extent of the potential remains, archaeological significance, potential of a construction task to impact significant archaeology and inform requirements for further archaeological investigation, such as salvage excavation or monitoring.

Text excavation would be conducted using machine excavator and manual tools to excavate targeted trenches at the Bays. Trench locations would be determined based on the intersection of areas of potential archaeological remains and areas of proposed impact and would be provided in the WMS for the proposed scope of work. These trenches would be positioned to aim to identify key features of suspected archaeological remains based on historic mapping and research.

Test trenches would be between 1.2 m and 2 m in width. NDD may also be required during test excavation to locate suspected or known services in proximity to the proposed test trench, however NDD excavation would not be used for archaeological excavation purposes.

Should significant and intact archaeological remains be identified during test excavation, and these remains show they are part of a larger feature which extends beyond the limit of the test excavation area, salvage excavation may be proposed by the Excavation Director. Salvage excavation of a resource would be proposed if one or more of the following conditions are met:

- The anticipated size of the feature is located within an area of impact
- The results of the test excavation indicated that the remains were of heritage significance

- The test excavation indicated that research questions could be addressed more fully through continued salvage excavation
- Excavation of the remains to their full extent had value for heritage interpretation or public outreach purposes

7.5.3 Salvage excavation methodology

Archaeological salvage generally refers to open area archaeological excavation under the control of the Excavation Director. Open area salvage excavation is a method of archaeological investigation in which the full horizontal extent of an area of site is investigated and cleared, whilst preserving the stratigraphic record. Salvage excavation would only be proposed where significant archaeological remains have been identified during archaeological monitoring or test excavation programs.

It involves removal of modern fills and disturbance to the top of archaeological layers of interest by machine under archaeological supervision. On the identification of any historical/archaeological fills, salvage excavation would commence. This investigation would be undertaken using hand tools, by a qualified archaeological team. The archaeological remains are then cleaned by hand, investigated (excavated) and recorded in detail by the archaeological team. In urban archaeological sites, careful machine excavation may also be employed to assist the detailed archaeological excavation process.

Construction works would not proceed until the salvage excavation is completed and the Excavation Director has provided clearance for the area in question. It is noted that due to the relatively deep archaeological deposits at the construction site, clearance can only be given to an area for a specific scope of work.

Upon encountering archaeological material, mechanical excavation would cease and excavation using hand tools would be undertaken by archaeologists trained in on-site historical excavation methods, under the guidance of the Excavation Director. Where contaminated deposits are identified, remote recording techniques may be utilised to minimise exposure to harmful materials.

7.5.4 Cesspit and well deposits

Accumulated material at the base of cesspits, wells and drains can contain archaeological material of high research value. Stratified well and cesspit backfills or deposits would be excavated by context. Homogenised deposits and fills would be excavated in spits (10 or 20 centimetre spits for example). The material would be sample sieved or 100 per cent sieved depending on the significance of the deposit. Excavated material would be wet sieved, or dry sieved if possible.

It is noted that the excavation of wells may pose safety risks due to the depths required. Normal archaeological excavation techniques may need to be altered to include staged mechanical excavation and benching.

The range and percentage of archaeological material collected from sieving would be in accordance with a sieving strategy developed by the Excavation Director and artefact specialist. The strategy would consider research agendas and potential interpretation outcomes.

7.6 Unexpected finds procedure

Unexpected archaeological finds would be managed under the Sydney Metro Unexpected Heritage Finds Procedure.

It is noted that this unexpected heritage finds procedure outlines protocols for non-archaeologically trained workers to initiate protections and assessment processes for potential archaeological finds during works. However, should the archaeological team identify heritage finds during excavation, assessment of the find would be immediately conducted by the archaeological field team and the Excavation and Site Directors. Due to the nature of late-nineteenth and early-twentieth century reclamation filling, it is anticipated that a large amount of small, diffuse and poorly stratigraphically-controlled artefactual and structural remains would be located within the fill materials at the Bays site. The majority of these a-contextual items would not be considered of heritage significance.

As such, the unexpected finds procedure will be implemented only in the following situations:

- Where archaeological finds which are **not** predicted in this archaeological research design report or other archaeological assessments prepared for the project are identified, or where unexpected archaeological remains in reclamation fill deposits are identified which are intact and of heritage significance (such as buried industrial or maritime equipment), this would be considered an 'unexpected heritage find' and the Sydney Metro Unexpected Heritage Finds Procedure would be implemented to protect, assess and report the find.
- Where non-archaeologically trained workers (e.g. the construction personnel) identify an item of potential heritage value without archaeological crews on site at that time, the Unexpected Finds procedure will be implemented until the Excavation Director or Site Director can take over the management of the find and ascertain the items provenance and significance. Should the Excavation Director confirm the unexpected find is considered a part of other predicted remains identified in this document and is not heritage significant, the find would not be considered an unexpected heritage find.

Unexpected finds identified in line with the circumstances described above would be archaeologically recorded by the archaeological team including the location, dimensions and characteristics of the find and its context will be recorded on a sequentially numbered context register. A record of find would be made; this would include digital photography, in RAW format, using photographic scales and photo boards where appropriate. Where the find is made in a location that is unsafe to access the archaeological recording would use recording techniques to record the item from a distance.

In the unlikely event that human remains are located during any works the Sydney Metro Exhumation Management Plan would be implemented⁴²³.

7.7 Contaminated materials

Due to the potential for contaminants across The Bays Station construction site, archaeological excavation would also be undertaken in accordance with the specified WH&S and environmental protocols established for the site, prior to the commencement of works on site. The archaeological team is reliant on contamination and hygienist contractors to provide prompt analysis of potential contaminants and detail contamination controls for safe excavation.

The Environmental Impact Statement prepared for the project identified that there is a moderate potential contamination risk for encountering potential contaminants in the soil and groundwater at the

⁴²³ <https://www.sydneymetro.info/sites/default/files/document-library/02%20Sydney%20Metro%20Exhumation%20Management%20Plan%20v3.0%20includes%20Appendix%201%202%20%26%203.pdf>

site. Potential contaminants would include asbestos (bonded or fibrous), hydrocarbons, pesticides and heavy metals within bulk soil deposits and particularly in ground water below the water table.

Should the discovery of contaminants on site likely result in the potential harm to archaeological staff, there may be a requirement to deviate from the proposed archaeological methodology, in order to ensure the health and safety of onsite staff. This response may include the use of protective clothing, face masks, and specified gloves, additional washing protocols, through to the need to cease hand excavation on site. It is noted that whole-of-body PPE (such as contamination suits) exacerbate heat stress in workers and the routine use of this PPE to excavate through contaminated deposits is not recommended – rather, where archaeological remains are identified in contaminated deposits, remote recording techniques are recommended over risking worker safety. However, basic contamination control PPE would be present with the archaeological team at all times (specifically, N2-masks for preventing inhalation of airborne asbestos fibres as well as impermeable gloves for handling soil).

The Excavation Director would provide justification wherever this proposed excavation methodology is deviated from in order to protect human health during archaeological investigation and outline the revised archaeological methodology for investigating specific remains.

Should the requirement to employ mechanical excavation rather than hand excavation arise, archival photographic recording of archaeological material would be conducted from a safe distance (as specified in the WH&S requirements of the remediation specialists). Should significant and robust archaeological remains be identified within contaminated deposits, opportunities for photogrammetry and orthography would be prioritised.

Should artefactual material located within bulk contaminated soil deposits be identified, the Excavation Director would consider opportunities for wet sieving of artefacts, within contamination PPE, depending on environmental and hygienist controls for managing run-off and disposing of contaminated soil. Artefacts which are composed of hazardous materials, or which have been embedded in known contamination areas (and which therefore may have absorbed harmful contaminants) would also not be collected if they are not deemed to be safe or for which storage of these items would be hazardous off-site.

Manual excavation is not anticipated at a depth where the water table is anticipated to be encountered with the exception of benched test excavation for reclamation fills within the station box excavation area. In circumstances where ground-water is present during archaeological excavation, archaeological staff would follow all OH&S advice provided to contractor crews. All opportunities to avoid handling or excavating within contaminated ground water would be undertaken, including vacuum suction of contaminated water if possible and remote recording of exposed archaeological remains with photogrammetry or drone photography where possible.

7.8 Archaeological recording and documentation procedures

7.8.1 Introduction

Archaeological recording would be undertaken by allocating each stratigraphic unit a context number and completing a record of each context on a context sheet.

Mapping, planning and recording would be coordinated through a GIS system that would combine data from varying sources and present it in the form of maps.

The Excavation Director and the Site Director need to complete a daily journal outlining the aims for the work to be done each day, what is achieved and what the next task is. In this way, the progress of the excavation and the day-to-day work and decisions are captured.

7.8.2 Survey Control

A survey control for the site would be established, tied to the Geocentric Datum of Australia (GDA) 2020. For preference, survey data would be recorded with a DGPS and post-processed to sub 1cm accuracy. Alternatively, a Total Station would be used to establish the survey and record survey data. An automatic level could also be used to record depths and tied to known datum points.

Due to the large size of the construction site and the likelihood of staged and sequential works, a physical site grid for the whole of the site is not likely to be able to be established or preserved. Surveyed datums would be established at the commencement of each excavation program, with these datums measured either with a DGPS or total station survey. Hand-drawn plans would then be measured off these datums, with at least 4 datums used for measurement control.

Within an archaeological excavation area, the archaeological team would set out a grid for ease of recording and, where required, and establish main and subsidiary datums based on survey information. Further datums for vertical control will be established to allow all trenches to be surveyed in to a nearby datum. These will be tied back to Australian Height Datum and the survey grid.

Where electronic surveying equipment is not available to the archaeological team, horizontal measurements and detailed scaled plans of excavation areas and features would be prepared. Vertical relative elevations would be taken with Dumpy level. These plans and levels would be tied to a previously surveyed main or subsidiary datum. Every level taken is assigned a number and is recorded on a level sheet (particularly for Dumpy readings).

Where dateable or otherwise special artefacts are located they would be recorded in three dimensions with surveying equipment if available.

7.8.3 Recording of Contexts

All soil deposits and significant features would be given a unique context number without duplication. Context numbers will be recorded in a register of context numbers to ensure context numbers are not duplicated. Each context is numbered sequentially.

Rubble deposits would be recorded only where it provides specific information regarding masonry and construction (i.e., wall finishes, material etc.). Fills need to be described in detail as there are varying types of fills (e.g., demolition, levelling).

Contexts would be related to each other through the use of a Harris Matrix. The relationships between each of the contexts are recorded on the context sheet and these are also recorded in Stratify, a computer program used for producing Harris Matrices.

7.8.4 Recording of Archaeological Features

Archaeological features would be recorded through the preparation of plans and sections. Structural elements, such as brick walls or timber posts, would be recorded in situ to observe phases in construction, and then removed in stratigraphic sequence.

Plans and sections will be labelled with details of what is being recorded, context numbers and details of the recorder. Each plan, map or section will be catalogued and receive a number which is put on the plan and in the catalogue. The plan, map or section will be placed flat in an artist portfolio.

Plans need four control points on each plan that can then be surveyed in to georeference the plan. All records of vertical sections would include elevation data to ensure accurate measurement of stratigraphic layers at the site. Excavation open areas of significant features would include elevation levels throughout site, recorded either with a DGPS or total station, or with a dumpy level measured

off surveyed datum control points for the site. The surface level and end of excavation elevation levels for all test excavation trenches, and all salvage excavation areas, would be recorded.

7.8.5 Photography

In photographically recording archaeological features, our practice would be to shoot to the requirements for photogrammetry, which includes accurate scale bars, overlapping of images and recording with a colour card where required. Photographs would be recorded in a register identifying the shot number, direction and a description of the scene.

All photographic recording would be carried out in accordance with *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Office 2006), accepting that parts of these guidelines are technically obsolete. Artefact would use a digital SLR camera and shoot in raw format to capture the maximum amount of information from the camera sensors. The photograph number and direction would be recorded, and a description provided for all photographs and the locations from which each image was taken would be recorded on a site base plan.

Where possible, photogrammetry would be conducted to record significant archaeological features *in situ*.

7.8.6 Collection of Artefacts

It is not considered feasible to collect all artefactual remains from an archaeological site. Often artefacts lack stratigraphic integrity or represent a large number of almost identical items (such as bricks) or may be hazardous materials (such as asbestos cement sheeting).

Artefacts that are manufactured from hazardous material such as asbestos or may be contaminated due to being in contaminated deposits, would not be collected to minimise danger to human health. The procedure will be for such items to be catalogued and recorded, and then be disposed of in an appropriate manner according to contractor site protocols for managing hazardous and contaminated spoil.

Secondly, artefacts from fills and other bulk deposits that lack stratigraphic integrity would be recorded in the field without collection. A record of artefacts would be made to be included with the context record for the fill or deposit. Should diagnostic or significant artefacts be present within the fill layers (out-of-context), a sample would be retained as part of the archaeological record. Any discarded items would be recorded on context or discard sheets (in the case of sieving).

In addition, building materials and other ubiquitous and non-diagnostic infrastructure items such as segments of railway track or sleepers would not be collected due to their limited diagnostic value and difficulty in storing and accessioning. Rather, a type collection would be collected for reference purposes if required, with records made in contextual records of the presence of these materials.

Artefacts would be collected and bagged with reference to the soil deposit's context number. Each artefact bag or individual artefact would be tagged with a Tyvek tag and sealed in plastic bags. Delicate materials such as bone or metal may need to be stored in a paper bag before being taken off site for conservation. All artefact bags would be catalogued prior to being stored in an archival quality storage container to prevent loss or misattribution of contextual data.

Retained artefacts would be cleaned, processed, catalogued and analysed by an archaeologist experienced in historical artefact assemblages. Artefact analysis would include production of a database in accordance with best practice archaeological data recording. The resulting information would be included in the final excavation report.

Large or unexpected artefactual remains which may be identified in reclamation deposits, such as intact maritime or industrial refuse, may be of State significance. If large-scale deposits such as these are identified in an area to be impacted, they would be carefully removed and collected intact following completion of archaeological recording *in situ* and after an assessment of material stability has been prepared, with controls for preservation incorporated into the removal of these items.

7.8.7 Long term management of recovered artefacts from the Bays excavation site

Archaeological remains collected and analysed from archaeological investigation would be stored safely by Sydney Metro following the completion of analysis of remains. Opportunities for artefactual material to be incorporated into future interpretive spaces would be considered by Sydney Metro. Should recovered archaeological remains be considered unstable for long-term storage, conservation handling would be undertaken for long-term preservation of finds. This would involve engagement of a specialist conservator who has experience with the material in question, for example metals or wood. The material would be stabilised and stored securely.

7.9 Aboriginal archaeological investigation

The Bays PAD 01 site is located in the south-western portion of the construction site, located directly below predicted remains relating to outbuildings of the First White Bay Hotel. Remains of the First White Bay Hotel have been predicted to have a low potential for intactness, but if intact would be of local heritage significance. No other areas of the construction site have been identified as having Aboriginal archaeological potential, as most of the site sits on reclaimed land which would not contain intact deposits.

It is not proposed that The Bays PAD 01 would be impacted. No subsurface excavations are needed within the PAD site as part of this project. The following methodology would be implemented if unexpected impacts to the PAD were to occur, or if areas of archaeological potential were unexpectedly uncovered in other areas of the site. The methodology is provided to meet Condition D22 of the SSI planning approval and is consistent with the excavation methodology provided in Section 12 of *Sydney Metro West Stage 1 Technical Paper 4: Aboriginal Cultural Heritage Assessment Report*.

7.9.1 Integration of Aboriginal and non-Aboriginal archaeological investigations

Because of the stratigraphic relationship between overlying non-Aboriginal archaeological remains and underlying Aboriginal archaeological remains an integrated archaeological excavation methodology would be undertaken. This would involve employing archaeological excavation methodologies provided in this document for non-Aboriginal archaeological investigation of the First White Bay Hotel site, followed by undertaking archaeological excavation of the Bays PAD 01 site if intact soil profiles below buried non-Aboriginal archaeological remains were present.

Single context excavation

Historical excavation of features would generally involve single context excavation to retrieve material from the feature for recording purposes. The removed material may not be sieved. It is anticipated that where Aboriginal objects are identified during single context excavation, that further material removed from the feature would be sieved to determine if further Aboriginal objects are present. Depending on the size and nature of the feature, sieving may cease at the direction of the historical archaeology Excavation Director where it is clear that no further Aboriginal objects are likely to occur within the feature. RAPs would be involved in excavation of identified Aboriginal objects within historical archaeological contexts.

Where historical features are identified during Aboriginal heritage salvage excavation, such as within a test Excavation Unit, or within open area salvage excavation, the Historical archaeology Excavation Director would be notified. Single context excavation would continue under the direction of the historical archaeology Excavation Director and in accordance with the archaeological research design to the extent of the feature(s) within the excavation area. Whether historical archaeology is contained to within the test excavation or salvage excavation pit, or widened over a broader area, would be at the discretion of the historical archaeology Excavation Director.

Machine scrapes to remove layers of fill and expose historical features

Non-Aboriginal archaeological excavation would involve the use of machine plant to remove overburden covering historical features and that this activity would be monitored by a Historical Archaeologist. Where natural contexts are encountered, machine excavation would cease, and the Aboriginal archaeology Excavation Director would be notified and excavation would revert to test and salvage excavation methodology, unless the construction site has been cleared by the Aboriginal archaeology Excavation Director.

7.9.2 Aboriginal archaeological test excavation methodology

This test excavation methodology has been prepared in accordance with both the excavation methodology provided in Section 12 of *Sydney Metro West Stage 1 Technical Paper 4: Aboriginal Cultural Heritage Assessment Report*⁴²⁴ and CoA D22 and would be undertaken with participation from registered Aboriginal stakeholders for the project. The integrated archaeological excavation would involve test excavation should intact soil deposits be identified below any potential non-Aboriginal archaeological remains in that area. Aboriginal archaeological investigation would be coordinated with suitably qualified person 'the Aboriginal Archaeological Excavation Director' in accordance with the requirements of the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South in accordance with condition D27 of the planning approval.

Test excavation would require hand excavation of test pits in controlled excavation units. Excavation units would comprise of one square metre test pits excavated in either arbitrary 100 millimetre spits or stratigraphic units where applicable. Excavation units can be joined together to form a two square metre test pit or larger, if required for work health and safety reasons in loose or deep contexts. In some instances, where very small portions of intact natural soil profile remain, the Excavation Unit size would be smaller than one square metre.

Excavation units would be excavated until archaeologically sterile deposit has been reached, or enough information has been retrieved to trigger salvage excavation, or a depth of 1.5 metres (or safe working depth) has been reached, whichever is the shallowest. If archaeological deposit extends below a safe depth (1.5 metres) deeper archaeological excavation should be considered such as shoring or stepping.

Where there is sufficient space, a grid of test pits would be established across the area to be tested. The archaeological method statement would include the grid layout and spacing of test pits. Where there are constraints on the grid layout, such as disturbed areas or services, test pits may be offset to an adjacent location within the area of proposed impact.

Machine excavation would be used where required to remove introduced fill layers overlying areas to be hand excavated. The Aboriginal archaeological Excavation Director would determine bucket size and areal extent of machine excavation. Where machine excavation is used for removal of fill, there is

⁴²⁴ Artefact November 2020.

no need for constraints on excavation size, with the main consideration being the provision of an area large enough to safely and satisfactorily undertake hand excavation of underlying natural contexts.

Soil samples would be collected where possible for particle size analysis, pollen analysis and Optically Stimulated Luminescence dating. Particle size samples would be collected from intact sections at up to 50 millimetre intervals by a qualified geomorphologist on site. Soil from buried humic layers would be collected where possible for palynological analysis. The number of samples collected from the site would be contingent on the degree of stratigraphic intactness, local sub-surface sedimentary conditions, and the relationship of stratigraphic units with artefactual deposits. Soil samples may also be retrieved by augur or push tube (or similar) methodologies.

Where the areal extent of the remaining archaeological resource is very limited, or where Aboriginal objects are identified in historical archaeology contexts, it is anticipated that salvage excavation would continue to the full extent of the archaeological resource and would not trigger salvage excavation.

All retrieved material from hand excavation would be sieved through nested 5 millimetre and 3 millimetre sieve mesh. It is likely that all material would be wet sieved, however dry sieving may be more appropriate in certain contexts.

The amount of fill material retrieved by machine that is sieved would depend upon the nature of the fill and the decision of the supervising archaeologist on site at the time.

The temporary repository of any retrieved artefacts would be a locked cupboard on the premises of the Artefact Heritage.

If recovered, further consultation with RAPs would be required to determine the preferred long-term care and management of any retrieved Aboriginal artefacts.

7.9.3 Aboriginal archaeological salvage excavation

Condition D22 of the planning approval states that if required a salvage excavation methodology would be prepared based on the results of the test excavation. If require the salvage excavation methodology would be prepared as part on a WMS and would be consistent with the excavation methodology provided in Section 12 of *Sydney Metro West Stage 1 Technical Paper 4: Aboriginal Cultural Heritage Assessment Report*.



 **The Bays Station**
Aboriginal archaeological potential
18260 Metro West
LGA: Inner West

SCALE 1:2,500
SIZE A4
DATE 14/01/2020

0 50 100 m



Figure 168: Location of The Bays PAD01

7.10 Preliminary results reporting

Interim or preliminary archaeological findings reports would be prepared following completion of archaeological investigation stages. These reports would outline the main archaeological findings, post-excavation and analysis requirements, and would also include any further archaeological investigation requirements for a particular site or future construction task. The preliminary results report would also identify whether the findings should be considered for public interpretation. Where possible, significant finds suitable for public interpretation would be researched

It is anticipated that interim reporting of archaeological finds would be prepared on a three-monthly schedule should archaeological investigations take place during that time. Sydney Metro templates would be used for preliminary reporting. These interim reports would be prepared for Sydney Metro.

As part of preliminary archaeological excavation reporting, confirmation of ground clearance would be provided by the Excavation Director where excavation works have completed management of an archaeological remain in a particular area in accordance with the significance of those remains. Due to the relative depth of potential archaeological remains at the construction site, total clearance to depth may not be possible after the completion of a specific scope of excavation work should archaeological remains be predicted to be located below an area of completed excavation.

7.11 Post-excavation analysis and reporting

Following the completion of on-site archaeological works, post-excavation analysis of the findings would be undertaken. This includes artefact analysis, environmental and building material sample analysis, stratigraphic reporting and production of Harris Matrices, production of detailed site survey plans, illustrations and interpretative drawings, generation of catalogues, data records and site registers.

Artefacts would be catalogued and analysed in a robust database in accordance with the EAMC (Exploring the Archaeology of the Modern City) catalogue architecture and methodology to facilitate inter-site artefactual comparative analysis.⁴²⁵

A final excavation report detailing the archaeological program and results would be prepared. It would include the results of the archaeological excavation and analysis, additional historical information if needed, photographs, illustrations and plans, catalogue and analysis of artefacts, and also respond to the research questions in detail. The report would also include a reassessment of archaeological significance based on the investigation results. Opportunities for archaeological interpretation would also be included in the final report.

Final excavation reporting would be prepared within 12 months of the completion of all archaeological investigation at the construction site, in accordance with relevant CoA for the project. Sydney Metro post-excavation reporting templates would be used for post-excavation reports. This report would be a standalone report. The report would be submitted to the Planning Secretary, Heritage NSW and the relevant Council when it is completed.

7.12 Public interpretation

There is the potential for recovered artefacts as well as final archaeological reporting results to be provided for future public interpretation opportunities. Significant structural remains, if intact, such as the locomotive roundhouse and turntable, and the former US Army stores, may be highly

⁴²⁵ Crook and Murray, 2006. *Guide to the EAMC Archaeology Database*. Archaeology of the Modern City Series, Volume 10. Historic Houses Trust of New South Wales.

demonstrative of the historically significant past uses of the site. Archaeological records – particularly high quality survey and photogrammetry – would be provided in archaeological reporting should future public interpretation be developed to include it at The Bays.

Artefactual remains for potential future public display would only include those items which were not identified as contaminated by sub-surface toxic materials, or for which cleaning activities were known to reliably remove contaminants without affecting the material integrity of the find.

Due to the industrial nature of the site and the high degree of subsurface contaminants, opportunities for public participation in archaeological excavation or open days during archaeological excavation is likely limited. However, if safe and reasonable to do so, it may be possible to facilitate public open days should state significant relics that are of public interest be found. Alternatively, providing publicly accessible, digital records of identified archaeological remains would also be of positive public benefit, should examination of the archaeological remains *in situ* by the public not be feasible.

8.0 APPENDIX – ARCHAEOLOGICAL INVENTORY SHEETS

8.1 Reclamation Fills

Item History

Year of construction:	Foreshore reclamation commences in 1840s with construction of the causeway to Glebe Island and is completed with extensions of the White Bay foreshore wharfage by the 1960s.
Modifications (with years):	Major identified phases: <ul style="list-style-type: none">• 1850s to 1860s – formalisation of Glebe Island causeway• 1860s to 1870s – sedimentation of the head of White Bay creating mud flats at low tide where there was once open water• 1890 - 1892 – extension of Mullens Street and the White Bay ballast dyke (and subsequent infill)• 1910 – modification to existing reclamation, construction of upper profile and hardstand elements
Function:	Creation of new land for road, public and then industrial use
Construction materials:	<p>The bulk matrix of the deposit consists predominantly of sand, silt and redeposited clay. Trace materials that may be present within the deposited soil matrices would include: fragments of brick, concrete, glass, wood and metal; presence of gravels and former hardstand concrete surfaces; buried rail or other rail infrastructure (see Inventory Sheet 8.6); presence of shell material; presence of preserved organic fibres (suspected cow fur).</p> <p>As well as deposited soil materials, there exists the low potential for discrete deposits of industrial refuse or wharf and maritime remains such as boats or jetties to exist within the reclamation fills.</p>
Demolished/removed (year):	Reclamation fills still present

Historical Summary

A detailed summary of this item can be found in Section 2.3.3 and Section 2.4 of this report.

A discussion of geotechnical information of this reclamation fill is provided in Section 3.2.

Summary of Archaeological Potential and Significance

High potential for locally significant bulk reclamation fills.

Low potential for significant remains associated with buried late-19th century industrial refuse, wharf structures, boats or equipment of local heritage significance.

Description of Potential Archaeological Remains

Reclamation fill materials have been positively identified from geotechnical investigation throughout the majority of the construction site. Reclamation fills consist of a variety of sandy and silty soils imported into the area from dredging that brought this material from the bottom of Sydney Harbour. These soils likely contain high volumes of dispersed historic materials, including sandstone, brick and concrete, with small quantities of glass, wood, shell and fibre. These deposits are of significant depth (in excess of 2 m) across the majority of the construction site.

However, reclamation activities may have included leaving contemporary local or industrial rubbish or obsolete maritime equipment (such as disused boats or jetties) *in situ* during reclamation activities in the 1890s. The historical research for this assessment did not include any positive archival evidence for the presence of shipwrecks (while known shipwrecks were identified further to the northeast in White Bay, these are outside of the construction site. However undocumented maritime equipment cannot be discounted from within reclamation deposits although the potential for these items to remain would be low.

Assessment of Archaeological Significance

- Archaeological research potential: Reclamation fills are likely to consist of discrete stratigraphic layers although artefactual material which may be of research interest is considered to be largely dispersed throughout. However while artefactual remains in bulk deposits may be of little significance, broad cross-site stratigraphic information may provide evidence of successive deposition events which would align with known and unknown reclamation phases. Stratigraphic information may provide evidence of the mechanisms used for reclamation activities which could be analysed in the context of reclamation works throughout Port Jackson in the 19th and 20th centuries.
Undocumented buried industrial, local or maritime rubbish, while the potential for recovery would be very low, may be intact and may demonstrate materials and techniques of construction. However, these remains are likely to date from the 1890s at the earliest (when the bulk of the reclamation activities took place) and their research value to address specific historical questions would be uncertain until specific remains are identified. Precedent for the discovery of this type of material in reclamation fills has been established by excavations at Barangaroo. Similar fills yielded the so-called 'Barangaroo Boat', an item of state significance that has demonstrated great research potential.
- Association with individuals, events or groups of historical importance: Reclamation activities at White Bay are not associated with any specific individual, event or group of historic importance. Buried maritime equipment by their undocumented nature are not anticipated to be associated with any individuals, groups or events of note – however this significance value would be re-assessed for any unexpected items which were uncovered.
- Aesthetic or technical significance: Reclamation fills would demonstrate late 19th and early 20th century aspects of dredging and infilling. While this process is well understood, stratigraphic information could provide further evidence of different techniques and labour organisation for specific reclamation phases in the wider context of long-term reclamation activities in Port Jackson. Undocumented maritime equipment may, if in the very low chance they are present and intact, be of aesthetic or technical interest to maritime historians and the broader community.
- Ability to demonstrate the past through archaeological remains: While reclamation fills are broadly demonstrative of the process of harbour reclamation, specific soil deposits uncovered or preserved through archaeological investigation is not likely to be of demonstrative value beyond showing specific stratigraphic infilling events. Undocumented maritime structures however may be demonstrative of the past lifeways however this is contingent on the intactness of any remains. Comparable excavations at Barangaroo have demonstrated the potential for significantly intact remains to be present in reclamation fills.

Archaeological Site Map



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 **Reclamation Fill**
Archaeological Location Map SCALE 1:2,000
21102 The Bays ARD SIZE A4
LGA: Inner West DATE 15/09/2021

0 12.5 25 50 75 100 Meters

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Figure 169: Archaeological site plan for reclamation fills

8.2 First White Bay Hotel and associated structures

Item History

Year of construction:	c1859
Alternative names:	First White Bay Hotel, Wide Bay Hotel.
Modifications (with years):	Plans from 1880 show several ancillary structures, including brick stables and fencing. By 1888, further structures had been added to the White Bay Hotel: timber toilet buildings, timber sheds, and a timber/iron structure.
Function:	Public house.
Construction materials:	Brick, stone, iron and timber buildings. Artefactual remains may be associated with wells, cisterns and privies.
Demolished/removed (year):	Demolished in 1915, with its bricks auctioned off by the Chief Commissioner for Railways and Tramways.

Historical Summary

Section 2.3.3.1 of this report contains a historical discussion of this inventory item.

Summary of Archaeological Potential and Significance

Low Potential for Local Significance

Description of Potential Archaeological Remains

Construction work to lay the railway in the 1910s through to the White Bay wharf involved extensive ground excavation and the construction of the Victoria Road overbridge. While images of the construction work in the early 20th century clearly show that rail is located on a lower elevation than at present, it is uncertain whether this excavation would have been several metres deep.

The surface level at the location of the former first White Bay Hotel and outbuildings is currently around 4.2 m AHD. Historical plans show that the hotel was located near the high tide line in the 1880s, which would be less than 1 m AHD and it is possible that the buildings may have been also near to this relative level if the ground was not steeply sloped in that area on the margin of the intertidal mudflat. The building was deliberately demolished, and its bricks auctioned in 1915, it is possible due to the change in land levels since that time that brick footings and other foundational remains of these structures may be preserved below fill layers.

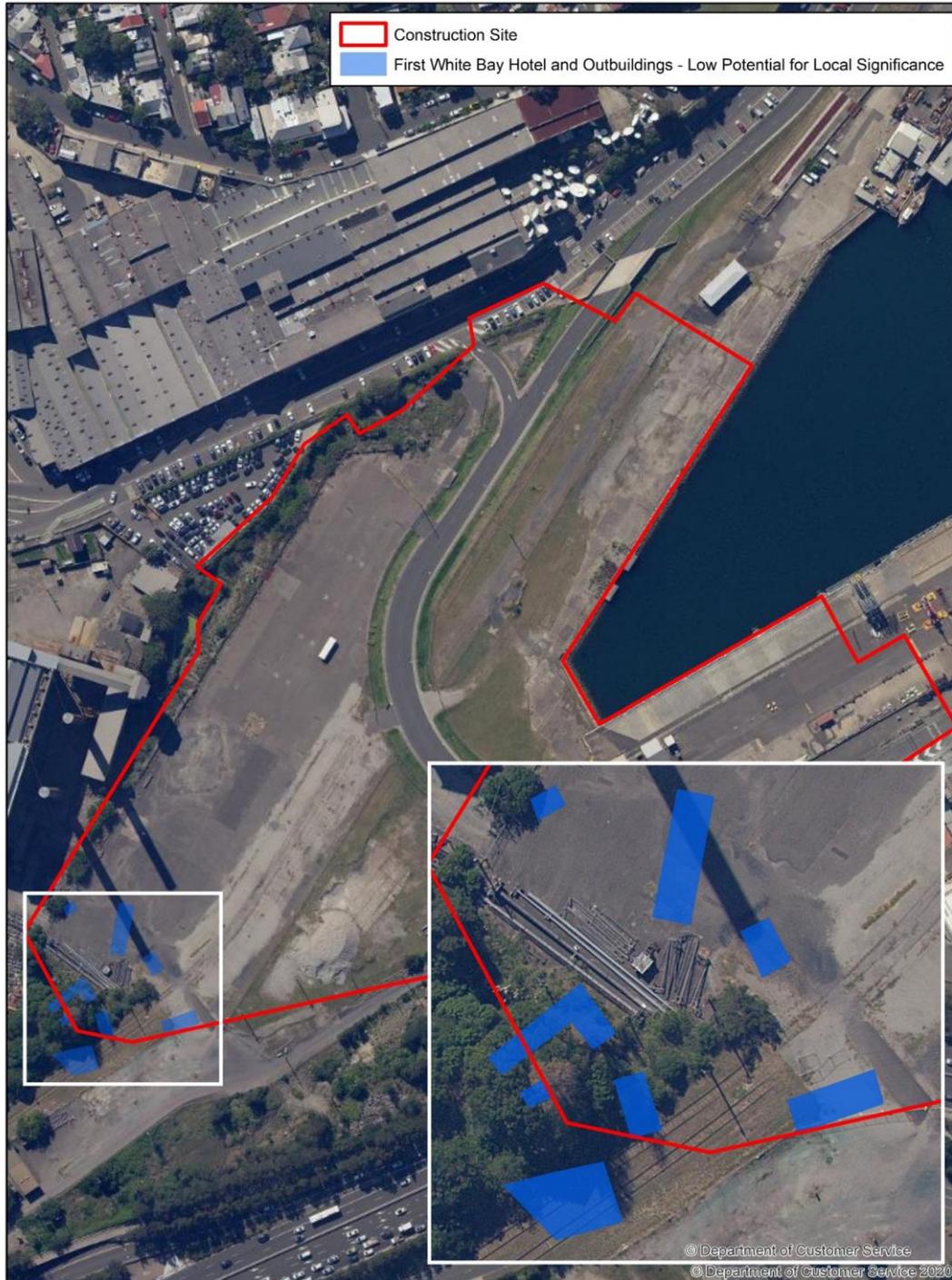
Furthermore, it is noted on historic plans the presence of structures that may indicate toilets and privies associated with the former hotel. While plans from 1888 imply that reticulation of water and sewerage were installed in these buildings at or following that time, it is possible that privies developed from the 1860s may have been drop toilets. Backfilling of former privies may have included deposited artefactual rubbish contemporaneous with the period of backfilling, with the possibility of deeper remains belonging to earlier historic phases.

Geotechnical investigation from this area of the construction site has not been conducted and at present a clear understanding of subsurface fill layers is unknown. While there is a possibility of these remains persisting due to potential depth of the remains, known ground disturbance in the area has been very high and the potential for these remains is considered low.

Assessment of Archaeological Significance

- Archaeological research potential: Archaeological remains associated with the first White Bay Hotel, particularly discrete artefactual deposits (such as remains in wells, cisterns or privies) may be able to be interrogated to analyse material practices of the operators and patrons of the former pub. These remains may demonstrate working class material practices from both the local Rozelle community as well as nearby abattoir workers.
 - Association with individuals, events or groups of historical importance: The hotel is associated with its proprietor, Robert Symonds however this association would not meet the threshold of local significance.
 - Aesthetic or technical significance: Structural remains are not anticipated to be technically unique enough to reach significance under this criterion. Artefactual remains may have demonstrative or aesthetic value, depending on the degree of intactness.
 - Ability to demonstrate the past through archaeological remains: Intact, stratigraphically-secure artefactual remains may be demonstrative of the past lives of the abattoir workers who frequented the hotel in the second half of the nineteenth century. Furthermore, remains of the hotel's associated structures may be able to provide a more holistic depiction of how hotels of this era operated beyond the main public house structure.
-

Archaeological Location Map



First White Bay Hotel
Archaeological Location Map
21102 The Bays ARD
LGA: Inner West

SCALE 1:2,000
SIZE A4
DATE 15/09/2021



Figure 170: Archaeological site plan for First White Bay Hotel

Key Images and Historical Overlays



1888 Sydney Water Plan, showing White Bay Hotel on south-west corner of Weston Road and Abattoir Road, with outbuildings (stables, toilets) in rear.

8.3 Timber Yard

Item History

Year of construction:	The exact date of construction is unknown, but the original timber yard appeared on an 1899 plan, meaning it was built some time before this.
Alternative names:	Maxwell's Timber Yard, Millars' Karri and Jarrah Company
Modifications (with years):	In 1904 when the Karri and Jarrah Company took over from Maxwell new offices and a stable. An office building was also constructed between 1906 and 1917, although whether it belonged to Millars' or the White Bay Steel Works is unclear.
Function:	Manufacturing, storing, and shipping timber
Construction materials:	Buildings were constructed predominantly with timber. However steel, brick, glass and other construction materials were used as part of the building
Demolished/removed (year):	The timber yard is no longer present in plans and photographs by 1920

Historical Summary

Sections 2.3.3.3 and 2.3.3.5 of this report provide a discussion of the Timber Yard's development.

Summary of Archaeological Potential and Significance

Low potential – Not Significant

Description of Potential Archaeological Remains

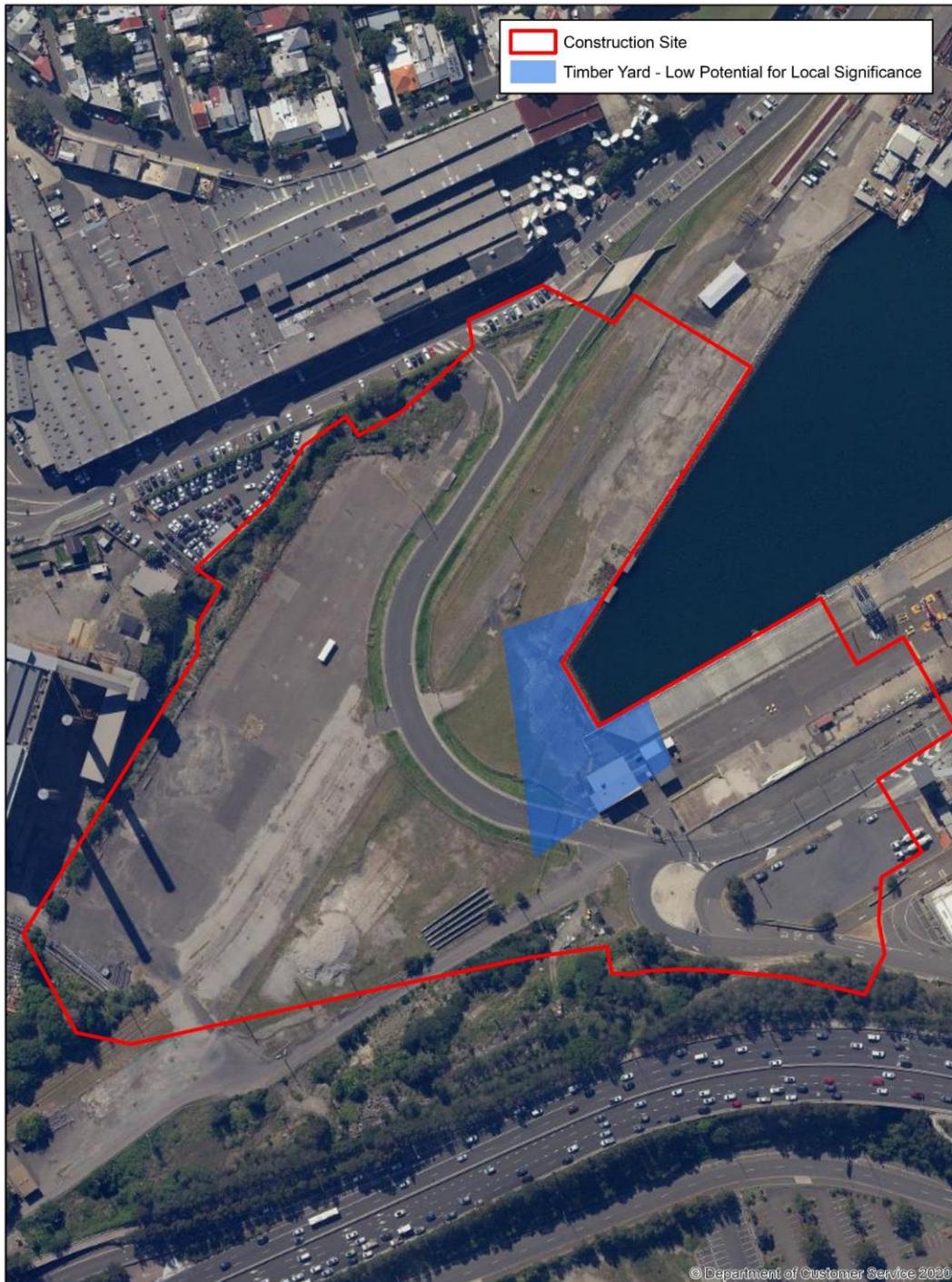
The former timber yard consisted of a timber office and laydown areas near the government jetty at the eastern end of the former Swan Street (on the outer edge of the 1890 phase of reclamation). Remains associated with this former lumber facility would likely consist of timber (both as structural remains and as worked or off-cut timber), along with possible industrial artefactual remains (remains of sawing and industrial equipment, industrial artefacts).

The timber yard is located in an area of ground which was later used as a railhead at the far western extent of the bay and for which a formalised infilled embankment was present by the 1930s. While timber remains associated with the former yard may be present below ground, it is considered unlikely that these remains would be either highly intact or be identifiable to the former structures and use of the yard in this location.

Assessment of Archaeological Significance

- Archaeological research potential: Archaeological remains from 19th and early 20th century timber yards, if intact are not considered likely to be materially robust to respond to research questions, nor are considered materially unique to technical questions over their significance.
- Association with individuals, events or groups of historical importance: The timber yard was associated with the proprietor J. Maxwell however this is not considered a significant association or group of historic importance.
- Aesthetic or technical significance: Timber remains from the former lumber yard may show evidence of past manufacturing, storing or shipping techniques specific to the use of the White Bay site for private commercial enterprise in the late 19th century. However these remains would not be considered technically unique or rare in NSW and would not reach significance under this criterion.
- Ability to demonstrate the past through archaeological remains: Archaeological remains of the timber yard, due to the multiple phases of industrial use of this location of the site, are not anticipated to be intact or robust enough to be demonstrative of the past manufacturing and labour processes of late 19th century Sydney.

Archaeological Site Plan



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Timber Yard
Archaeological Location Map
21102 The Bays ARD
LGA: Inner West

SCALE 1:2,000
SIZE A4
DATE 15/09/2021

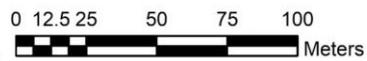
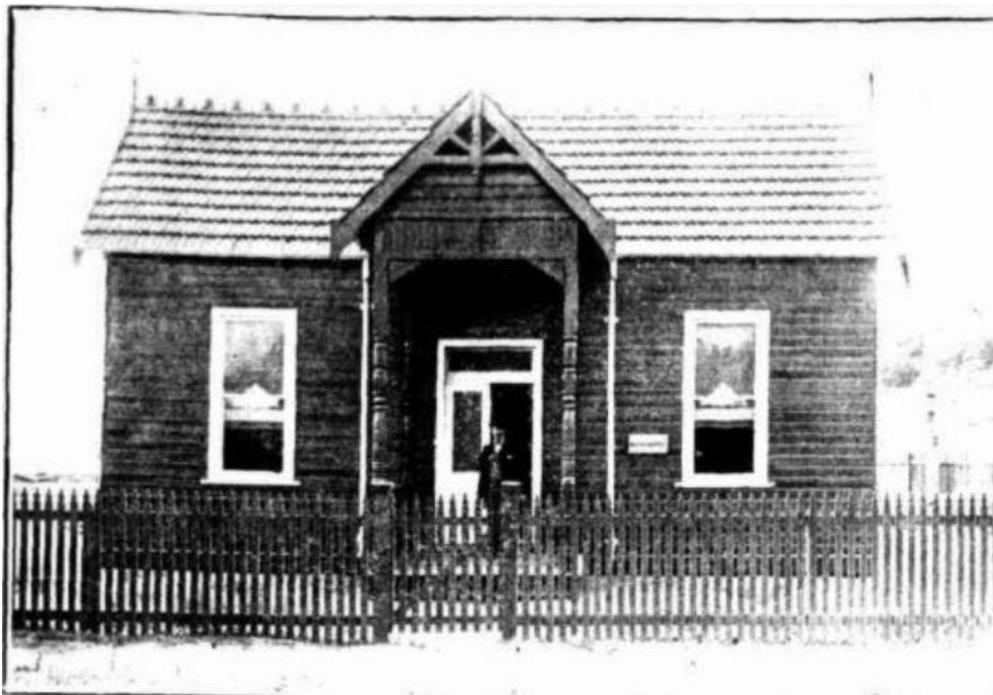
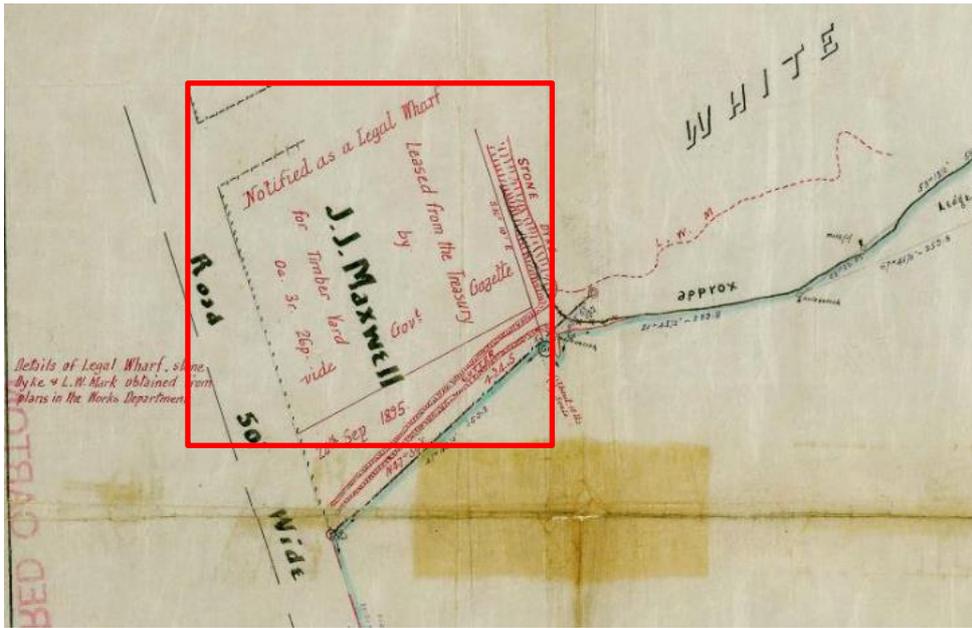


Figure 171: Archaeological site plan for former Timber Yards

Key Images and Historical Overlays



8.4 Rubble Ballast Dyke

Item History

Year of construction: Present on plans from 1892.

Function: Aided in the reclamation of White Bay.

Construction materials: Stone.

Demolished/removed (year): The dyke was removed – at least in part – with the formalisation of part of the current White Bay wharf foreshore in around 1915. Those portions of the dyke that correspond with the current terrestrial portion of White Bay were likely buried and not removed during later construction of the Balmain No 1 Wharf.

Historical Summary

Discussion of the Dyke and its role in the reclamation of White Bay can be found in Section 2.3.3.2 of this report.

Summary of Archaeological Potential and Significance

Moderate Potential – Locally significant

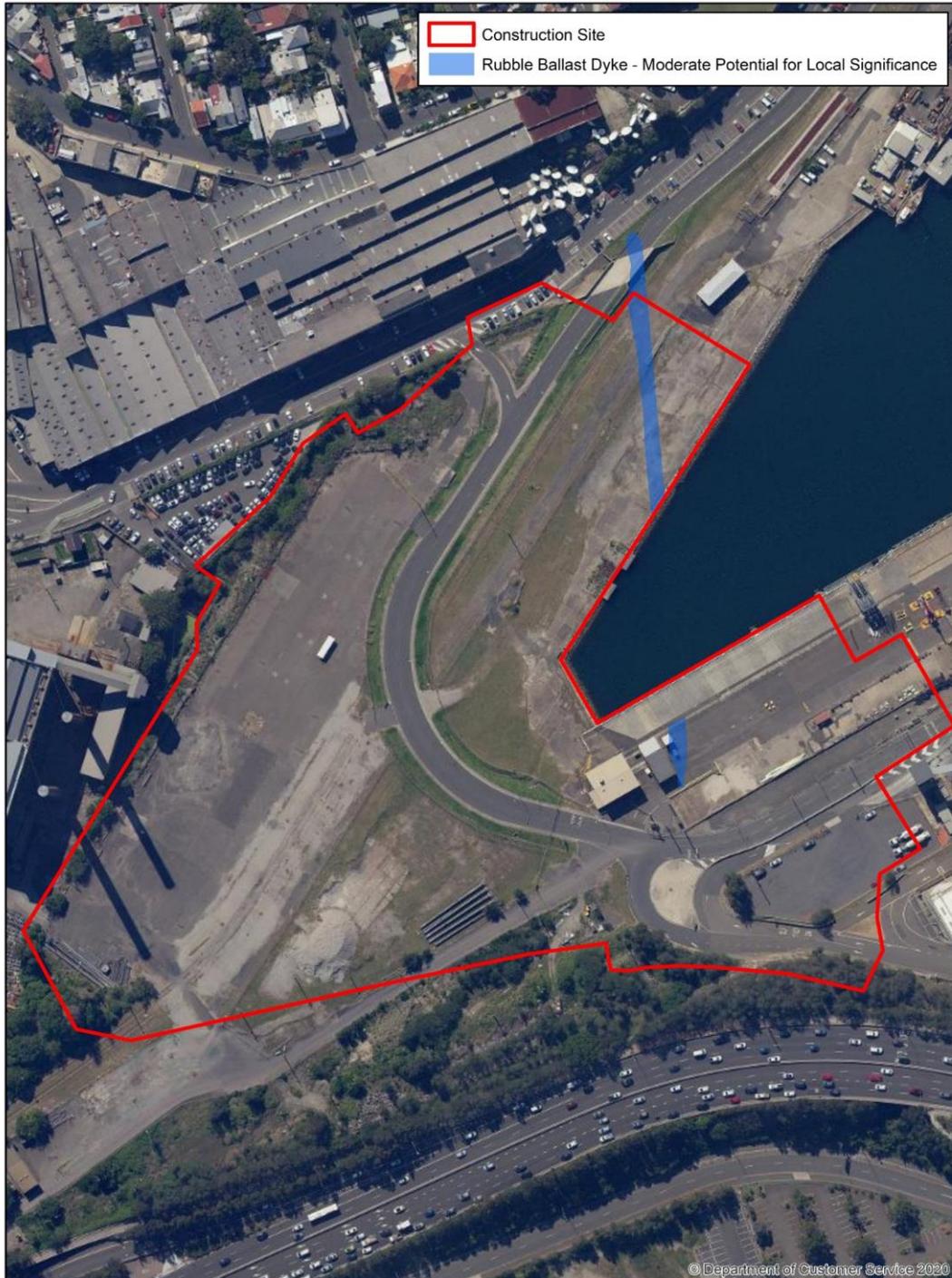
Description of Potential Archaeological Remains

While the central portion of the former dyke would have been likely partly removed when the foreshore was modified in 1910 – 1915, it is likely that the northern and southern extension of the dyke would be preserved below reclamation fills. Archaeological remains related to the former dyke would consist of stone blocks and rip rap; timber posts and retaining boards; and isolated maritime artefactual remains.

Assessment of Archaeological Significance

- Archaeological research potential: The remains may address research questions related to material sourcing for public works in the late 19th century. Currently, the structure of the dyke is unknown, so the remains could inform us of the material and techniques used in its construction. Furthermore, it has the potential to provide researchers with additional information on the processes by which humans altered their physical surroundings in the 19th century.
- Association with individuals, events or groups of historical importance: The construction of the dyke was associated with the Public Works Department in the 1890s and is associated with the historic development of this portion of White Bay from a disused intertidal cove to the large wharf site it became.
- Aesthetic or technical significance: The former dyke, if intact, may be of aesthetic significance as a 19th century former harbour retaining wall.
- Ability to demonstrate the past through archaeological remains: The former dyke is demonstrative of the pre-government phase of reclamation filling in the 1890s, which significantly expanded the area of usable land at White Bay and later allowed the development of the bulk goods wharfage at the site. Any identified location and materials used for the dyke, if intact, would have demonstrative value for future heritage interpretation. Such remains could allow greater understanding of the processes involved in reclamation works.

Archaeological Location Map



 **Rubble Ballast Dyke**
Archaeological Location Map SCALE 1:2,000
21102 The Bays ARD SIZE A4
LGA: Inner West DATE 15/09/2021

0 12.5 25 50 75 100 Meters

N

Figure 172: Archaeological site plan for Rubble Ballast Dyke

Key Images and Historical Overlays



8.5 Roundhouse, Turntable and Locomotive Siding

Item History

Year of construction:	Construction commenced in 1915 and completed by 1920.
Alternative names:	Loco Siding, Loco Shed, Engine Shed
Modifications (with years):	The Concrete Works were added to the southern side of the Roundhouse around 1920
Function:	Servicing and stabling locomotives.
Construction materials:	Iron rails, steel pivots, brick pits, concrete footings and foundations, timber frames, and corrugated iron.
Demolished/removed (year):	The Roundhouse and Turntable were demolished by 1943.

Historical Summary

See Sections 2.4.2.1 and 2.4.2.2 for detailed summaries of these items and their history.

Summary of Archaeological Potential and Significance

Moderate Potential – Local Significance

Description of Potential Archaeological Remains and Comparative Analysis of Roundhouse Remains

Archaeological remains of the former locomotive roundhouse would consist of brick and concrete footings of the overall structure as well as lower elevation brick- or concrete-lined inspection and service pits as well as the circular turntable pit. Artefactual materials may have been deposited within inspection pits, as well as around footings or within general demolition rubble. While the building was known to be removed it is considered likely for the ground- and below-ground portions of the structures to have been infilled rather than excavated.

The railway turntable would consist of a concrete- or brick-lined circular pit. The turntable itself is known to have been removed, however the centre pintle and other remnants of the turning apparatus may remain. It is considered likely that the turntable pit was not excavated but infilled when the structure was removed, and demolition rubble in the pit may also contain discrete rail and industrial artefact deposits in association with backfilling episodes.

Roundhouses were introduced to Australia in the 1880s to assist in locomotive storage and maintenance at depots. These structures were designed as an annulus and existed as complete rings or segments dependent upon the intended capacity of the specific depot they were installed in. The simplicity and efficiency of their design enabled a greater utilisation of smaller areas of land and negated the installation of complex trackwork to maneuver locomotives. However, as the 20th century progressed there was a reduction in servicing facilities within NSW, rendering many roundhouses obsolete and derelict⁴²⁶. The extant roundhouses that are still in use have largely been adapted to other uses, with only a few still operating as locomotive servicing facilities. The surviving remnants of

⁴²⁶ Don Godden and Associates Pty Ltd 1989. *Railway Workshops: Bathurst – Cardiff – Goulburn; Railway Locomotive Roundhouses: Broadmeadow – Casino – Cowra – Goulburn – Junee – Muswellbrook – Parkes – Temora – Werris Creek*. Report prepared for The State Rail Authority of NSW.

roundhouses vary in terms of condition. While some remain standing, others are only archaeologically visible through their remnants and subsurface footprints.

Locomotive turntables were also an important aspect of rail infrastructure and functioned in conjunction with roundhouses. Implemented in Australia after 1890, they accommodated locomotive storage, servicing and movement around depots that housed multiple locomotives. Like the roundhouses they were associated with, turntables within NSW have largely become obsolete, with the handful that still exist only receiving occasional novel usage. The surviving body of turntables varies in its condition. While some examples remain in reasonably good condition, a significant number are derelict, cannot be located, or exist only as ruins⁴²⁷. Of the remains that exist as ruins, it is generally the pit and foundation elements of the turntable that are still extant.

Previous archaeological excavations have noted that the bricks used to surround turntable pits are often still present⁴²⁸. Such excavations have noted that the brick walls and floors of these pits have been discovered *in situ* despite being filled in and the area around them being disturbed and developed (Figure 173). Stone plinths, which were used to support the turntable and aided in its function, have also been noted, albeit far less frequently⁴²⁹ (Figure 174). Excavations of the Lee Street Substation also demonstrated patterns of cement bonding on the pit's brick walls that were associated with the turntable mechanisms⁴³⁰.

The turntable at White Bay was being constructed during a shift in standard turntable designs which occurred due to an increase in locomotive size⁴³¹. Previously, turntables were 60 feet in diameter prior to 1915; however, post-1915 standardised plans called for a 75 foot diameter turntable⁴³². White Bay turntable may be one of the earliest turntables built according to the new standardized 75 foot plans. The available information demonstrates that many 75 foot turntables were built after the completion of the White Bay turntable⁴³³, which could imply that this turntable was one of the earliest 75 foot turntables to be constructed after the shift to newer standardized plans. Although the turntable itself was removed from White Bay and reinstalled at the Broadmeadows depot, its infrastructure, if present, may prove significant in demonstrating engineering approaches to early 75 foot turntables. Such remains could inform us on how the transition from smaller to larger rail infrastructure was handled, and would also prove a useful comparison with later versions to see if engineering techniques were altered or refined.

Possible expansion of the White Bay Roundhouse was hampered by the inclusion of the other structures that were developed around it, meaning that it was only able to accommodate a certain number of locomotives at any one time. However, the turntable serviced a busy industrial area, so it would be advantageous to accommodate as many locomotives as possible in order to maintain industrial efficiency and not slow down production and goods delivery. It is possible that a higher volume of locomotive traffic was necessary to maintain efficiency and offset a smaller size. Increased usage would lead to wear and the rail infrastructure used to accommodate these locomotives, which may be archaeologically visible through damage or newer or incongruous technical elements of said infrastructure. It may be possible to see such features in any extant remains of the turntable's infrastructure, which could evidence higher volumes of usage. Furthermore, it may be possible to compare visible damage against the Parkes and Cowra turntables, which are both examples of 75 foot turntables that are noted to have been worn and damaged through usage⁴³⁴. This evidence would provide further detailed information on the volume of transport and industry taking place at White Bay during the early 20th century.

⁴²⁷ <https://www.nswrail.net/infrastructure/turntable.php>

⁴²⁸ Fenwick, P. 1994. *Honeysuckle Point Locomotive Turntable Excavation Report*, New Castle, New South Wales. Report prepared for Honeysuckle Development Corporation; AMAC Group 2016. *Chalmers Street Substation Archaeological Monitoring*; AMAC Group 2016. *Archaeological Assessment, Research Design, Excavation Methodology & Heritage Impact Statement: Footings [066], [073], [074] and [080] Lee Street Substation Site Central Station, Sydney*. Report to UGK Limited on behalf of Transport for New South Wales.

⁴²⁹ AMAC 2016; Mckillop, B. 2016. *Lee Street Substation Archaeological Dig*.

⁴³⁰ Mckillop 2016.

⁴³¹ Don Godden and Associates Pty Ltd 1989.

⁴³² Davies, P. 1978. *Railway Architecture 1888 – 1915*. B. Arch. Thesis, University of New South Wales.

⁴³³ B Cubed Sustainability Pty Ltd. 2006. *Locomotive Roundhouse Heritage Conservation Strategy*. Report prepared for The Australian Rail Track Corporation.

⁴³⁴ Don Godden and Associates 1989; B Cubed Sustainability 2006.

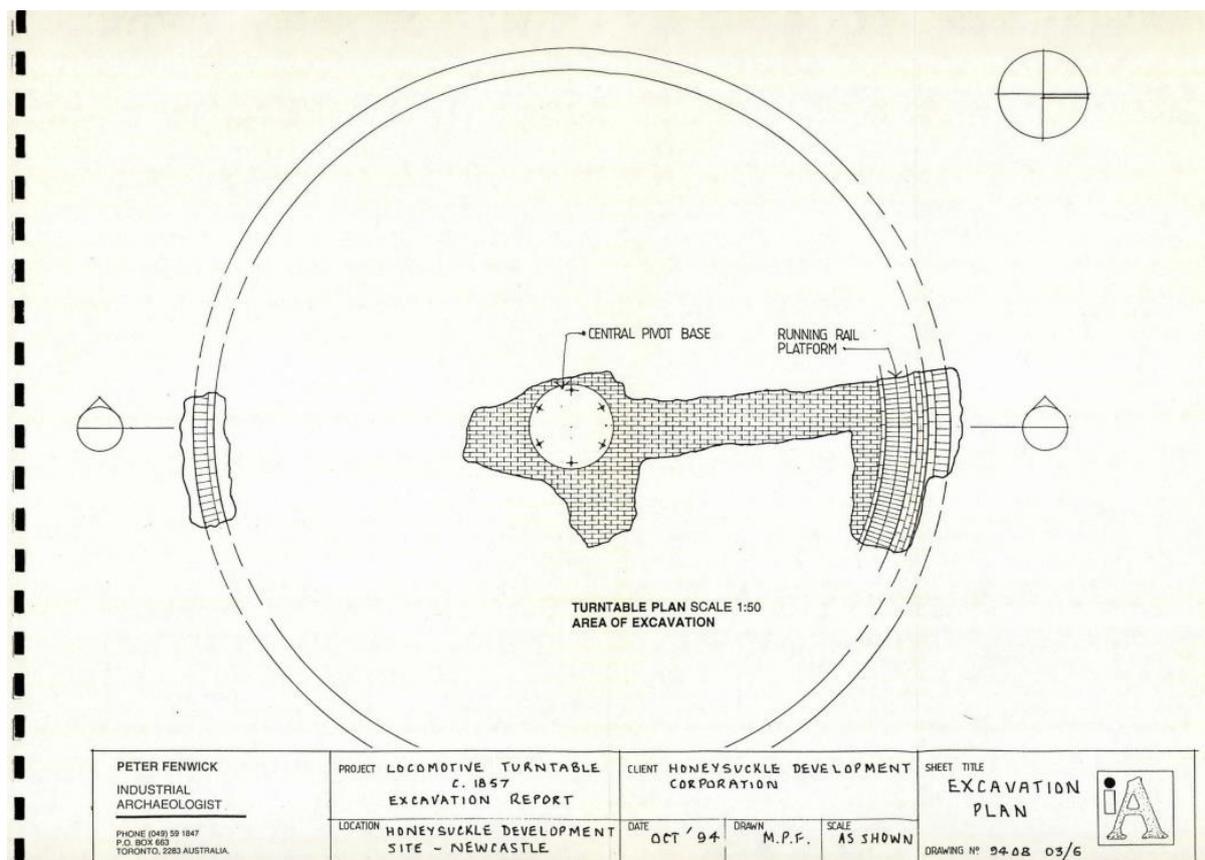


Figure 173: Honeysuckle turntable remnants (Source: Fenwick 1994).



Figure 174: Lee Street turntable, with brick walls, floor and stone plinth still extant (Source: AMAC 2016).

Assessment of Archaeological Significance

- **Archaeological research potential:** The former roundhouse and turntable were constructed in the 1910s and it is not known whether they were of brick or concrete construction. Archaeological remains of these structures may answer questions on the short lifespan of the structure's use. Artefactual remains located within buried contexts may provide information on the locomotive maintenance and use as well as labour practices of workers.
 - **Association with individuals, events or groups of historical importance:** This archaeological item is not associated with events, individuals or groups of historic note.
 - **Aesthetic or technical significance:** Sufficiently intact under-roads and turntable pits may be of aesthetic significance, if materially intact and coherent, for their historic legibility into past industrial and transportation use of the site.
 - **Ability to demonstrate the past through archaeological remains:** The remains of the roundhouse and turntable would be demonstrative of past industrial and mechanical practices if structural remains are identified in a good state of intactness. Should the substructures of these former buildings be entirely preserved, accurate surveying and photogrammetry would be a valuable resource for future heritage interpretation purposes at The Bays site.
-

Archaeological Location Map



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 **Locomotive Roundhouse and Turntable**
Archaeological Location Map
21102 The Bays ARD
LGA: Inner West

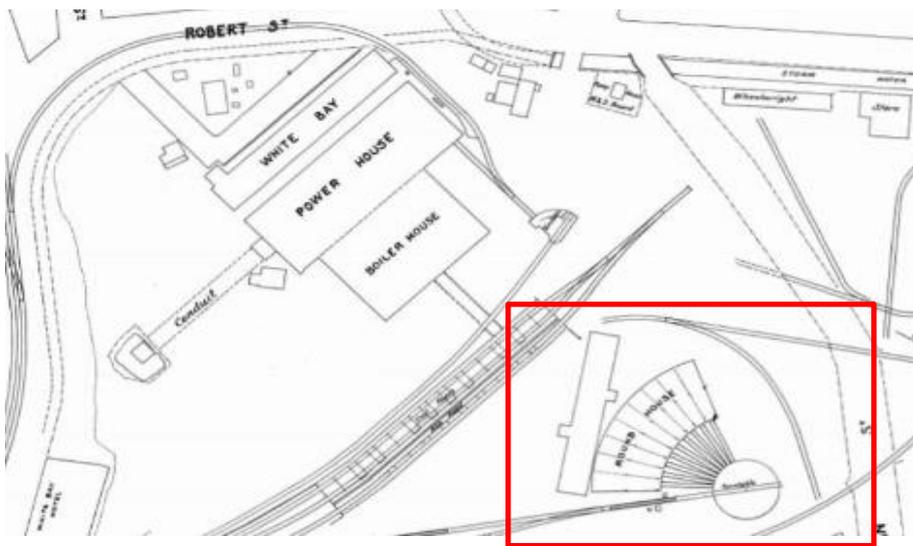
SCALE 1:2,000
SIZE A4
DATE 15/09/2021

0 12.5 25 50 75 100
Meters

N

Figure 175: Archaeological site plan for Locomotive Roundhouse and Turntable

Key Images and Historical Overlays



8.6 Railway infrastructure

Item History

Year of construction:	First constructed with the development of White Bay Power Station ca. 1910
Modifications (with years):	Continually modified throughout 20 th century use of the site
Function:	Rail roads for moving freight and locomotives
Construction materials:	Steel, iron, timber, gravel ballast, concrete, metal signals
Demolished/removed (year):	Rail no longer actively used within the construction site from 1990s onward, however remnant portions of rail are still visible and present at surface level and have not been entirely removed

Historical Summary

The development of rail infrastructure within the construction site is discussed in Section 2.4.2 and Section 2.4.1.2 of this report.

Summary of Archaeological Potential and Significance

High Potential – Not Significant

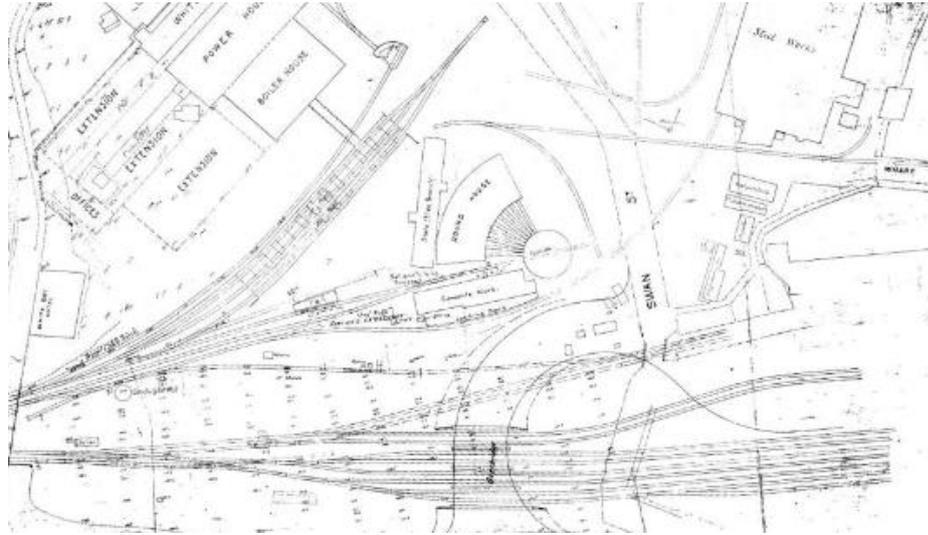
Description of Potential Archaeological Remains

Rail remains would consist of steel rail, timber and concrete sleepers, gravel ballast, concrete stanchions, iron and steel point rods, former signalling cables.

Assessment of Archaeological Significance

- Archaeological research potential: Evidence of 20th century railway infrastructure are ubiquitous within the NSW railway network today, and their physical remains are not likely to address significant research questions.
- Association with individuals, events or groups of historical importance: Railway infrastructure at the Bays is not associated with individuals, groups or events of historic note.
- Aesthetic or technical significance: 20th century railway infrastructure is not considered to be significant for its aesthetic or technical properties due to how common these remains are within the railway network in NSW.
- Ability to demonstrate the past through archaeological remains: While railway infrastructure is demonstrative of the 20th century industrial use of the site, these are not anticipated to be easily legible to specific phases of industrial use at White Bay due to the constant upgrading to the site during this time and the commonality of the material remains.

Key Images and Historical Overlays



8.7 White Bay Steel Works

Item History

Year of construction:	Constructed in 1907.
Modifications (with years):	A carpenter's shop, plumber, pattern maker, and an engineer's office were added to the Steel Works between 1916 and 1919.
Function:	The preparation and cutting of pre-fabricated steel structures for use in building and as individual structures in their own right. Limited evidence of steel casting.
Construction materials:	Galvanised iron roof and walls, timber frames, concrete flooring and foundations.
Demolished/removed (year):	Plans show its existence in 1928, the Steel Works and its associated buildings had been removed to Chullora by c1930

Historical Summary

A detailed summary of the White Bay Steel Works can be found in Sections 2.3.3.4 and 2.4.3.1 of this report.

Summary of Archaeological Potential and Significance

Low Potential – Local Significance

Description of Potential Archaeological Remains

The White Bay Steel Works consisted of several buildings constructed from 1907 through to the late 1910s. These consisted of the steel fabricating building itself, as well as later-built carpenter's and plumber's shops and an engineer's office. Structural remains of these buildings may consist of timber, brick and concrete footings, steel and iron sheets, demolition rubble and industrial and manufacturing refuse. It is not considered likely that remnant fabrication machinery would remain as these were transferred to the Chullora Railway Workshops in the late 1920s. However, there is a low possibility that the foundations or supports of former equipment may have been preserved.

The extent of ground surface disturbance in this area was known to be very high and the preservation of these remains is contingent on infilling and not excavation from later levelling events at White Bay, particularly the construction of the Balmain Coal Loader

Assessment of Archaeological Significance

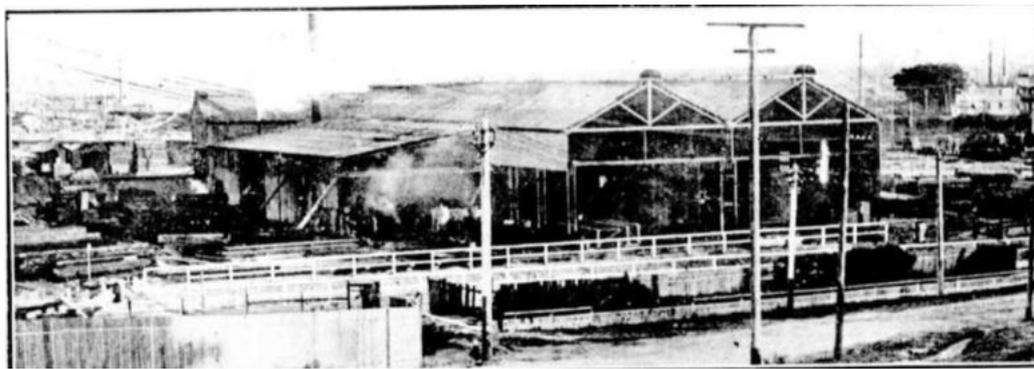
- Archaeological research potential: The former steel works were one of the larger steel works in Sydney in the early 20th century and fabricated steel girders and joists for construction projects throughout Sydney and NSW. Evidence of manufacturing techniques, transportation and storage of goods, labour organisation and information about the lifeways of workers and engineer's may be present if remnant evidence of former structures and machining locations are identifiable.
- Association with individuals, events or groups of historical importance: While the steel works fabricated steel for use on other historically significant structures (such as Sydney Central Station and expansion to the Art Gallery of NSW), archaeological remains are not anticipated to be demonstrative of these associations.
- Aesthetic or technical significance: While the likelihood of encountering significantly intact remains related to this item is low, should remnants of manufacturing equipment be identified these may have aesthetic value as well as technical value for understanding past manufacturing processes.
- Ability to demonstrate the past through archaeological remains: Remains of the former steel works and offices may have the ability to demonstrate past manufacturing and industrial practices, as well as providing evidence of the differentiation of labour. The degree of significance would be related to the degree of intactness of these remains, with highly preserved remnant structures and deposits likely to have future interpretive value. Intact remains may also provide some indication of what working conditions were like inside the steel works, which could contribute to our understanding of the factors that led to mass-industrial action during the mid-20th century.

Archaeological Location Map



Figure 176: Archaeological site plan for White Bay Steelworks

Key Images and Historical Overlays



8.8 Coal Loading and Ash Handling Facilities

Item History

Year of construction:	The Boiler House No. 1 Ash Handling plant was originally constructed in 1913, while the first Coal Loading facilities were in operation c1914.
Modifications (with years):	More coal and ash handling facilities were added to Boiler House No. 2 c1927. Boiler No. 1's facilities were upgraded in 1951
Function:	Handling of materials necessary for and produced by the operation of the White Bay Power House.
Construction materials:	The original facilities were fabricated steel with steel trellises supported with concrete foundations.
Demolished/removed (year):	These facilities were demolished and replaced by new facilities by 1958.

Historical Summary

Section 2.4.2.1 and Section 2.4.2.2 of this report contains a detailed discussion of the development of the coal and ash handling facilities at White Bay.

Summary of Archaeological Potential and Significance

Low Potential – Local to State Significance

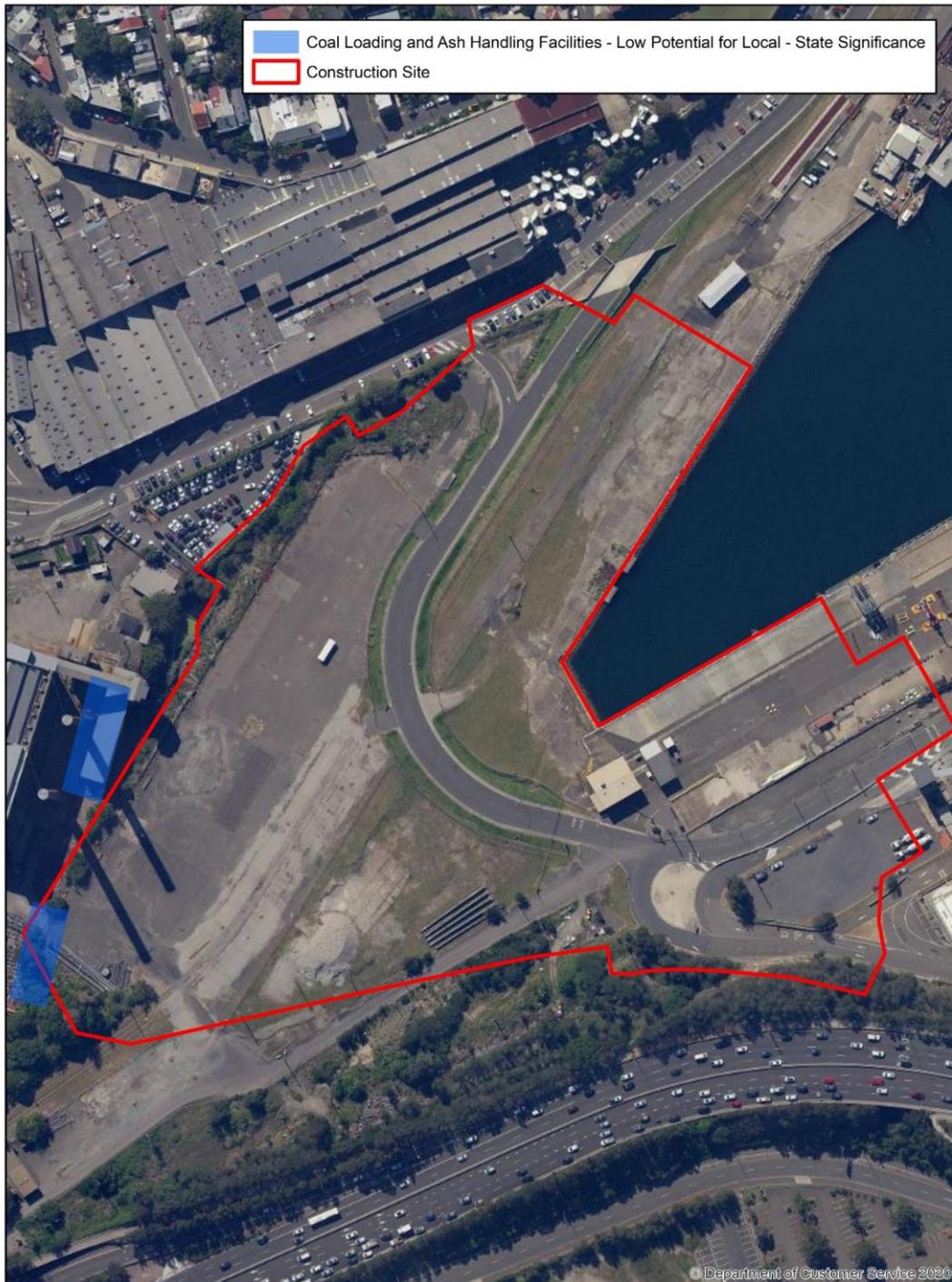
Description of Potential Archaeological Remains

The coal loader and ash handling facilities were constructed on raised steel trellis' with hoppers to convey coal up and ash down to nearby railway lines. The removal of these structures in the 1950s may have involved the preservation of footings of the former structures but above-ground portions of these buildings would have been removed. While coal and ash may be present in association with the former footprint of this building these elements are not likely to be distinguishable from similar materials in bulk reclamation fills.

Assessment of Archaeological Significance

- Archaeological research potential: As the primary operational equipment of this former facility would have been removed when it was upgraded in the 1950s, footings and supports for the former structure are not likely to address research questions to do with their manufacture and use.
 - Association with individuals, events or groups of historical importance: These remains were an original component of the first stage of the White Bay Power Station, and intact footings or deposits would be significant because of their association to the State significant heritage item.
 - Aesthetic or technical significance: Remnant footings are not considered likely to be of aesthetic value. As the operational portions of these structures were above ground and were historically removed, the remains of footings and supports are not likely to have technical value.
 - Ability to demonstrate the past through archaeological remains: Footings and foundations of the former coal loading and ash handling facility, if intact, would demonstrate the original configuration of the White Bay Power Station. However, these footings are not likely to be demonstrate the past use and operation of this former structure.
-

Archaeological Site Plan



Document Path: D:\GIS\GIS_Mapping\21102_Bays_Metro_ARD\MXD\Inventory_Maps\White_Bay_Coal_Ash>Loading.mxd

 **Coal Loading and Ash Handling Facilities**
Archaeological Location Map SCALE 1:2,000
21102 The Bays ARD SIZE A4
LGA: Inner West DATE 15/09/2021

0 12.5 25 50 75 100 Meters

N

Figure 177: Archaeological site plan for Coal Loading and Ash Handling Facilities

Key Images and Historical Overlays



8.9 No. 9 Shed

Item History

Year of construction:	Constructed by mid-1927.
Alternative names:	Shed No. 9.
Modifications (with years):	Potentially enlarged after 1927
Function:	Warehousing bulk goods during transportation through White Bay
Construction materials:	Galvanised iron roofing and walls, concrete flooring and foundations.
Demolished/removed (year):	By around 1995 Shed No. 9 had been completely removed or adapted to form part of the Soda Ash unloading facility

Historical Summary

Information regarding the No. 9 Shed's history can be found in Section 2.4.1.2

Summary of Archaeological Potential and Significance

Low Potential – Not Significant

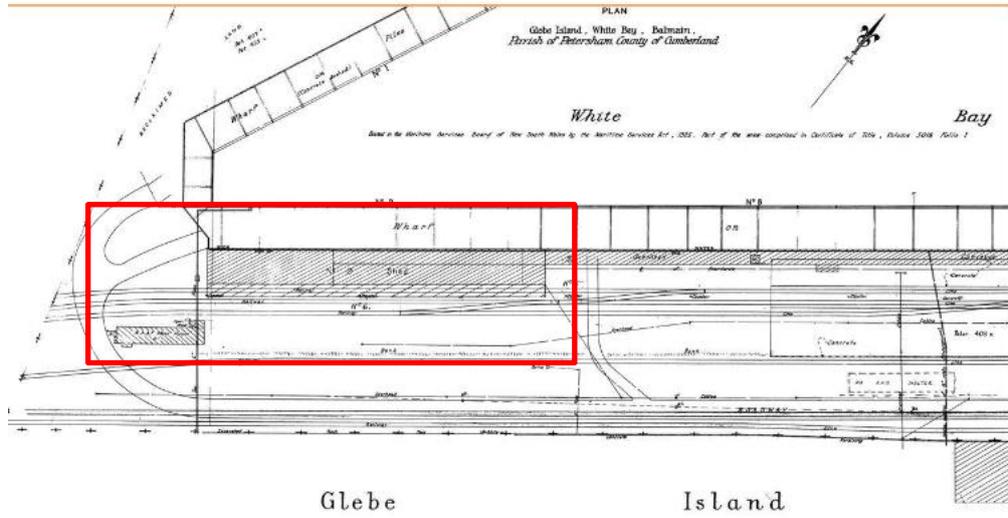
Description of Potential Archaeological Remains

The structure was completely removed by the 1990s. Concrete footings may remain of this item below current asphalted surfaces.

Assessment of Archaeological Significance

- Archaeological research potential: Concrete footings of the former shed are not likely to address any significant research questions related to the construction and use for this structure for the bulk handling of goods.
- Association with individuals, events or groups of historical importance: This item is not associated with any individuals or groups of historic note.
- Aesthetic or technical significance: The concrete footings of this item, if present, are not anticipated to be of aesthetic or technical value.
- Ability to demonstrate the past through archaeological remains: Concrete footings of the former structure may demonstrate the former footprint of this item, however it is unlikely that artefactual material which would demonstrate its past use would be identified. The location and footprint of the item are well attested from historical plans and photographs.

Key Images and Historical Overlays



8.10 U.S. Army Warehouses and RAAF Mess Hall

Item History

Year of construction:	c1942
Alternative names:	WW2 Warehouses
Modifications (with years):	An additional warehouse to the south of the two original structures was added between 1943 and 1948.
Function:	Storage for military equipment during and post-WW2.
Construction materials:	The buildings were constructed of corrugated asbestos sheet or galvanised iron on wood and concrete footings with concrete flooring.
Demolished/removed (year):	c1951.

Historical Summary

For a detailed historical summary of the U.S. Army Warehouses and RAAF Mess Hall see Section 2.4.4.

Summary of Archaeological Potential and Significance

Low potential – Local significance

Description of Potential Archaeological Remains

The warehouses and ‘mess hall’ were constructed as storage and goods distribution facilities for the US and Australian armies during World War II. While White Bay was a critical point of embarkment of materiel and personnel during the war, the remains of these buildings would likely consist of concrete and wood footings and artefactual remains related to the wartime use of these structures is not anticipated to be present.

Assessment of Archaeological Significance

- Archaeological research potential: Remains of these buildings are anticipated to only be structural footings which would not be likely to be informative to yielding evidence which could answer research questions about the war time use of the White Bay site.
- Association with individuals, events or groups of historical importance: The former warehouses and ‘mess hall’ are associated with the main embarkation point for US and Australian soldiers and materiel in Sydney during World War II.
- Aesthetic or technical significance: Footings of these utilitarian war time structures are not likely to be of aesthetic or technical value.
- Ability to demonstrate the past through archaeological remains: While concrete footings of these former structures are unlikely to address new research questions of the use of these buildings, the former footprint of these buildings may have heritage interpretation value for demonstrating the critical war time role of these items at White Bay.

Archaeological Site Plan



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US Army Warehouses and RAAF Mess Hall
Archaeological Location Map
21102 The Bays ARD
LGA: Inner West

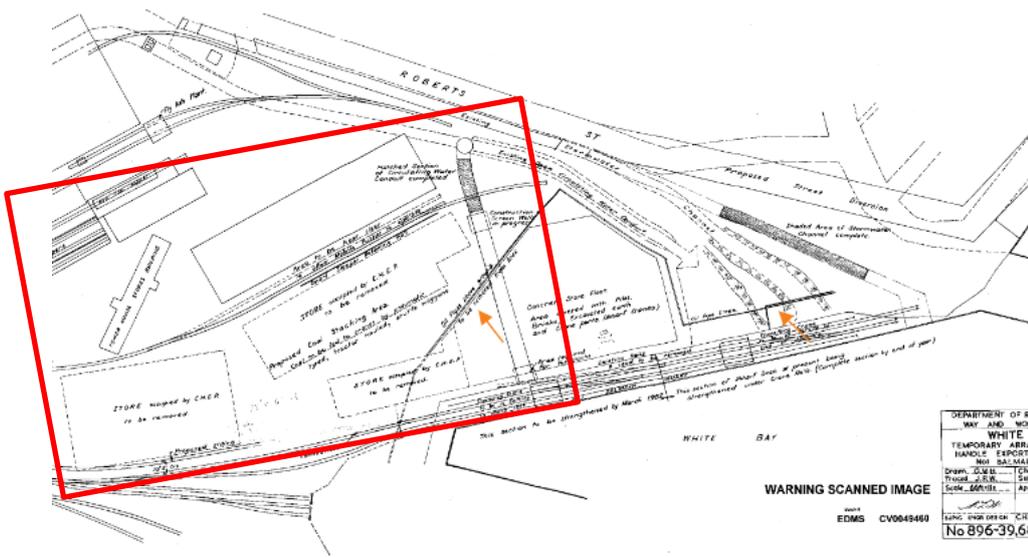
SCALE 1:2,000
SIZE A4
DATE 2/11/2021

0 12.5 25 50 75 100
Meters



Figure 178: Archaeological site plan for US Army Warehouses and RAAF Mess Hall

Key Images and Historical Overlays



8.11 Circulating Water Conduit

Item History

Year of construction:	1912 on the Rozelle Bay portion and 1913 for White Bay.
Alternative names:	Cooling channels, circulation conduits
Modifications (with years):	By 1951 a new deviation was provided for the White Bay portion of the conduits, running in a more southerly direction, perpendicular with Wharf No. 1. The redundant outlet for the conduit was filled in by 1965.
Function:	Water provision to operate the White Bay Power Station steam turbines.
Construction materials:	Brick-lined ditch with concrete and steel water channels. Steel penstocks.
Demolished/removed (year):	Intact.

Historical Summary

Sections of this report feature in-depth discussions of the conduits and their development over the years.

Summary of Archaeological Potential and Significance

High – State Significant

Description of Item

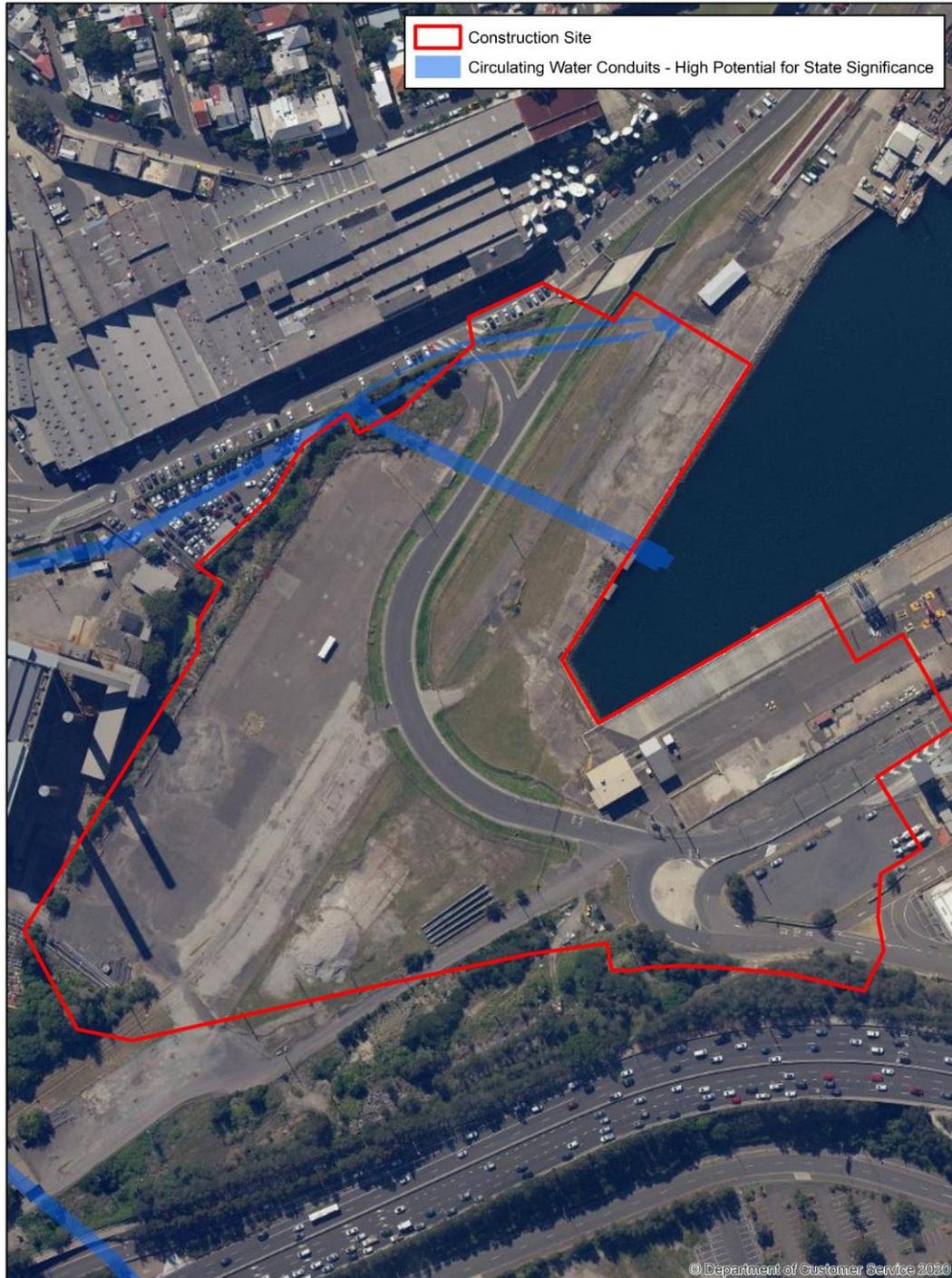
Despite modification over time (including re-routing the water canal in the 1950s) the significant fabric of the conduit canals is a known item and portions of it are independently heritage listed.

Assessment of Significance

The item is listed as locally significant on the Port Authority of NSW s170 heritage register.

Both listed and unlisted portions of the canals are considered an element of moderate to high value to the State heritage significance of the White Bay Power Station even though they are located outside of the SHR curtilage of the item. During their operation, they enabled the operation of the Power Station's steam turbines and facilitated in providing electricity to power Sydney's lighting, transport and other services, making them an increasingly valuable asset as the 20th century progressed.

Archaeological Site Plan



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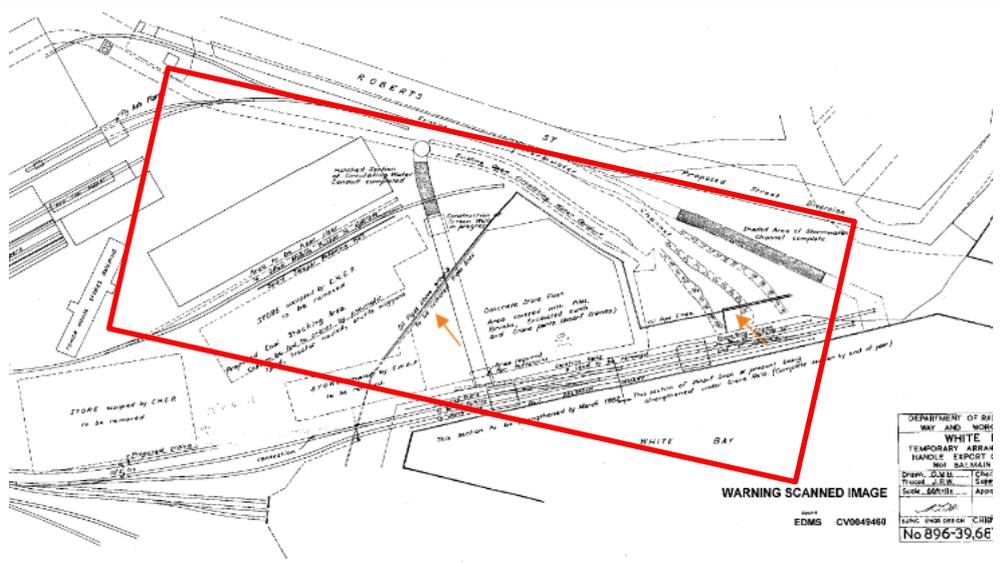
 **Power Station Circulating Water Conduits**
Archaeological Location Map SCALE 1:2,000
SIZE A4
21102 The Bays ARD DATE 2/11/2021
LGA: Inner West

0 12.5 25 50 75 100 Meters



Figure 179: Archaeological site plan for White Bay Power Station Circulating Water Conduits

Key Images and Historical Overlays



8.12 Beattie Street Stormwater Canal

Item History

Year of construction:	Originally constructed in 1893, portions of the canal within the construction site were extended during the construction of White Bay Power Station in the early 1910s.
Modifications (with years):	The stormwater canal was modified to its termination point by the 1930s with the modification to the outlets occurring up until the 1950s
Function:	Stormwater drainage canal
Construction materials:	Concrete canal
Demolished/removed (year):	Intact and covered over.

Historical Summary

A discussion of the Beattie Street stormwater canal is provided in Section 2.3.3.2.

Summary of Archaeological Potential and Significance

High – Local significance

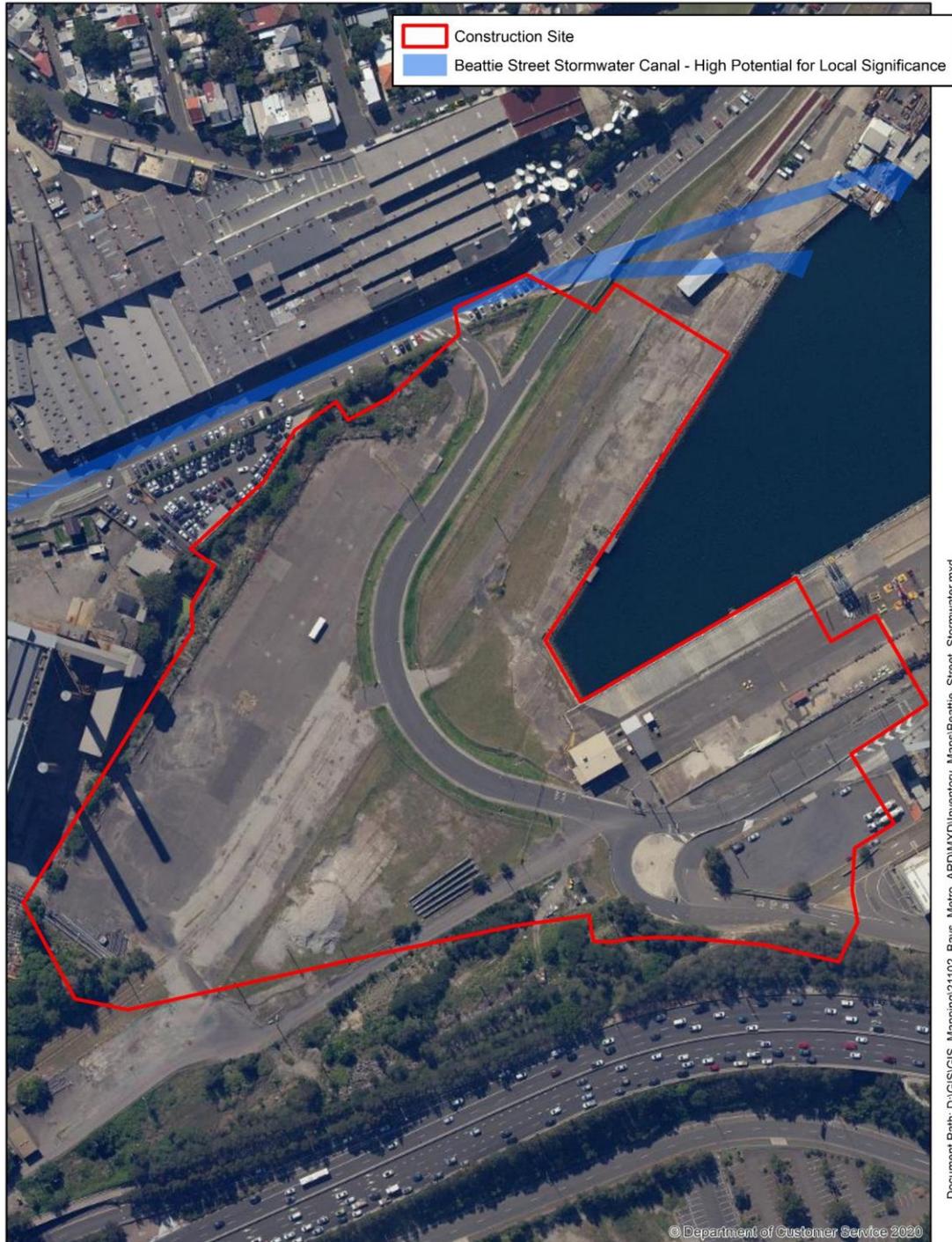
Description of Item

The canal consists of a concrete outlet of approximate 5 m in width located directly to the south of Roberts Street. The canal along Roberts Street has been enclosed and is currently located below concrete hardstand.

Assessment of Significance

The item is listed as locally significant on the Sydney Water s170 heritage conservation register. The canal was constructed to assist with the land reclamation efforts that occurred around White Bay during the 1890s and played a role in the physical development of the area despite only reportedly being constructed towards the completion of the reclamation processes.

Archaeological Site Plan



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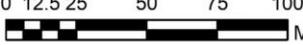
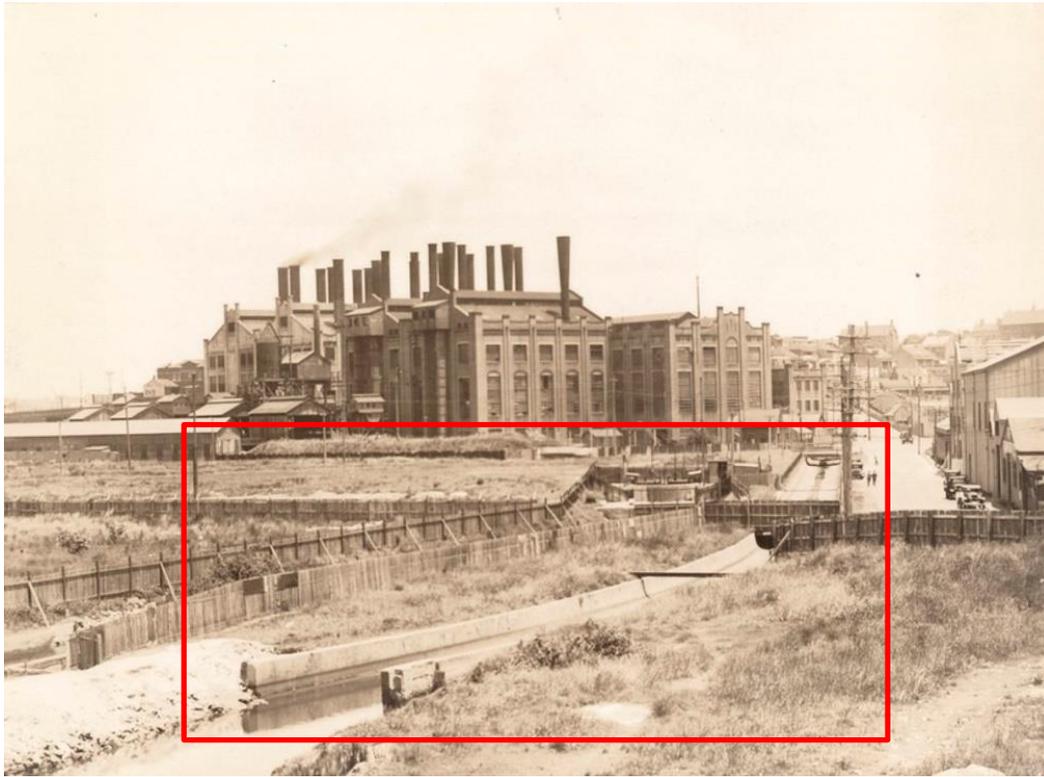
 **Beattie Street Stormwater Canal**
Archaeological Location Map SCALE 1:2,000
SIZE A4 0 12.5 25 50 75 100
21102 The Bays ARD DATE 15/09/2021  Meters
LGA: Inner West 

Figure 180: Archaeological site plan for Beattie Street Stormwater Canal

Key Images and Historical Overlays



8.13 Balmain Coal Loader

Item History

Year of construction:	1952
Modifications (with years):	1963 – upgraded to increase handling capacity.
Function:	Loading coal onto transport ships.
Construction materials:	Steel structure and rails with concrete foundation.
Demolished/removed (year):	Demolished in 1993 by the MSB Sydney Port Authority.

Historical Summary

A detailed summary of this item can be found in Section 2.5.1 of this report.

Summary of Archaeological Potential and Significance

Moderate Potential – Not Significant

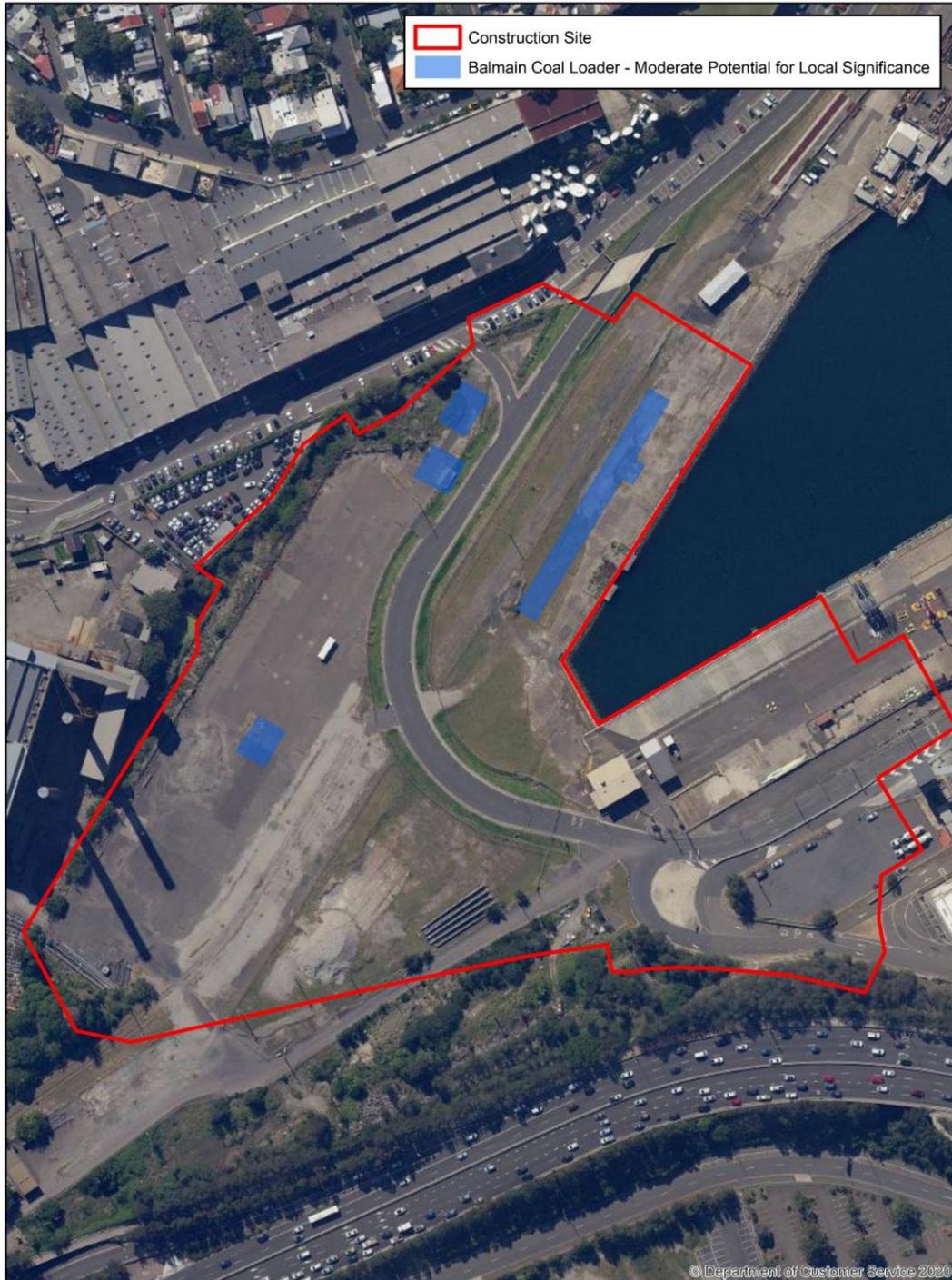
Description of Potential Archaeological Remains

The potential extant remains associated with the Balmain Coal Loader are likely limited to its concrete foundations and possibly the steel railings associated with its operation.

Assessment of Archaeological Significance

- Archaeological research potential: Archaeological remains related to the former coal loader may provide some material evidence for the operation of the facility which was not recorded during dismantling works in the 1990s. However the late 20th century construction and use of the loader is unlikely to provide material evidence of information not present in archival sources.
- Association with individuals, events or groups of historical importance: The former coal loader is associated with the Balmain coal loading wharves constructed in the late 1940s and early 1950s. This coal loader was one of the primary points of transshipment for collieries which shipped coal through the ports of Sydney during this time. However, these transshipment activities are not considered significant under these criteria.
- Aesthetic or technical significance: Archaeological remains associated with the former coal loader would likely be limited to footings and rail, which are not likely to be considered aesthetically or technically significant.
- Ability to demonstrate the past through archaeological remains: Structural remains of the former coal loader may demonstrate the mechanical operation of large coal loading transshipment facilities before they were made obsolete in Sydney by the 1990s. Archaeological recording of material remains are unlikely to be of heritage interpretative value as their location and structures are well attested in historic plans

Archaeological Location Map



Balmain Coal Loader
Archaeological Location Map
21102 The Bays ARD
LGA: Inner West

SCALE 1:2,000
SIZE A4
DATE 15/09/2021

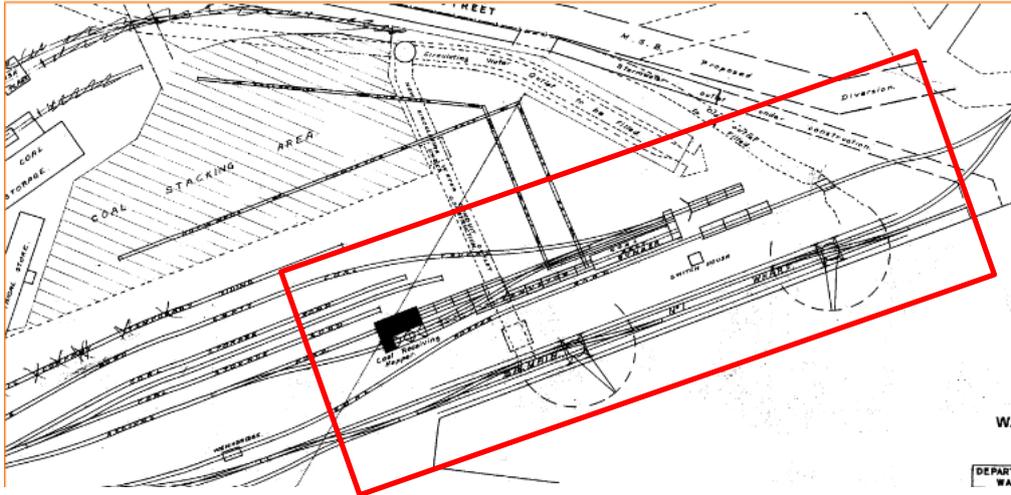
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Figure 181: Archaeological site plan for Balmain Coal Loader

Key Images and Historical Overlays





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