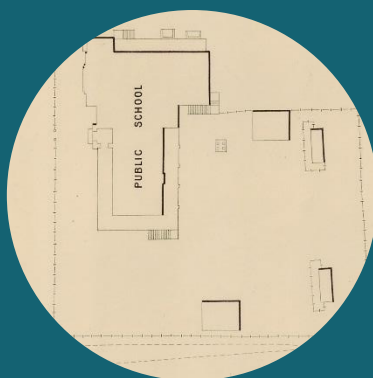
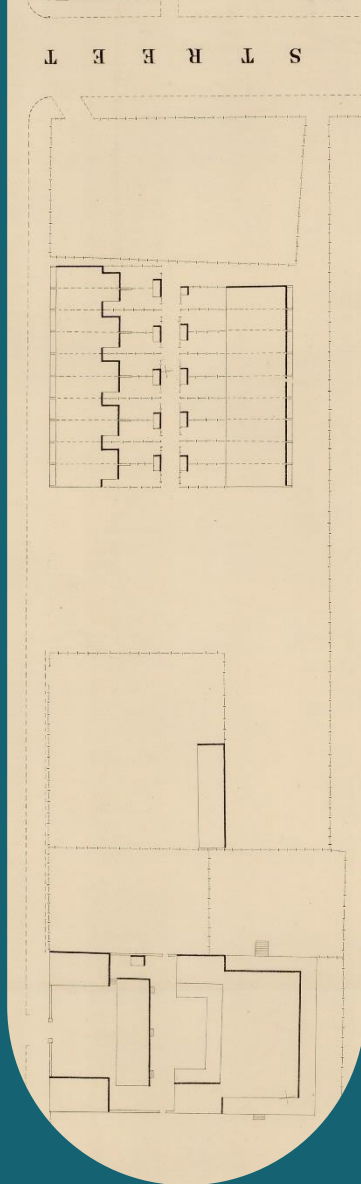




Harbourside, Darling Harbour

Archaeological Research Design

December 2021

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1. Introduction

1. 1. Introduction

1.1. Background

An Archaeological Assessment of the Harbourside site, in Darling Harbour was completed by Curio Projects (Curio) in 2016 that identified archaeological potential within a proposed area of development impact. On this basis Curio has been commissioned by Mirvac, to complete an Archaeological Research Design (ARD) of Harbourside (hereafter the 'study area') in advance of finalised development design.

In Heritage Council correspondence referring to "Response to Submissions for Harbourside Shopping Centre Redevelopment SSD 7874" it was advised;

The project shall ensure that archaeological testing is used to inform the Stage 2 SDA detailed design. The project shall use this information to minimize impacts to State significant archaeological resources (historical, maritime and Aboriginal) within the project area. Subsequent development applications must demonstrate how the design has been informed by the results of the archaeological testing. The results of the archaeological testing must be documented in a report which outlines opportunities for conservation in situ (as a preference), development and interpretation.

This Archaeological Research Design has therefore been undertaken to provide the background and rationale for archaeological testing of the study area to provide this information. This Research design with the 2016 Curio Archaeological Assessment will form the background information for an application for an s140 Excavation permit to undertake the test excavations.

1.2. Site Location and Identification

The study area is located within Darling Harbour immediately to the west of the Sydney CBD. Darling Harbour is a 60-hectare waterfront precinct that provides a mix of functions including recreational, tourist, entertainment and business. The study area is bounded by Pyrmont Bridge to the north, the Sydney International Convention, Exhibition and Entertainment Centre Precinct (SICEEP) to the south, Darling Drive and the alignment of the Light Rail to the west and the waters of Cockle Bay to the east.

The cadastral details of the site are Lot 1 DP 776815 and Part Lot 2015 DP 1234971 and it occupies an area of approximately 24,305 m².

1.3. Previous Curio Reports and Investigations

The site has previously been the subject of the following heritage reports by Curio Projects:

- Curio Projects, 2016 Heritage Impact Statement Harbourside Redevelopment report for Mirvac;
- Curio Projects, 2016 Redevelopment of Harbourside Shopping Centre Aboriginal Heritage Due Diligence Assessment report prepared for Mirvac;
- Curio projects, 2016, Harbourside Shopping Centre, Darling Harbour Historical Archaeological Assessment report prepared for Mirvac;
- Curio Projects, 2018, Response to Submissions Heritage Impact Statement Harbourside Redevelopment report prepared for Mirvac.
- Curio Projects, 2020, Response to Submission Heritage Impact Statement Harbourside Redevelopment report prepared for Mirvac.

1.4. Approach and Methodology

This report was prepared in accordance with the principles and procedures established by the following documents:

- Guidelines for the Preparation of Archaeological Management Plans (Heritage Branch, Department of Planning 2009).
- Assessing Significance for Historical Archaeological Sites and Relics (Heritage Branch 2009);
- Australia ICOMOS, 2013. The Burra Charter (The Australia ICOMOS Charter for Places of Cultural Significance); and
- Historical Archaeology Code of Practice (Heritage Office 2000).

1.5. Limitations

Due to COVID restrictions in place at the time of writing, this report has used supplied and readily available documentation, the historical research was generally limited to resources available online. This report does not review the Indigenous cultural heritage values or the maritime archaeology of the study area. However, a separate Aboriginal Due Diligence report has previously been completed by Curio Projects in 2016 and an Aboriginal Cultural Heritage Assessment Report (ACHAR) is currently being prepared. A maritime archaeology assessment and review will also be completed as a separate report.

1.6. Author Identification

This assessment report was prepared Dr. Matthew Kelly, Senior Archaeologist at Curio Projects and reviewed by Jody Steele, Director Cultural Heritage, Curio Projects.

1.7. Acknowledgements

We acknowledge the assistance of Steven Simpson, Senior Project Design Manager, Mirvac, in the completion of this report.

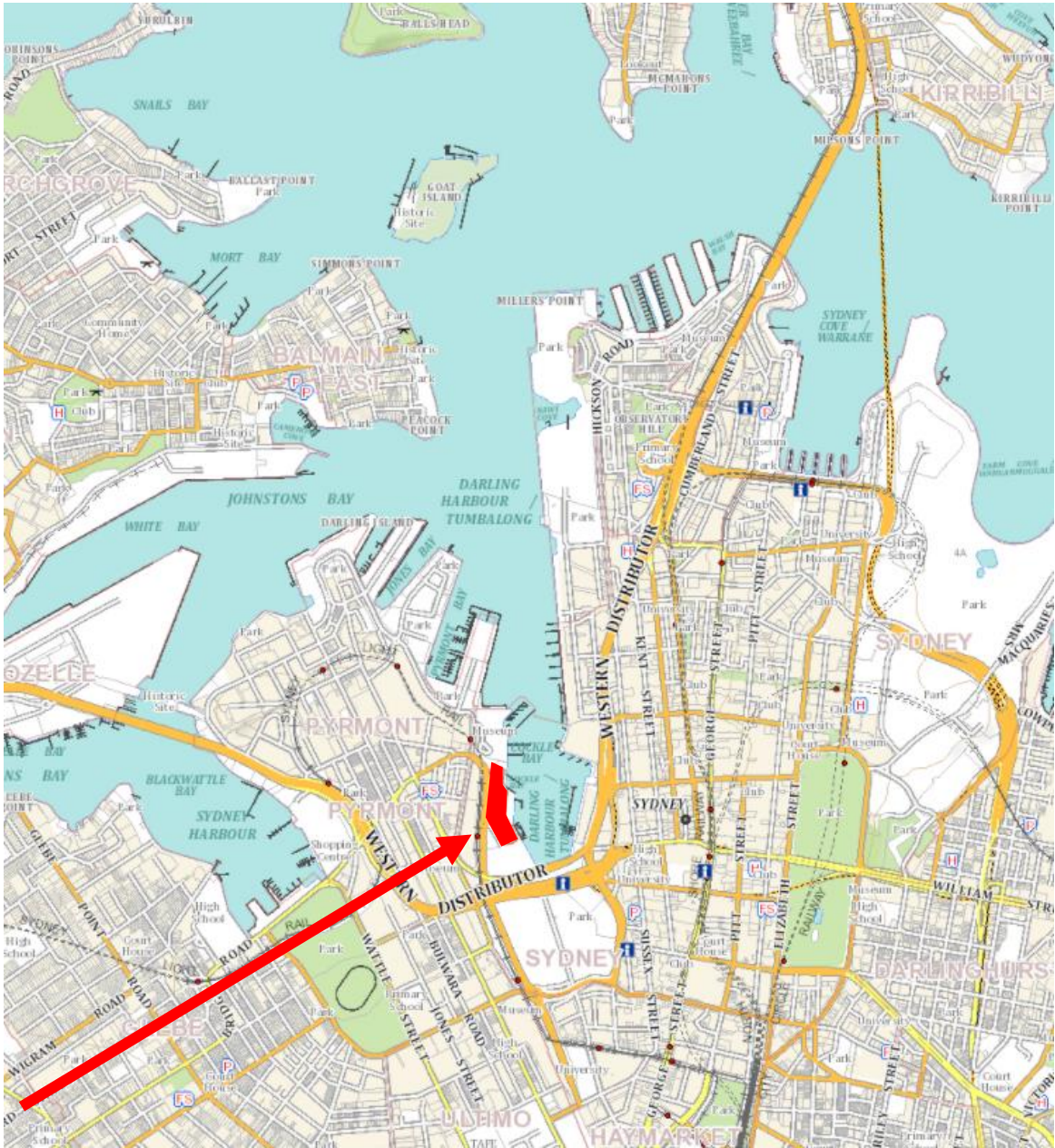


Figure 1-1 Study Area location indicated in red in context to the Sydney CBD (Source: Six Maps)

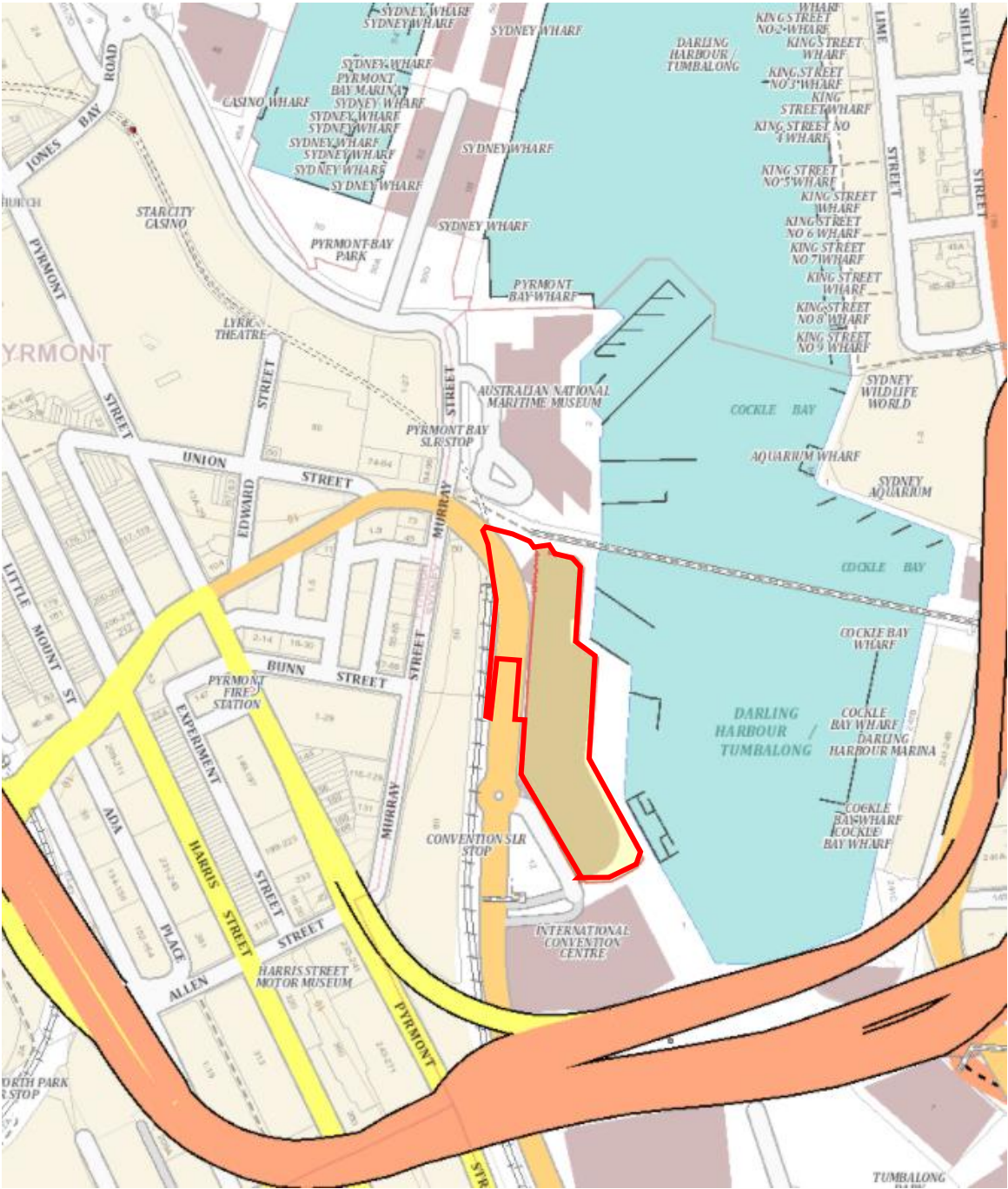


Figure 1-2 Study Area outlined in red. (Source: Six Maps)

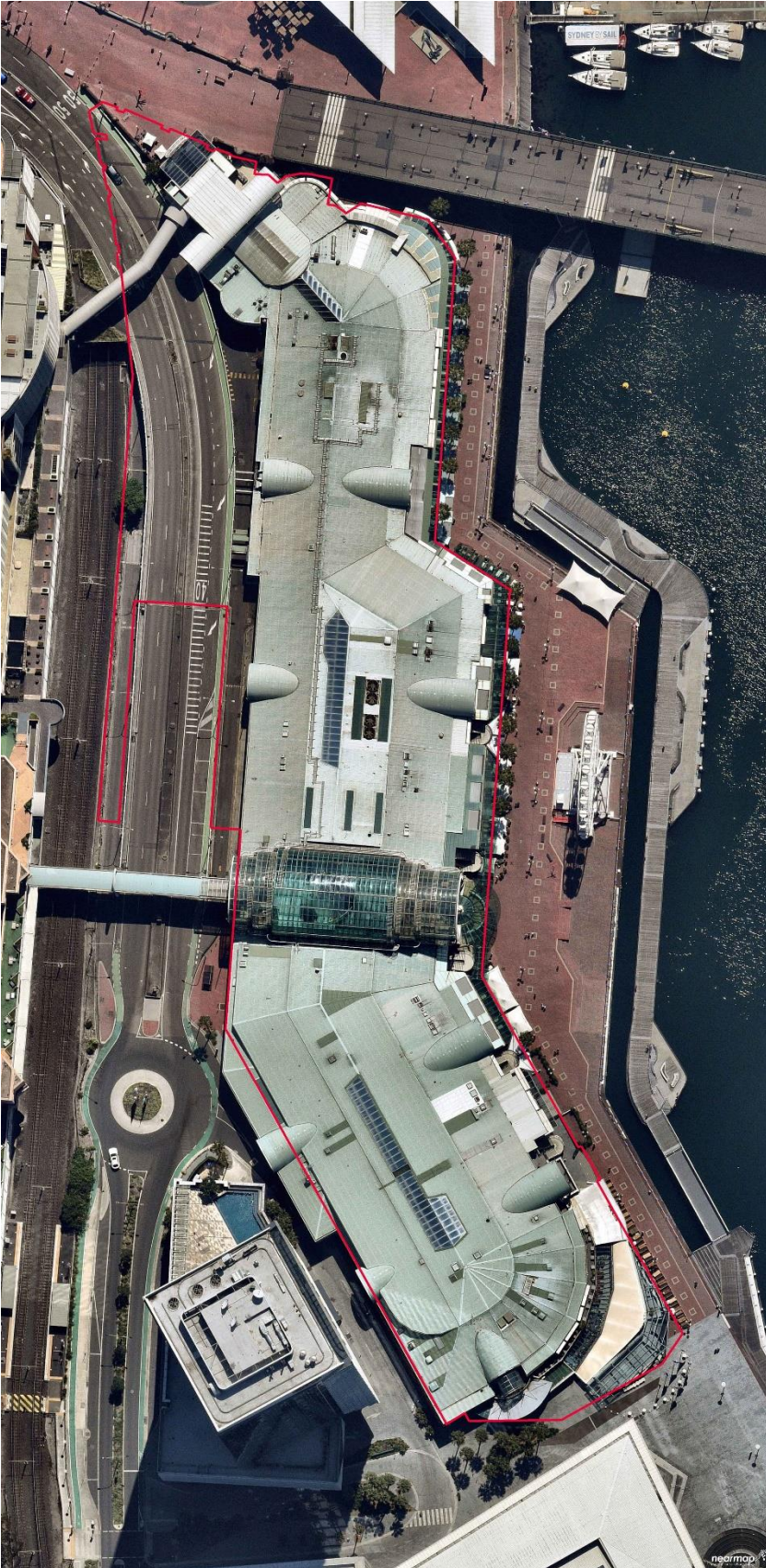


Figure 1-3 Aerial photo of the study area, outlined in red. (Source: Nearmap).

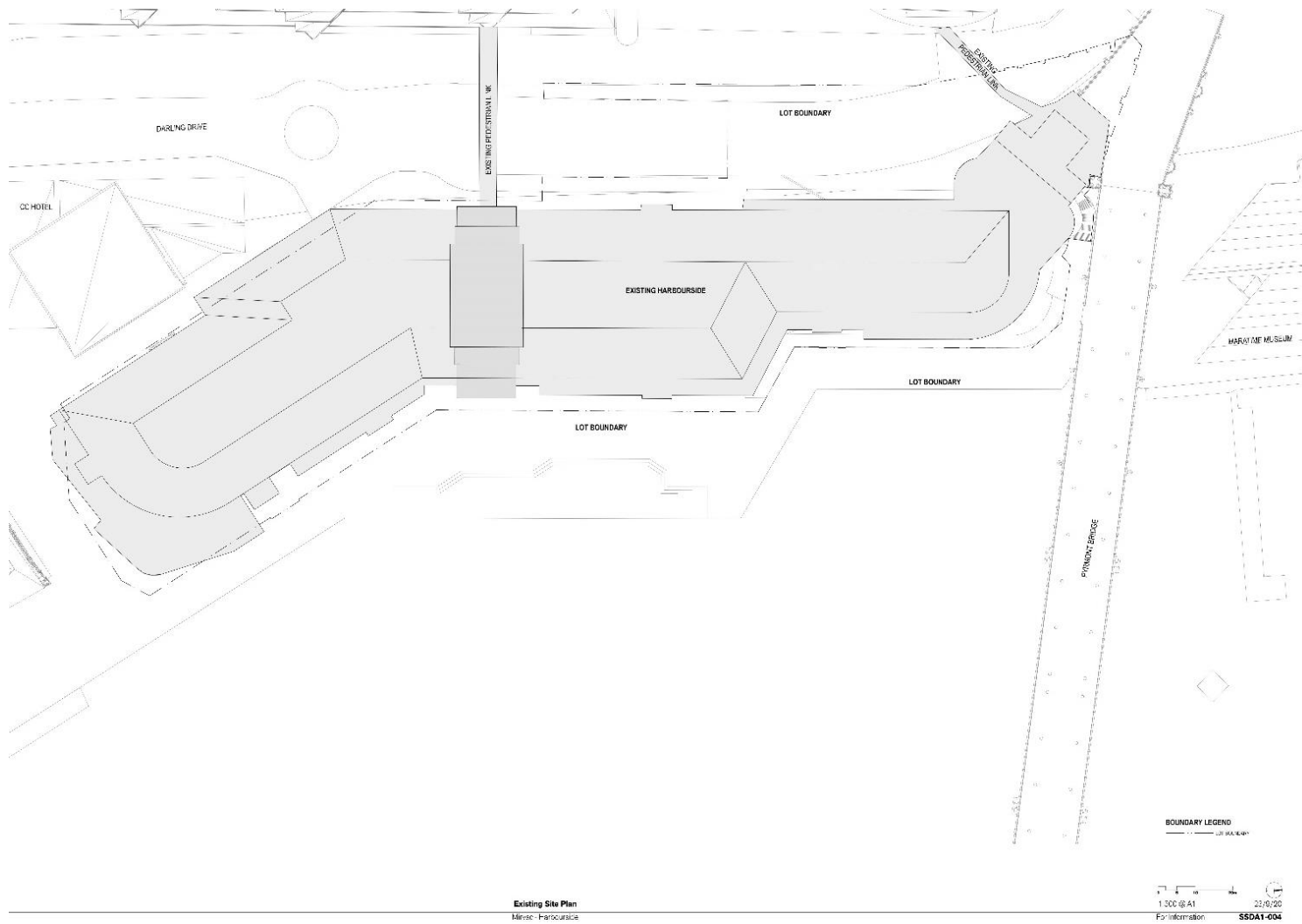


Figure 1-4 Current site plan (2020). (Source: FJMT).

2. Historical Outline

2. Historical Summary

2.1. Introduction

The study area, as noted above (Section 1.3), has been the subject of a number of heritage reports previously completed by Curio. This historical outline below was previously completed for the 2016 Historical Archaeological Assessment and has been included here to provide some historical background.

2.2. Historical Timeline

2.2.1. Phase 1: European Settlement and the Ultimo Estate (1788–1874)

- 1803–1840s—John Harris acquired successive grants between 1803 and 1818 to create his 233-acre Ultimo Estate. Harris used his Ultimo Estate as his parkland country retreat, farming only a few acres. Land clearing occurred progressively through to the 1840s as the area was primarily used for grazing and as a deer park. After John Harris' death, legal issues prevented subdivision until after 1859, meaning little to no urban development occurred in the vicinity of the subject site during this period.
- 1810s–1820s—Shell middens on western side of Darling Harbour utilised as a source of lime, particularly during Governor Macquarie's campaign of civic improvement. It is unclear if any are within the study area.
- c.1832—In 1828 John Harris gifted 1.5 acres to Anne Murray on her marriage to Captain George Bunn. Newstead House (also referred to as Bunn's Cottage or Bunn's House) was constructed in c.1832. The house stood until at least 1889 and appears to be located to the west of the study area (between Murray Street and Darling Drive). Some physical developments and modifications are evident within the study area between Newstead House and the waterfront:
 - A plan from 1844 indicates a small brick/stone and wooden structure of unknown function was constructed close to the foreshore. It is unclear if it is directly associated with Newstead House.
 - An access way is illustrated on the 1844 plan, constructed between the Bunn's house and the waterfront, its function is not known, however it is likely a slipway and/or haulage track associated with goods arriving by sea. This feature appears to utilise existing topography, however, may also be associated with localised land reclamation to enhance this feature. This feature is also evident in the 1860s and 1870s.
 - The 1865 Trig survey indicates the small structure at the waterfront shown in 1844 is still standing. A second small wooden L-shaped building of unknown function is also evident to the south of the original small building. Both structures have associated outbuildings behind them, likely to be an outdoor privy.
 - Substantial fencing or a retaining wall between Newstead House and the smaller unknown structures is possibly evident in both the 1865 Trig Survey, and the 1873 panoramas. This division is approximately the point at which the level changes significantly from the rise at Newstead House to the water's edge, evident in the panorama. Quarrying may have been undertaken in this area.
 - In the 1873 and 1875 panoramas, additional structures between the rise and the water's edge are present to the south of those indicated on the 1865 Trig survey, suggesting additional structures were constructed close to the water in

the intervening years.¹ The area to the north still appears undeveloped and unmodified aside from clearing, with natural sandstone outcrops evident.

- Mature cultural plantings, including a Moreton Bay Fig and Norfolk Pine, are evident in the garden of Newstead House in the 1873 panorama. Additional landscaping elements not visible in this image may be present within the grounds of Newstead House.
- c.1873—Photograph panoramas indicate additional unidentified structures present to the south of Bunn's cottage. A jetty appears in immediately south of the slipway/track from Newstead House. The function of other structures in this foreshore area is unclear but may relate to commercial or industrial activities.

2.2.2. Phase 2: Growth and Expansion of the Darling Harbour Railway Goods Yard (1874–1960s)

- 1878—By this time the Atlas Engineering Works were functioning out of premises on the Darling Harbour waterfront immediately east of Bunn's Cottage. In 1878 these are shown as a relatively small shed/warehouse complex, which may have served its shipbuilding function. The company was also awarded a contract in the same year to build railway vehicles, including engines, passenger vehicles and goods rolling stock.
- 1884–1888—Darling Harbour Goods Line railway expanded north to Pyrmont Bridge through subject site. Atlas Engineering Works premises were resumed and appear to have relocated to a series of parallel sheds to the west of the railway line, beyond the subject site. The waterfront looks to have undergone some land reclamation and levelling to facilitate railway construction. Additional lines were added on reclaimed land to the east by 1903. Associated infrastructure (possible signal boxes) was present within the subject site close to Pyrmont Bridge.
- 1891—Construction of Outward Goods Shed (C&D Shed), equipped with hydraulic cranes. Iron and steel in its construction with a wooden truss roof with lantern, the shed had a central roadway with two platforms, each with a hydraulic crane and two sidings. The shed has a capacity of 97 goods wagons.
- 1902—Construction of second Outwards Goods Shed (A&B Shed), immediately east of the 1891 goods shed (i.e., on the waterfront). The shed contained a central roadway with a platform and siding on either side. The shed was constructed with cast iron circular columns and walls manufactured by 'Barmer & Son Globe Foundry Sydney'. The iron columns supported the steel beams and trusses of the corrugated fibro roof. A clock was set in the building's northern gable, and the shed was equipped with hydraulic cranes and loading facilities that were later removed. Further land reclamation appears to have occurred by this time and allowed this shed to be built right on the waterfront.
- 1902—The Goods Shed Offices/Forwarding Station was a two-storey brick and sandstone building with a timber-framed iron covered hipped roof and pressed metal ceilings. Windows facing Pyrmont had semicircular arches with a stone keystone and decorative stone sills. The building was constructed close to the corner of Murray Street, at the north-western corner of the 1891 Outwards (South) Goods Shed (C&D). The building was converted for amenities during the twentieth century and had several ablutions fittings on the first floor. The ground floor was used as office space.

¹ The quality of the image does not allow for detailed analysis of their form or function.

- 1920s—a two-storey structure was constructed on the eastern side of the Outwards Good Shed (A&B Shed). Possibly connected with the 1895 construction for transferring frozen meat across the harbour from the Meat Market to the NSW Pastoralists Association works at North Sydney. May have remained in place following the closure of the Meat Market in 1914 until the reclamation of Darling Harbour was completed in 1926. Its site may have been reused for the coal wharf that by 1984 appears to have also supported a helipad.
- 1918–1928—land reclamation proceeded in stages along the head of Darling Harbour and along its western shore. Some of the reclamation fill originated from the spoil excavated from the City Circle train line, as well as from the 1926 demolition of the Iron Wharf (south of subject site). Some of this reclamation is likely to have extended into the subject site. Additional wharves (Wharves 37 and 38) were built along the newly reclaimed area beyond the study area by 1928. A jetty constructed during this phase of work appears to fall partially within the study area.

2.2.3. Phase 3—Decline, Closure and Redevelopment of the Darling Harbour Goods Yard (1960s–Present)

- 1982–1984—closure of the Darling Harbour Goods Yard.
- 1986—The ‘Harbourside Festival Marketplace’ is constructed from 1986. It was one of the first projects to commence as part of the Darling Harbour redevelopment for the Bicentennial celebrations. Harbourside is based on a design from Baltimore, USA and was completed in time for the Bicentennial celebrations on 26 January 1988. Harbourside is still standing and in active use at the time of this report.

3. Archaeological Potential and Significance

3. Archaeological Potential and Significance

3.1. Previous Assessment of Archaeological Potential

The 2016 Archaeological Assessment of the site provided the following information in relation to the archaeological potential of the site:

Archaeological remains of some activities and features dating to Phase 1 (1788–1874) have nil-low potential to survive at the subject site. Evidence of early historical activities undertaken on the original sandstone rise above the foreshore, including land clearing, grazing and the original garden of Newstead House would likely have been primarily ephemeral, and is most likely to have been destroyed by the successive phases of quarrying that brought the entire subject site down close to sea level. Levelling and quarrying at the site would also have highly disturbed physical remains of the slipway constructed between the waterfront and Newstead House, and it thus there is nil-low potential for archaeological remains of this feature to survive at the western area site. Closer to the original foreshore where structural remains or early land reclamation deposits associated with its construction may have been capped land reclamation activities from the late nineteenth century, there is moderate potential for archaeological evidence of this feature to survive.

Physical evidence of the early uses of the natural foreshore zone during Phase 1 (1788–1874) has varying potential to survive at the subject site (Figure 3-1). The primarily ephemeral evidence of shell collection as part of the lime production process (1810s–1820s) has nil-low potential to survive, primarily due to the impacts that later use of the foreshore would have had on this resource. There is low potential for evidence indicating other unrecorded uses of the foreshore areas, for example for early maritime commercial or industrial activities, to be present.

Occupation and likely commercial/industrial use of the foreshore had commenced by 1844 and intensified over the period to 1878. Archaeological evidence of this use—including structural remains, deeper subsurface features (privies, wells, drains), rubbish pits, artefact scatters, timber posts of jetties, timber/stone slipways, yard and work surfaces—has moderate potential to survive. It is likely to have been subject to moderate disturbance associated with the development of the Darling Harbour Goods Yard and Goods Line through the subject site, and the construction of the existing Harbourside Shopping Centre. Other site formation processes, such as land reclamation (particularly in the late nineteenth and early twentieth centuries) and the formation of hard surfaces within the Goods Yard may have capped, and thus preserved, any remaining archaeological deposits associated with these activities.

Archaeological evidence dating to Phase 2 (1874–1960s) would primarily relate to the development and operation of the Darling Harbour Goods Line and Goods Yard. For a brief period (c.1878–1884), the Atlas Engineering Works operated from premises on the foreshore within the subject site. Depending on the extent of landscape levelling and quarrying undertaken to construct and operate these premises, archaeological evidence of this activity—including structural remains, manufacturing areas, slipways, rubbish pits and other deeper subsurface features—has moderate potential to survive.

There is high potential for physical evidence of landscape reclamation activities undertaken during Phase 2 (1874–1960s) to survive within the subject site (Figure 3-2 and Figure 3-3). Land reclamation fills, as well as sea walls constructed to retain these fills, of different dates are highly likely to have survived at the site as the subject site's footprint extends across these areas reclaimed as early as the 1880s. There may be localised disturbance to fills or sea walls as a result of construction and other developments during Phase 2 (1874–1960s) and Phase 3 (1960s–present).

There is moderate potential for archaeological evidence of the development and operation of the Darling Harbour Goods Line and Goods Yard to survive within the study area. Evidence of these site uses is likely to include remains of the rail line (tracks, sleepers, ballast, track slab), concrete base slab, foundations and postholes or bases of iron columns of the Goods Sheds (especially of Sheds A&B, which are the main sheds within the subject site), foundations of other structures such as the 1902 Goods Shed Offices/Forwarding Station, or timber posts of the c1926 jetty. In addition to robust structural remains, archaeological evidence may also include deeper subsurface features such as privies, drains or other services, rubbish pits or other incidental remains of unrecorded activities. These remains are likely to have been disturbed to an extent by the decommission and demolition of the Goods Yard and Goods Line, and the construction of the Harbourside Shopping Centre, however as the existing shopping complex does not have a basement there is likely to be areas where physical remains of the Goods Yard/Goods Line survive.

3.2. Archaeological Resources at Similar Sites

Several similar Australian and International sites covering the intertidal zone of major ports that have been subject to archaeological assessment and excavation in the past. They include areas such as Barangaroo (formerly East Darling Harbour) in Sydney, Honeysuckle Point, Newcastle and Fremantle, Western Australia. Some of the results of that work will be presented below.

3.2.1. Darling Harbour/Barangaroo

The former wharves and docks area of the western side of Darling Harbour has been the subject of extensive development and construction works for the last 15 years. Archaeological assessment and excavations have been undertaken in conjunction with that development.

In 2010-2012 Casey and Lowe undertook assessment which identified that the study area contained a mixture of maritime infrastructure, shipbuilding and industrial land. The archaeology was assessed as having a variety of levels of significance from little or none (isolated wooden piling) through Local (19th Century wharfage, yards and stores and reclamation) to State significance (early maritime infrastructure and shipyards, specific early foreshore remodelling and reclamation). Subsequently excavations take place in concert with the development. The excavations, across nine separate areas, revealed evidence of nineteenth century:

- Retaining walls and reclamation fills
- Remnant wharf piles in different historical phases;
- Slipway;
- Stores and sheds with occupation deposits;
- Yards and surfaces;
- Drains; and
- Artefacts.²

In 2010 Austral Archaeology was commissioned to complete an assessment of the Barangaroo north project area.³ The 2013 assessment identified early wharf structures and stores as of State

² Casey and Lowe, 2012, Archaeological Excavation Barangaroo South, Preliminary Results, report to Lend Lease.

³ Austral Archaeology, 2010, Barangaroo, Archaeological Assessment and Management Plan. Unpublished report for Barangaroo Delivery Authority; 2013, Integration concept Barangaroo,

significance. In 2012 Austral also undertook excavations as a result of recommendations in that assessment. The results of that excavation were summarised as:

- A substantial complex of wharf frontage at Moore's Wharf;
- Late nineteenth and early twentieth century wharves in the Northern Cove;
- Two shipyards in the Northern Cove;
- 576 archaeological contexts recorded, and,
- Over 10,000 historical archaeological artefacts recovered.

More recently, as part of works at Barangaroo north remains of an early boat have been uncovered in the reclamation. It is believed to be one of the oldest watercraft (built in the 1830s) in Australia to be fully excavated and has been assessed as of National significance. It was possibly purposefully included in the reclamation of the area.

In 2016 Casey and Lowe completed excavations in the Sydney Entertainment Convention, Exhibition and Entertainment Precinct.⁴ The excavations associated with this work identified:

- The original shoreline prior to reclamation;
- Three phases of reclamation Phase 1 1860s, Phase 2 1870s and Phase 3 1920s;
- Remains of the 1870s Iron Wharf including a concrete seawall and a slightly later sandstone seawall;
- Pollen remains from early soil profiles.

The various fills and reclamations commencing in the mid-nineteenth century, that covered these remains were in places 2 to 3 m deep.

3.2.2. Honeysuckle Point, Newcastle

In 2006 the AMAC Group completed an Assessment and Research Design for the Lee Wharf area on Honeysuckle Point, Newcastle.⁵ During the course of subsequent archaeological monitoring, in 2012, the finds were summarised as:

- the remains of a pre-land reclamation seawall;
- a timber 'pontoon' structure;
- two mooring bollards;
- large concrete footings;
- A span of railway track;
- Water, gas and stormwater service pipes; and,
- A zigzag trench that was likely a WWII air raid shelter.

NSW: Historical archaeological assessment, statement of heritage impact & research design, final report for Boulderstone

⁴ Casey and Lowe, 2016, Sydney Entertainment Convention, Exhibition and Entertainment Precinct, Non-Indigenous Archaeological Investigation, for Lend Lease.

⁵ AMAC Group, 2006, Lee wharf project stage 3 (Buildings A3-6) Honeysuckle Precinct Newcastle NSW: archaeological assessment, research design and excavation methodology report for Lee Wharf Developments.

In addition, the substantial remains of the vessel the *Leo*, which was buried in the land reclamation.⁶ International studies have highlighted the potential presence of remains of maritime vessels reused as structures in port and harbour facilities.⁷

3.2.3. Other Sites

Other nineteenth century sites from Australia also provide further context and examples for assessing the potential resource. These include work at Fremantle on the Long Jetty at Fremantle and work undertaken on harbourside and riverine jetties in Western Australia.⁸

International comparisons can also be made in similar nineteenth century colonial contexts at sites such as the North Wharf at Capetown and the port of San Francisco.⁹

3.3. Geo-technical Information

In March 2021 Douglas Partners completed a geo-technical investigation of the Harbourside site.¹⁰ The work was comprised of the drilling of eight boreholes and the installation of three temporary groundwater monitoring wells (Figure 3-4). This geo-technical work supplemented previous investigations in 2013 (Coffey Geotechnics Pty Ltd) and 1985 (Jeffery & Katauskas Pty Ltd).¹¹

The 2021 report concluded that the site:

is underlain by between 2.7 m and 11.9 m of fill which appears to have been placed over either a thin layer of natural soil or bedrock. The fill is generally sandy with varying proportions of gravel, boulders

⁶ AMAC Group, 2012 Final Archaeological Report, Lee Wharf Project State 3 (a), Honeysuckle Precinct, Newcastle, NSW report to Lee Wharf Developments in 2 Vols -

⁷ see Ford, B, 2013, "The Reuse of Vessels as Harbor Structures: A Cross-Cultural Comparison" *Journal of Maritime Archaeology*, 8, [2], pp. 197-219.

⁸ Garratt, Dena, 1987, "The Long Jetty in Bathers Bay, Fremantle a case study." *Bulletin of the Australian Institute for Maritime Archaeology*, 11,[1], pp.7-10 and 1984, "The Long Jetty Excavation Report, 1994." Fremantle, WA: Western Australian Maritime Museum. Western Australian Maritime Museum, Department of Maritime Archaeology Report, 78 and McCarthy, M, 2002, "The archaeology of the jetty: an examination of jetty excavations and 'port-related structure' studies in Western Australia since 1984." *Journal of the Australasian Institute for Maritime Archaeology*, 26 (2002), pp. 7-18.

⁹ Scharma, S etc al, 1993, "The Development of Cape Town's Waterfront in the Earlier Nineteenth Century: History and Archaeology of the North Wharf", *Historical Archaeology in the Western Cape*, Vol. 7, pp. 98-103; Delgado, J, 1991, "Archaeological investigations of a mid-19th-century shipbreaking yard, San Francisco, California", *Historical Archaeology*, 25, pp.61-77 and 2009, *Gold Rush Port: The Maritime Archaeology of San Francisco's Waterfront*, University of California Press.

¹⁰ Douglas Partners, 2021, Report on Geotechnical Investigation Harbourside Redevelopment 2 – 10 Darling Drive, Darling Harbour Prepared for Mirvac Projects Pty Ltd.

¹¹ Coffey Geotechnics Pty Ltd, 2013, Report on Geotechnical Investigation SICEEP - International Convention Centre (ICC) Hotel, Darling Harbour, Sydney for Lend Lease Developments and Jeffery & Katauskas Pty Ltd, 1985, Proposed Development, Darling Harbour Sydney for Wargon Chapman Partners Pty Ltd.

and clay. The natural soils comprise soft clays and loose sands, with some organic clay encountered in BH7.¹²

An overlay of the borehole locations with the basement impact indicates that the relevant 2021 boreholes and deposit sequences are (Figure 3-1 to Figure 3-3):

- BH2 - Brick pavers fill sand (to 0.2m), Fill/Gravel medium to coarse, grey to dark grey, (to 0.8m), compacted Fill/Gravel and Sand (to 5m), Clay (>5m), and Sandstone (5.55m);
- BH3 – Surface asphalt, Road base Gravel (to 0.3m), Fill/Sand Gravel (to 1.0m), Concrete slab (at 1.25m), Fill/Gravel and Sand (to 1.6m), sand (to 3.0m), Sand marine (to 3.5m);
- BH4 – Concrete slab, Fill/Sand and Gravel (to 2.0m), Fill Sandy Clay (to 3.5m), Fill/Clay (to 4.5m), Fill/Sandy Clay (to 5.2m), Fill/Sandy Clay (to 7.2m), Sand (to 7.85m), and Sandstone (7.85m);
- BH5 – Tiles and Concrete Slab (to 0.39m), Fill/Sand (to 1.0m), Fill Road base Gravel (to 1.5m), Fill/Sand and Gravel (to 3.0m), Sandy Clay marine (to 3.8m), and Sandstone (3.8m);
- BH6 - Concrete Slab, Fill/Sand (to 0.3m), Fill/Sand and Gravel (to 1.6m), fill/Gravel and Sand (to 2.7m), Sandy Clay marine (to 5.2m), and Sandstone (5.3m).

In 2021 JBS&G completed an environmental investigation of the study area.¹³ This report described the site geology and soils as:

situated on disturbed terrain (xx) soil landscape which consists of turfed fill areas commonly capped with up to 40 cm of sandy loam or up to 60 cm of compacted clay over fill or waste materials (OEHL 2021). The soil profile consists of four main horizons with various properties as described in Table 1 below.

Previous geotechnical investigations (Section 4.2) suggests that fill material at the site varies considerably in depth but, contra to the description of disturbed terrain above, contains only trace/minor anthropogenic inclusions, being comprised largely of sandy gravelly clay fill with sandstone gravel and boulders, over natural organic-rich marine sediments and sandstone bedrock.¹⁴

Soil Horizon	Typical depth (m)	Soil Description Summary
XX1	0-0.15	Loose black sandy loam. Brittle when dry, crumbly when moist. Generally, Nepean River alluvium or Elderslie soil series. Appears as a topsoil (A1 horizon). Moderately acidic (pH 5.0) to neutral (pH 7.5).
XX2	0.15-0.80	Compacted mottled clay. Usually used as a compacted impermeable cover for hazardous buried materials. Colour is highly variable. Extremely acidic (pH 3.5) to slightly alkaline (pH 8.0). Ironstones are occasionally present.

¹² Douglas Partners, *op cit*, p. 5.

¹³ JBS&G, 2021, Detailed Site Investigation Harbourside Shopping Redevelopment 2-10 Darling Drive Sydney for Mirvac Residential (NSW) Developments Pty Ltd.

¹⁴ Ibid, p. 4-5.

XX3	0.15->1.50	Variable transported fill. May consist of any type of soil or regolith material. If often includes demolition rubble and industrial and household wastes. Colour, texture, structure, fabric, degree of compaction, porosity and pH vary markedly.
XX4	0.15->1.50	Dark dredged muds and sands. Sands, sandy loams to silty clay loams and sandy clays. Appears as subsoil. Colour varies from black to yellowish brown. Charcoal, shells, or shell fragments are commonly present. This material swell, is highly saline and neutral (pH 7.0) to moderately alkaline (pH 9.0) when first dredge, but acidity may increase dramatically following drainage and oxidation.

Table 1 Soil Type Summary (Source: JBS&G 2021, p. 4)

3.4. Conclusion

The sequences outlined above suggest that marine sand and clays are identified in 3 boreholes BH 3, BH 5 and BH 6 (adjacent to the proposed basement excavation) indicating possible survival of intact former foreshore below fills introduced behind the successive seawalls and reclamation along the western shore of Darling Harbour.

The presence of a former surface (i.e., concrete slab) at 1.25 m depth in BH3 is indicative of the potential survival of capped and preserved surfaces and features in these reclamation contexts. The previous examples noted above (Section 3.2) highlights the potential survival of complex historical strata containing significant features, deposits and artefacts from a variety of historical phases of development, from the mid nineteenth through to the twentieth century, that have archaeological research significance (see below).

3.5. Archaeological Significance

The following summary statement of the archaeological significance of the study area was contained in the 2016 Archaeological Assessment report (pp. 33-4).

If surviving, historical archaeological remains of the site dating to Phase 1 (1788–1874) may be of local or State significance, depending on their nature, extent and integrity. These archaeological remains may be varied in nature, relating to potentially diverse uses of the site including domestic occupation, commercial enterprises and industrial activities. Although there is low potential for archaeological evidence of early unrecorded enterprises to be present, if identified at the site this resource may be of State significance, primarily due to their research potential and ability to demonstrate an early historical period of commercial development in the colony. This evidence may contribute important information to our understanding of early commercial operations and reveal the site's role in the development of Darling Harbour as an industrial and commercial centre.

There is moderate potential for evidence of the post-1844 use of the site's foreshore zone to survive at the site. This evidence may be able to demonstrate the development of local economies and the evolution of Darling Harbour's western shore as part of the broader industrial and commercial focus in Ultimo and Pyrmont. The archaeological record may be comparable to similar archaeological sites at and in the vicinity of Darling Harbour. As a resource that may demonstrate the history of the site itself, as well as contribute to our understanding of the use of intertidal foreshore locations in Sydney

through the mid nineteenth century, archaeological remains from this phase are likely to have high research potential at a local level.

The evolution of the Darling Harbour Goods Yard is clearly an important phase both in the site's history as well as in the history of Darling Harbour and New South Wales more generally as it contributed to the flow of goods across the state. The majority of the anticipated archaeological resource associated with the Phase 2 (1874–1960s) development of the Darling Harbour Goods Yard and Goods Line through to its closure and demolition in 1980s is likely to be limited to building foundations and possibly rail lines and be disturbed to an extent by the construction of the Harbourside Shopping Centre in the 1980s. A resource of this nature would be unlikely to contribute important information to our understanding of the Goods Yard beyond information that is not readily available in existing documentary records. The anticipated archaeological resource associated with these activities is not considered to reach the threshold of local significance and is unlikely to be considered a relic.

Archaeological evidence of landscape modification processes, including reclamation fills and sea walls, may be of local significance for their representative value as evidence of the continual reclamation of land in the harbour for the Goods Yard.

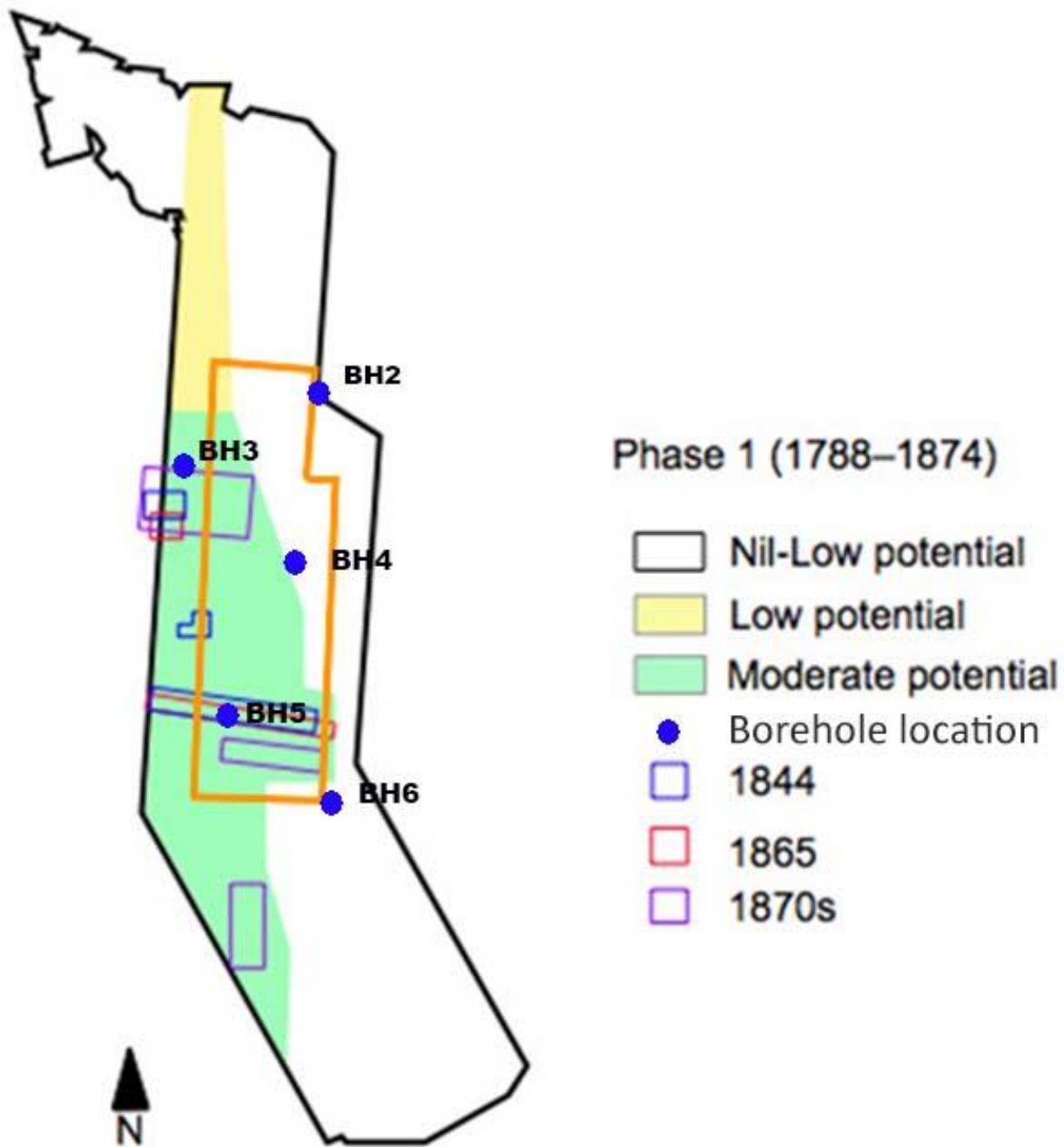


Figure 3-1 Plan of Historical Archaeological Potential related to Phase 1 occupation. The footprint of the proposed basement is indicated in orange and the boreholes adjacent to the basement in blue. (Source: Curio 2016).

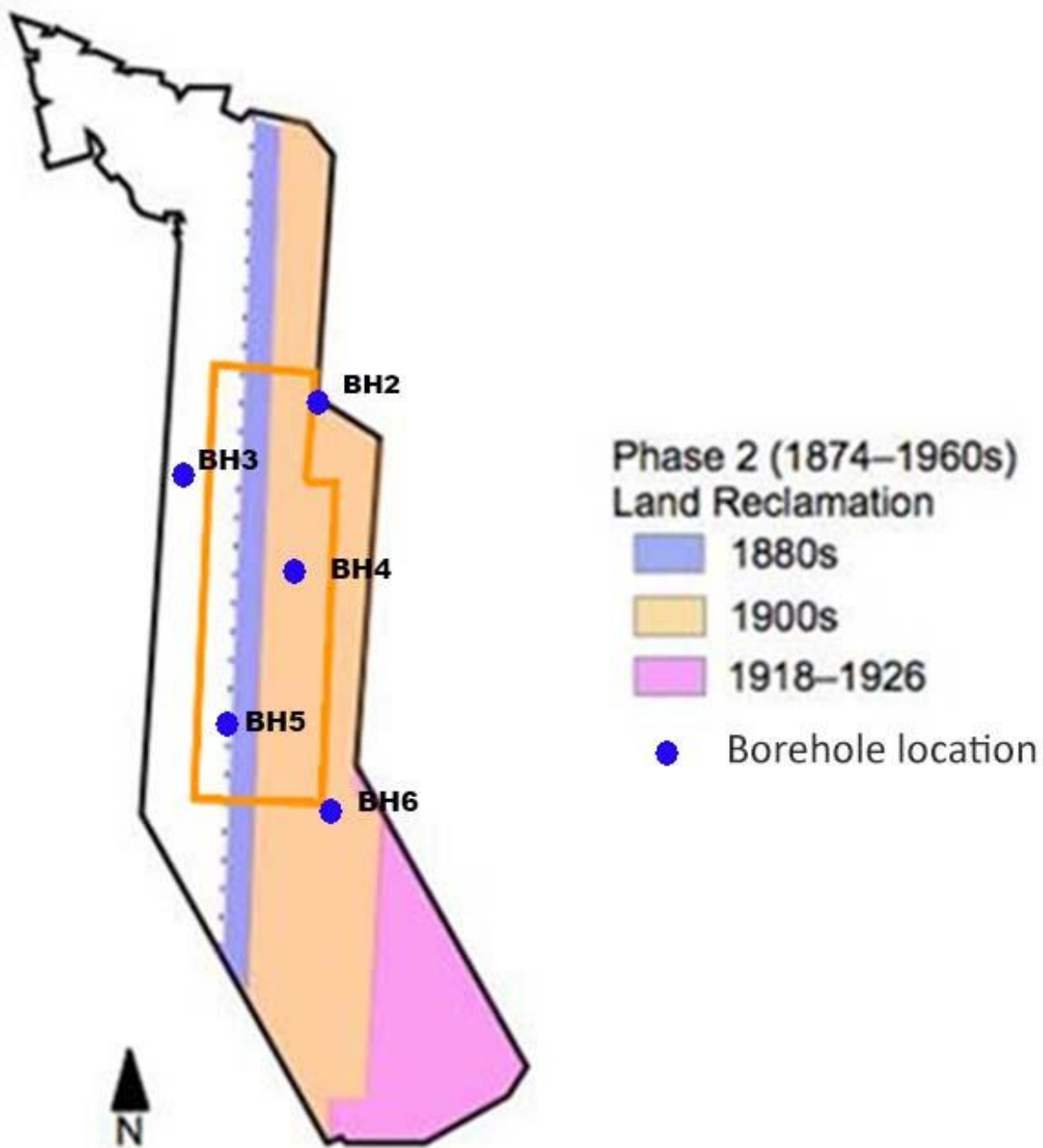


Figure 3-2 Plan of successive reclamation phases. The footprint of the proposed basement is indicated in orange and the boreholes adjacent to the basement in blue. (Source: Curio 2016).

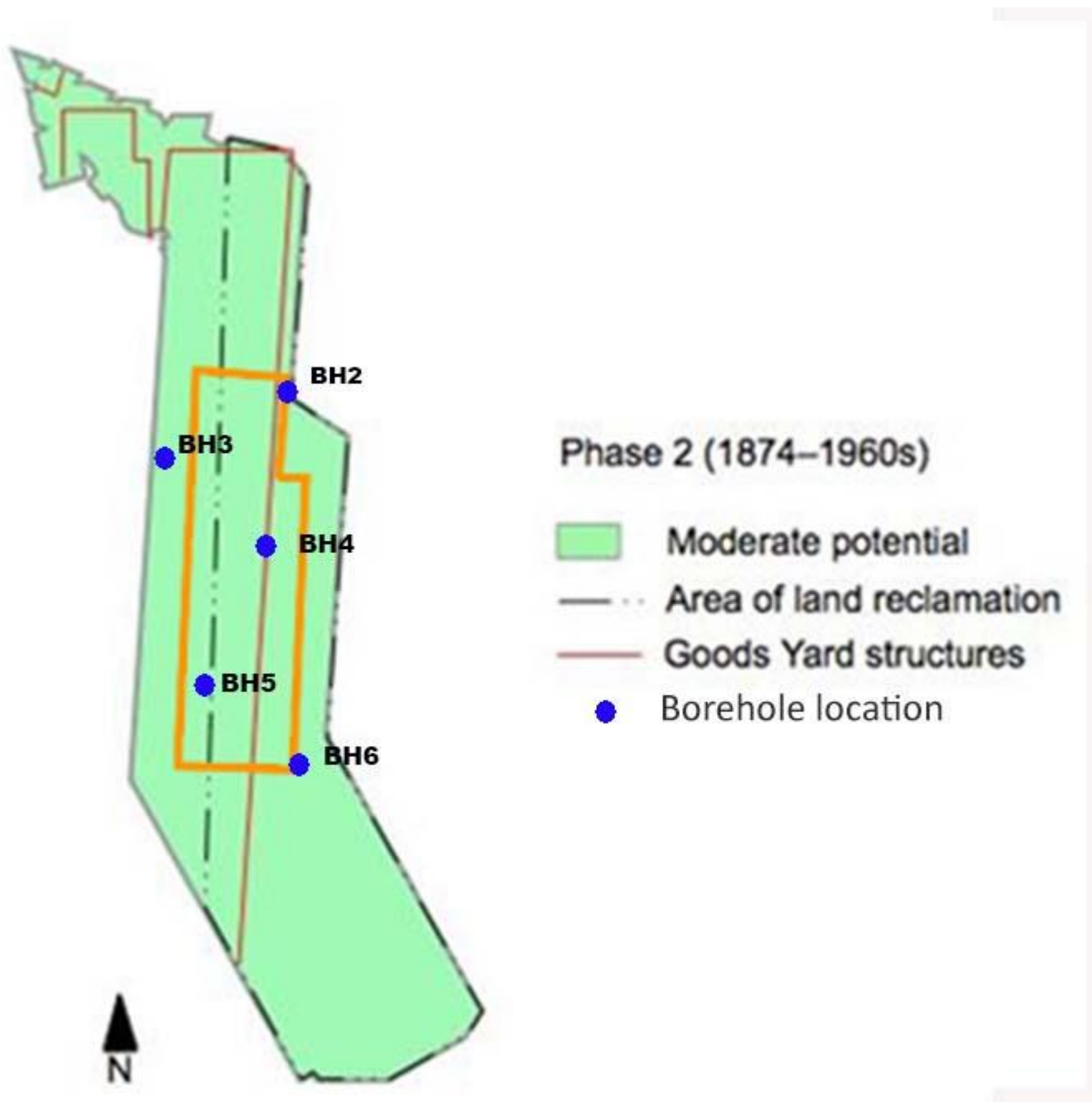


Figure 3-3 Plan of Historical Archaeological Potential related to Phase 2 land reclamation (dotted line) with the remains of the goods yard structures shown in red. The footprint of the proposed basement is indicated in orange and the boreholes adjacent to the basement in blue (Source: Curio 2016).



Figure 3-4 Geotechnical investigations Harbourside. The red borehole numbers correspond to the current work, the pink to the 2013 and the blue to the 1985 boreholes respectively. (Source: Douglas Partners)

4. Research Design

4. Research Design

4.1. Introduction

An Archaeological Research Design identifies and establishes the rationale, context, questions and methodology for the archaeological investigation of a site. The rationale is established through the assessment process (i.e., the 2016 Archaeological Assessment) which identifies the past occupation of the study area and the heritage values and research potential of the likely archaeological resource. The questions focus on recovering the values or 'unknown' information or gaps in information about the past that may be recoverable, and which may be lost if the archaeological resource is disturbed or destroyed. In turn, research questions focus the development of excavation and recording methods to recover the information or values of the study area.

4.2. Aim of the Work

An archaeological test excavation program at the site is considered necessary to allow archaeologists the opportunity to identify and archaeologically record any in-situ historical remains or archaeological deposits/relics that have not previously been subject to high levels of disturbance. Overall, the locations of test trenches are based on the archaeological potential and predictive modelling developed for the study area, as well as the location of the excavation for the basement. The Response to Submissions noted in Section 1.1 required:

- Testing to inform detailed design;
- Minimise impacts of the design on State significant archaeology;
- Identify opportunities for conservation in-situ.

The proposed locations for the archaeological test excavation trenches within the study area are presented in Figure 4-1. The archaeological trenches have been placed to target specific locations based on the potential for structures and features identified in the historic research for the study area. Their condition and extent will determine any recommendations related to assessment of significance, retention/conservation and interpretation.

4.3. Methodology

Each trench has been placed to investigate the nature and extent of potential archaeological resources in each location, and if found to be present, to enable assessment of the intactness and significance of the encountered resource. The trenches have also been sited with reference to existing layout of open areas and commercial spaces in the complex to allow some continued functioning of internal operations during the archaeological work.

This test excavation methodology proposes the excavation of seven strip trenches, (1.2 m wide) to be excavated carefully by a small (5-7t) backhoe with a flat edge bucket (to be operated by someone with demonstrated experience in historical archaeological excavation), under the monitoring and direction of the State Significant Excavation Director, Matthew Kelly. Removal of existing surfaces may be completed with the assistance of a concrete cutter and machine excavator fitted with a flat edged bucket. Should mechanical excavation encounter intact structural features, hand excavation by suitable qualified and experienced archaeologists would be undertaken to verify the nature of the find (detailed further below). The locations of the seven test excavation trenches are determined as follows:

Trench 1 - (1.2 m by 6 m) To investigate the potential presence of the slipway and associated deposits on the western side of the basement excavation

Trench 2A and 2B - (A 1.2 m by 5 m, B 1.2 m by 5 m) To investigate the profile of deposits west to east across the site and also the presence of the 1880s seawall than runs north to south

Trench 3 - (1.2 m by 7 m) To investigate the potential presence of the slipway and associated deposits on the eastern side of the basement excavation

Trench 4 - (1.2 m by 5 m) To investigate the potential presence of the two small structures east of Newstead House and associated deposits on the western side of the basement excavation

Trench 5 - (1.2 m by 6 m) To investigate the assessment of this area as having nil archaeological potential for Phase 1 of the study area occupation and the nature of the deposits associated with the 1900s reclamations

Trench 6 - (1.2 m by 6 m) To investigate the potential presence of the two small structures east of Newstead House and associated deposits on the western side of the basement excavation

Trench 7 - (1.2 m by 4 m) To investigate the assessment of this area as having nil archaeological potential for Phase 1 of the study area occupation and also the presence of the 1880s seawall than runs north to south.

Trench 8 – (1.2 m by 7 m) To investigate the potential for a small unknown structure at the western side of the site.

4.4. Research Questions

As the current work has the primary aim of investigating the level of survival of features and deposits any research questions that may be asked of the site will, of necessity, remain relatively general. Nevertheless, the following questions may provide a basis for retrieving some information related to the historical development of the study area. Most significant information would be that related to Historical Phase 1 (See Section 3.1) should they be present, though investigation of later historical phases will also form part of the investigation.

4.5. General Research Questions

An archaeological research design can be formulated to answer general questions about any deposits or features exposed during the work. These general questions are applicable to most archaeological sites investigated. These general questions are:

- What features or deposits are present on the study area;
- What is the nature and extent of any features and/or deposits;
- What dates can be assigned to them;
- How does this information compare to available historical information relating to the study area; and
- What is the significance of the “relics”?

4.5.1. Study area Specific Research Questions

General Questions relating to potential deposits and relics on the study site

Landscape

- What is the nature of any remnant soil profile in the area of investigation?
- How does the soil profile relate to filling events associated with the creation of the harbour?

- Does evidence of in situ natural topsoil (A1/A2 horizon) remain within investigated areas? If so, can this tell us anything about the nature of the landscape at the time of settlement or use of the land thereafter?
- What evidence is there for the former shoreline?
- What other landform alterations may be observable?

Structural Features

- To what extent do the nineteenth and twentieth century seawalls survive?
- Is there any evidence for the slipway? Along the shoreline?
- Is there any evidence for the remains of the unidentified structures east of Newstead House?
- Are there any other unrecorded structures present?

Deposits

- Is there evidence which can differentiate between different reclamation episodes?
- Can dates be assigned to these events?
- Is the reclamation material locally derived or imported?
- Is the reclamation comparable to other such events in Darling Harbour and other areas of the Harbour foreshore?

Significance and Conservation

- Are any of the features potentially of State significance?
- Do any of the features warrant in-situ conservation?
- What elements may lend themselves to interpretation?

4.6. Archaeological Investigation Methods

4.6.1. Nominated Team

Excavation Director: Matthew Kelly

Secondary Excavation Director: Andre Fleury

The details of any additional team members will be confirmed in writing to the archaeologists at Heritage NSW once the timing of the excavation has been finalised.

4.6.2. Recording and Report

If and when relics are exposed in any excavation test trenches, they will be assessed on the spot and recorded. Artefacts and structural remains considered to meet the threshold of locally significant relics may be removed and recorded and their significance assessed. Any features that may potentially be of State significance will be left in situ. The archaeological recording process will include the following:

The excavation recording and reporting methods to be used at the site and undertaken by the archaeological team would include:

- Establish site grid by survey or from existing client survey information;

- Detailed digital survey and mapping of the area based on that grid would be undertaken which will record via orthophotos all features etc. to AHD;
- Locate extent of excavation area in relation to internal spaces;
- Use of a concrete cutter and a small excavator (5-7t) to open up areas and remove surfaces and overburden/fill if required. The extent and depth of this machine work will be at the direction of the archaeological team;
- Manual (hand) excavation of exposed relics using hand tools (shovels and trowels) as determined by the archaeological team;
- Where significant deposits are found undertake detailed stratigraphic excavation and recording;
- Use of context recording forms and context numbers to record all archaeological information;
- Use of Harris Matrix as part of the recording program;
- All structural remains, post holes, and features will be planned at a scale of 1:20 or 1:50;
- Detailed photographic recording (including orthophotos) undertaken;
- All locally significant artefacts will be recorded/collected except those from unstratified fills;
- Samples of bricks and mortar will be collected from structures;
- Collection, labelling, safe storage, washing, sorting and boxing of artefacts by artefact specialists along with palynological analysis and materials conservators as appropriate;
- A Final report detailing the excavations, its results and addressing the Research Design questions would be completed within 12 months of the work being completed on the site, The report would include.
 - An introduction and executive summary.
 - Planning framework.
 - Site history supplemented by additional research.
 - Archaeological background.
 - Archaeological investigation methodology, results and site recording.
 - Analysis and catalogue detailing all historical cultural material recovered.
 - Maps and site plans etc.
 - Photo catalogue.
 - Artefact catalogue.
 - Assessments of significance of overall remains and individual elements.
 - Identification of features for interpretation.
 - Interpretation of results and addressing of Research Design questions.
 - Conclusions and recommendations.
 - Identification of repository for artefacts and site records.
- The artefacts, site records and final report would be presented to the client/site owner for curation.

4.6.3. Artefact Management and Analysis

Artefacts will be managed on site by Alexandra Thorn (Curio Projects Artefact Specialist). Recovered artefacts will be sorted, cleaned, separated and bagged for cataloguing and analysis off site. The artefacts will be catalogued using a variant of the “Exploring the Archaeology of the Modern Cities” database. The artefact collection will have a Type Series established and the collection will be divided into material types and standard Activity/Function/Sub-function groupings. Analysis will include comparison with similar collections (Section 3.2) Artefacts will be bagged and labelled with unique database ID numbers linked through the catalogue to context,

Type Series, Images, and historical information. Sydney Artefacts Conservation will provide advice on any conservation requirements.

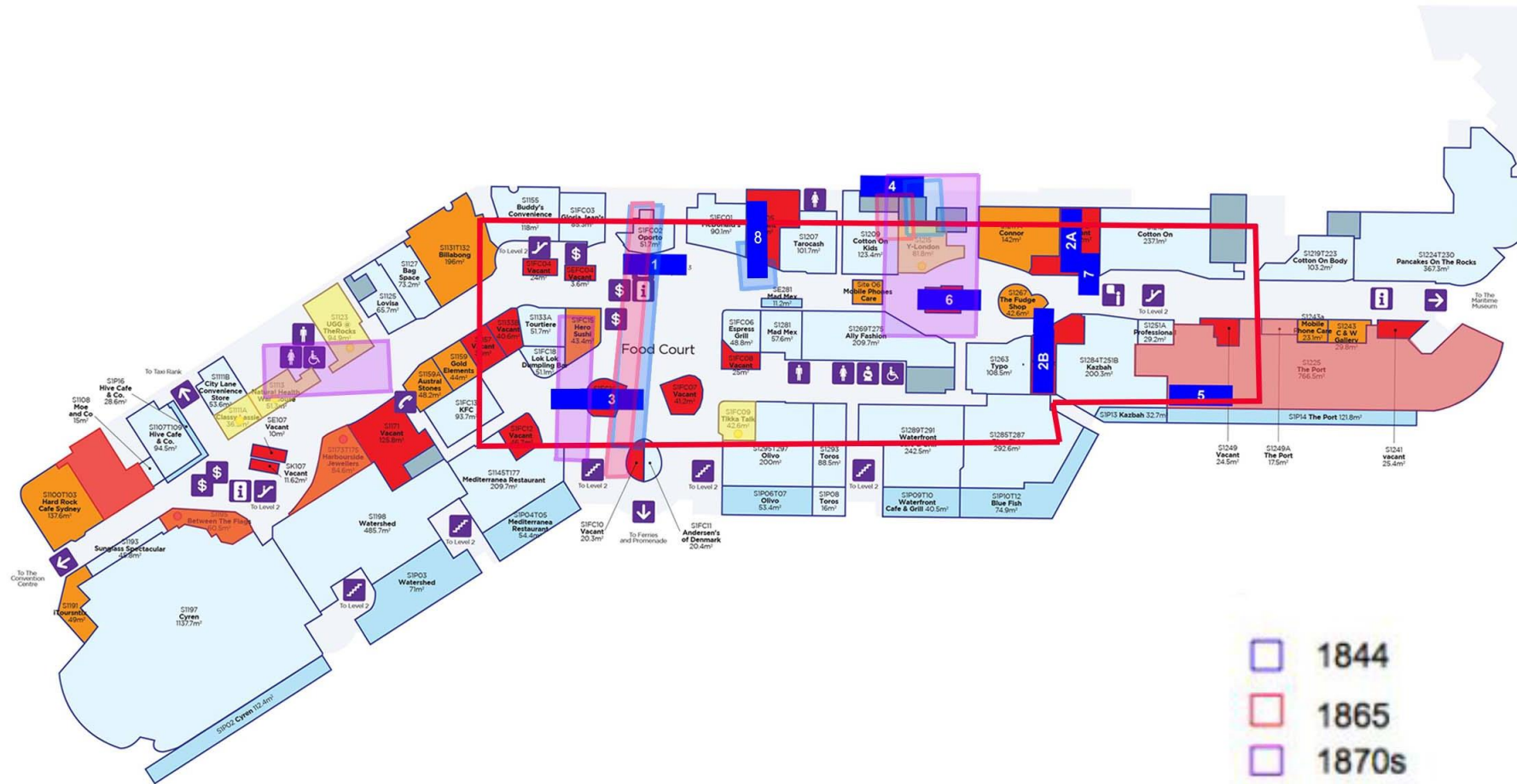


Figure 4-1 Location of Test Trenches (shown in blue) within the footprint of the current shopping complex with outlines of former historic structures overlain .

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5. Bibliography

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