



Harbourside Redevelopment: Stage 2 Excavation

Heritage Impact Statement and Archaeological Impact
Statement

July 2022

Document Information

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Executive Summary

Curio Projects Pty Ltd (Curio) have been commissioned by Mirvac Projects Pty Ltd (Mircac) to prepare a Heritage Impact Statement (HIS) and Archaeological Impact Statement (AIS) for the Harbourside Redevelopment's (the project, hereafter) Stage 2: Excavation. This report supports a State Significant Development Application (SSDA 38881729) submitted to the Minister for Planning pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

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

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

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

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

Physical Impacts

The proposed works are limited to demolition of existing ground floor slab and bulk excavation works. Therefore, they will have **no direct physical impact** to any significant heritage fabric or items either within, nor close to, the study area.

In addition, Mircac have commissioned the preparation of a *Construction Noise and Vibration Management Plan* (prepared by Acoustic Logic 2022, attached to this report as Appendix G), to address, avoid and monitor any potential for indirect impacts to heritage fabric caused by SSDA1 excavation works in the form of noise and vibration.

Thus, it is considered that any potential for vibrations to have indirect impact to heritage fabric/structures (e.g. the State significant Pyrmont Bridge, historic piers and associated maritime features, including the water manifold) will be avoided, monitored and/or (if required) readily managed, in accordance with the strategies and recommendations of the Acoustic Logic Vibration Management Plan throughout the Stage 1 SSDA works construction program of works.

Visual Impacts

The proposed works are limited to internal demolition and bulk excavation only. They will not involve modifications to exterior components of the study area. Consequently, they will have no visual impact to nearby heritage listed items (*Pyrmont Bridge, Darling Harbour Water Feature, South Steyne*

(S.S.) and the *Darling Harbour Woodward Water Feature*) or the existing character of the area. Thus., SSDA1 scope of works will have a **neutral visual impact** to the heritage values of the subject site.

Historical Archaeology

The 2016 Historical Archaeological Assessment (HAA) of the Harbourside Redevelopment site, prepared by Curio, assessed the study area as having:

- Moderate potential for archaeological resources associated with the Phase 1 occupation and commercial/industrial use of the original intertidal zone, particularly activities that postdate the 1840s. This archaeological evidence is likely to primarily be of local significance, depending on its nature, extent and integrity. Whilst there is nil-low potential for pre-1844 archaeological evidence to exist on site - if present, archaeological evidence of the early (pre-1844) use of the site's foreshore zone may be of State significance.
- High potential for physical evidence of land reclamation undertaken to expand the Goods Yard during Phase 2 to survive at the site, including reclamation deposits and sea walls. Archaeological evidence of these features is likely to be of local significance.
- Moderate potential for archaeological remains of the Goods Yard to survive. This physical evidence is likely to be limited to some structural remains including foundations of sheds and other structures, and footings of other infrastructural elements. This evidence would be unlikely to meet the threshold of local significance, and would be unlikely to be considered relics.

In response to findings of the 2016 HAA, the following Condition of Consent for SSDA 7874 was made:

***Condition 28:** Future Development Application(s) must be informed by Historical, Maritime and Aboriginal Archaeology testing and demonstrate how the results of such testing have been used to minimise impacts to State Significant archaeological resources. The results of the archaeological testing must be documented in a report which outlines opportunities for conservation in situ as a preference, development and interpretation.*

Curio prepared an Archaeological Research Design and Excavation Methodology (ARD) for historical test excavation (attached as Appendix C) to support a s140 excavation permit application that was lodged with Heritage NSW in February 2022 (Appendix A). The archaeological test excavations were undertaken in May and June 2022. Six test trenches of a planned eight were excavated and areas for further archaeological excavation were identified within the basement footprint. The remaining two trenches were not excavated due to site safety conditions. Several trenches exposed evidence of the 1880s reclamations in this area of Darling Harbour. Other trenches identified former shoreline, remains of the Atlas Engineering Works and prior historical occupation of the foreshore. Remains of the boat slip and jetty associated with Newstead House were not exposed as the trenches planned for these areas could not proceed. The areas noted above would be removed during bulk excavation of the area.

The excavation report (appended to this report as Appendix H) concluded that none of the identified archaeological remains met the threshold for State Significance, but they were of Local Significance. On that basis the report recommended an Addendum to the existing Archaeological Research Design and Excavation Methodology be completed to undertake excavations and archaeological recording in conjunction with the program of bulk excavation on the site. No further testing was proposed

Aboriginal Archaeology

Curio completed an Aboriginal Due Diligence Assessment for the Harbourside study area in 2016. The report identified nil to low Aboriginal archaeological potential within the study area. Based on the 2016 assessment, it is therefore considered unlikely that the proposed excavation works for SSDA1 will encounter and/or impact Aboriginal objects/archaeological deposits.

Curio has prepared an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the project (attached as Appendix D), in accordance with SEARs conditions. The assessment included within the 2022 ACHAR report has not identified any further archaeological potential in relation to the 2016 Due Diligence Report—that is to say, the conclusions within the ACHAR confirm that there is a **low to nil potential for intact natural soil profiles** to be present within the study area.

In the unlikely event that Aboriginal objects are encountered during the non-Aboriginal archaeological program, work would cease in the immediate vicinity of the find and as under s89A of the NPW Act, reported to Heritage NSW. Management of unexpected Aboriginal objects encountered during the excavation program has been addressed in the 2021 ARD prepared by Curio. The management of any potential Aboriginal objects, including options ranging from in situ retention, interpretation or excavation will be discussed and agreed with the RAPs for the project and will be included in the updated archaeological impact statement proposed to be prepared and submitted, once test excavation works are completed.

Aboriginal Community Consultation

In accordance with project SEARs, Aboriginal community consultation in accordance with statutory guidelines *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010) was initiated for the Harbourside project in February 2022. Eight project RAPs were identified for the project and were consulted throughout the process of preparing the ACHAR (see ACHAR in Appendix D for full details).

As part of the ACHAR assessment process, it was determined that the Harbourside study area held nil-low potential for Aboriginal archaeological material due to the highly disturbed nature of the area and its surrounds through land reclamation processes and extensive occupation and industrial use. The predictive model for the study area stated two zones of archaeological potential could be divided:

- Zone 1 – portions of the study area situated along the Disturbed Terrain soil profile and identified reclamation lands. The ACHAR identified that this zone has **low to nil potential** for subsurface Aboriginal cultural material to be present.
- Zone 2 – portions of the study area that are situated along the original shoreline of Darling Harbour. This section is still classified as being within the Disturbed Terrain landscape with land reclamation works, and also borders the Deep Creek soil profile to the southwest. The ACHAR has identified that this zone has **low potential** for subsurface Aboriginal cultural material to be present where pockets of residual natural soils may remain within the historical fill and land reclamation.

As a part of the ACHAR recommendations, it was recommended that an Unexpected Finds Procedure be put in place, stating:

An Unexpected Finds Procedure to be enacted for all works within the Project area. Should Aboriginal objects or natural soil landforms be identified or suspected during works, all works are to cease immediately and the Unexpected Finds Procedure be

followed. This applies to historic archaeological test excavations proposed within the study area.

A historical archaeological test excavation program was held in May and June 2022, and no evidence of Aboriginal archaeological material was uncovered. Whilst evidence of the former shoreline was identified, no evidence of Aboriginal occupation was observed, and it was determined that overall, the site was extremely disturbed from an Aboriginal archaeological perspective. Therefore, there was no need to enact the Unexpected Finds Procedure at this time. No further testing was proposed.

Maritime Archaeology

The proposed scope of works will involve land-based physical impacts (i.e. Historical Archaeology and Aboriginal Archaeology) only and not extend into Darling Harbour. Therefore, bulk excavation works for the SSDA 1 scope of works only have the potential to impact maritime archaeological resources within what is now reclaimed ground in the study area.

While the SSDA1 scope of works will not impact any potential maritime archaeological resources (should they be present adjacent to the study area within the harbour), maritime archaeologists have been engaged by Mirvac to undertake a condition and dilapidation assessment of the existing maritime structures within/adjacent to the subject site to ensure that key maritime structural elements (i.e. s170 water cooling manifold, harbour piers etc) are assessed for current condition, including archival recording, prior to the commencement of any bulk excavation works on site.

The condition report (undertaken in June 2022 Appendix I) found that the stone sea wall, both above and below water, was in generally good condition with some evidence of mortar loss and repairs. The toe of the wall has been undermined in parts but is generally stable.

The dive survey was not able to survey the external condition of the saltwater conduits as access through later entrances was not possible. The gates and concrete surrounds of the entrances all appear in sound condition, although the uppermost gate from the southern entrance is missing.

The Maritime survey findings will inform the management and/or protection of maritime archaeological resources that may be present, including any additional research questions, features or activities that should be considered for future archaeological works, development impacts and SSDA submissions for the Harbourside project.

The maritime assessment report (Appendix J) concluded that potential historic maritime archaeological remains within the study area include wharves and related material and seawalls, in and under reclamation fill.

Maritime archaeologists have reviewed the results of the test excavation report and will provide input into the any subsequent AIS or ARD and Excavation Methodologies for the project to ensure any potential impacts to archaeological resources are managed and mitigated appropriately

1. Introduction

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1.1. Background

Curio Projects Pty Ltd (Curio) have been commissioned by Mirvac Projects Pty Ltd (Mircvac) to prepare a Heritage Impact Statement (HIS) and Archaeological Impact Statement (AIS) for the Harbourside Redevelopment's (the project, hereafter) Stage 2: Excavation. This report supports a State Significant Development Application (SSDA 38881729) submitted to the Minister for Planning pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

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

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

1.2. Project Background

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

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

- **SSDA 1:** Bulk excavation works and construction of retaining structures.
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- **SSDA 3:** Construction and use of the public domain, and Guardian Square, including construction and use of the Murray Street and Bunn Street bridges.

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

1.3. Site Description

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

Specifically, the site occupies an area of approximately 2.05 hectares within the north western portion of Darling Harbour, in between Cockle Bay and the Pyrmont Peninsula. It is irregularly shaped and existing site improvements include the 2-3 storey Harbourside Shopping Centre – noting approval has already been granted for stage 1 demolition works. Indicative site boundaries are shown in Figure 1.1.



Figure 1.1. Harbourside Shopping Centre redevelopment site.

1.4. Overview of the Proposed Development

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

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

For more information, refer to the Environmental Impact Statement (EIS) prepared by Ethos Urban to which this report is attached.

1.5. Planning Approvals Strategy

State Environmental Planning Policy (Planning Systems) 2022 identifies development which is declared to be State Significant. The proposal is SSD as it is located within Darling Harbour and the proposed development has a Capital Investment Value (CIV) of more than \$10 million.

1.6. Secretary's Environmental Assessment Requirements

This report has been prepared to respond to the relevant Secretary's Environmental Assessment Requirements (SEARs) for SSD-38881729 (issued in accordance with Section 4.39 of the Environmental Planning & Assessment Act 1979), as outlined in Table 1-1 below.

Table 1-1. SSDA 1 Stage 2 'Bulk Excavation works' SEARs

SEARs	Detailed Condition	Where Addressed
4: Heritage	The EIS must include: <ul style="list-style-type: none"> a Heritage Impact Statement (HIS), prepared in accordance with relevant guidelines, assessing the impact of the proposal on the heritage significance of the site and surrounding area and in particular the heritage and visual impact on the context and setting, views and vistas to and from the State heritage listed Pymont Bridge, including archaeology, and includes measures to reduce or mitigate any unavoidable impacts 	<p>This HIS and AIS report has been prepared to meet this SEARs condition.</p> <p>A heritage impact assessment is presented in Section 7 (including Visual Impact assessment in Section 7.3 and Archaeological impact assessment in Section 7.4)</p> <p>Management recommendations to reduce or mitigate any unavoidable impacts are provided in Section 8</p>
	<ul style="list-style-type: none"> provide a historical archaeological assessment to inform the HIS and identify any archaeology protected under the Heritage Act 1977. 	<p>Summarised in Section 6.2, attached as Appendix B (Historical Archaeological Assessment 2016), and Appendix C (Historical Archaeological Research Design, Dec 2021).</p>
	<ul style="list-style-type: none"> an Aboriginal Cultural Heritage Assessment Report (ACHAR) in accordance with relevant guidelines, identifying, describing, and assessing any impacts for any Aboriginal cultural heritage values on the site, including archaeology. 	<p>An ACHAR is currently being prepared for the broader Harbourside Redevelopment project which identifies, describes, and assesses any impacts for any Aboriginal cultural heritage values on the site, including archaeology.</p> <p>An assessment of Aboriginal cultural heritage values on the site, including archaeology is provided in Section 6.1</p> <p>A preliminary assessment of impacts to any Aboriginal cultural heritage values on the site, including archaeology, is provided in Section 7.4.1</p> <p>The draft ACHAR for the project is attached to this report as Appendix D.</p>

1.7. Previous Reports

Curio have prepared, or are preparing, the following reports inform and guide Aboriginal, non-Aboriginal and built heritage management for the project:

- 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 for Mirvac
- Curio Projects, 2016. *Harbourside Shopping Centre, Darling Harbour Historical Archaeological Assessment*. Report for Mirvac
- Curio Projects, 2018. *Response to Submissions Heritage Impact Statement Harbourside Redevelopment*. Report for Mirvac

- Curio Projects, 2020. *Response to Submission Heritage Impact Statement Harbourside Redevelopment*. Report for Mirvac
- Curio Projects, 2021. *Harbourside, Darling Harbour: Archaeological Research Design*. Report for Mirvac
- Curio Projects, 2022, Final Test Excavation harbourside. Report for Mirvac
- Curio Projects, *in preparation*. DRAFT Aboriginal Cultural Heritage Assessment Report (ACHAR). Report for Mirvac (Appendix D to this report).

1.8. Report Methodology

This HIS has been prepared in accordance with the following guidelines:

- City of Sydney LEP 2012
- City of Sydney Development Control Plan (DCP) 2012
- National Parks and Wildlife Act 1974 (NSW) (NPW Act)
- NSW Heritage Office, 2002. *Statements of Heritage Impact*
- NSW Heritage Office, 2001, *Assessing Heritage Significance*.
- NSW Heritage Office, 2006. *Historical Archaeology Code of Practice*
- NSW Heritage Branch, Dept. of Planning, 2009. *Assessing Significance for Historical Archaeological Sites and Relics*
- ICOMOS, 2013. *Australia ICOMOS Charter for Places of Cultural Significance, the Burra Charter* (Burra Charter)

1.9. Limitations and Constraints

This report has been prepared using historical data and documentation available for the study area including archaeological reports and assessments. No further historical research was undertaken and no archaeological excavations have been carried out at the time of preparing this report which could further inform an assessment of archaeological potential. The program of archaeological test excavation is anticipated to commence mid April 2022, with preliminary results expected by end April 2022. Once available, the preliminary results of the test excavation will be used to update this report (and the archaeological predictive modelling) accordingly, should test excavation encounter a substantial archaeological deposit. The archaeological test excavation permit application was lodged with NSW Heritage in February 2022 (refer to Appendix A) and has been conditionally approved, with test excavation planned for commencement from c.19 April 2022. Once available, the results from the test excavation program will be attached to this HIS as an appendix.

An Aboriginal Cultural Heritage Assessment Report (ACHAR), including an assessment of cultural heritage significance and Archaeological Technical Report (ATR) is currently being prepared by Curio for the Harbourside Development as a standalone report to meet SEARs conditions. The ACHAR will incorporate the process and findings of the Aboriginal community consultation process that is currently being undertaken by Curio for the project in accordance with Heritage NSW Consultation Guidelines. A final ACHAR will be submitted once the stages of the ACHAR process are complete (i.e. Stage 4 of the consultation process—Registered Aboriginal Party review of the draft ACHAR—has been completed- anticipated for the end of May 2022). This is discussed in more detail in Section 7.0 of this report and Appendix D (draft ACHAR).

This HIS does not include assessment of any non-heritage related planning controls or requirements.

1.10. Authorship

This report was prepared by Adele Zubrzycka, Senior Archaeologist and Cultural Heritage Specialist and Dr Matthew Kelly, Excavation Director, with senior input and review provided by Sam Cooling, Cultural Heritage Manager, and Natalie Vinton, CEO, all of Curio Projects Pty Ltd.

2. Statutory Context

2. Statutory Context

2.1. Planning Framework

2.1.1. Environmental Planning and Assessment Act 1979

The EP&A Act is designed to 'institute a system of environmental planning and assessment for the state of NSW' (EP&A Act).¹ Dependent upon which Part of the EP&A Act a project is to be assessed under, differing requirements and protocols for assessing heritage may apply.

Part 4, Division 4.1 of the EP&A Act identifies and defines SSD projects as those declared under Section 89C of the EP&A Act. SSD and State Significant Infrastructure projects (SSI), replace 'Concept Plan' project approvals, in accordance with Part 3A of this Act, which was repealed in 2011.

The Site is located within the Darling Harbour precinct, which is identified as a State Significant Site in Schedule 2 of State Environmental Planning Policy (State and Regional Development) 2011. As the proposed development will have a capital investment exceeding \$10 million, it is declared to be SSD for the purposes of the EP&A Act, with the Minister for Planning the consent authority for the project.

The SSDA for Harbourside is a staged development application made under Section 83B of the EP&A Act. It was given approval for the concept proposal for the entire site and its surrounds in by the IPC on 25 June 2021 (SSD 7874).

As part of the SSD approvals process, applicants are not required to obtain separate heritage statutory approvals, including built heritage and historical archaeology approvals under Section 60 of the NSW Heritage Act (1977) or Aboriginal Heritage Impact Permits (AHIPs) under Section 90 of the National Parks and Wildlife Act, 1974.

However, in order to identify the potential for the development to impact on archaeological resources, an ACHAR and Historical Archaeological Impact Assessment, along with a detailed Archaeological Research Design and Excavation Methodology for test excavations under a Section (s) 140 excavation permit, have been prepared as part of this Stage 1 SSD process.

These documents have been prepared in accordance with the appropriate Heritage NSW guidelines to ensure that as part of the redevelopment of the site, any potential archaeological resources proposed to be disturbed, will be appropriately investigated, recorded and removed.

Under these assessments, where excavation is required for the carpark, it is not possible to retain archaeological resources *in situ*. It is intended to excavate, investigate and interpret within public spaces of the development. Should any archaeological relics suitable for interpretation be found, they would be included within the overall public heritage interpretation proposed for the redeveloped site.

Following the issuing of final Notice of Determination (approval), the statutory provisions of the NSW Heritage Act and the National Parks and Wildlife Act will only apply again, if —once development commences—an unexpected discovery of historical archaeological relics or Aboriginal objects and/or Aboriginal places are made during the works program.

¹ Austlii, n. d. Environmental and Planning Assessment Act. Accessed online on 11/03/2022 at: http://www.austlii.edu.au/au/legis/nsw/consol_act/epaaa1979389/longtitle.html

Should an unexpected archaeological resource be found, then there is a requirement to cease works in the immediate area and report the discovery of the unexpected archaeological find - to the relevant authority (Heritage NSW). This is the only statutory process not over-ridden by the SSD process. Should any archaeological remains identified in the assessments submitted with the final Environmental Impact Statement (EIS) for the project be found, these are not considered to be 'unexpected finds'.

2.2. Heritage Framework

2.2.1. Statutory heritage listings

NSW Heritage Act 1977

In NSW, heritage items are afforded statutory protection under the Heritage Act. Heritage places and items of importance to the people of New South Wales (NSW) are listed on the NSW State Heritage Register (SHR).

The Heritage Act defines a heritage item as a 'place, building, work, relic, moveable object or precinct'. The Heritage Act is responsible for the conservation and regulation of impacts to items of State heritage significance, with 'State Heritage Significance' defined as being of 'significance to the state in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item'.

State Heritage Register

The SHR was established under Section 22 of the Heritage Act and is encompassed by a list of places, objects and archaeological sites of particular importance to the people of NSW. The SHR is administered by the NSW Heritage, DPC and includes a diverse range of over 1,500 items, in both private and public ownership.

The study area is not listed on the SHR. However, it is located directly north of the following item:

- *Pymont Bridge* – SHR no. 01618

It is also located in close proximity to the:

- *The Darling Harbour Woodward Water Feature* – SHR no. 01933
- *South Steyne (S.S.)* – SHR no. 00755

The curtilage for each item is shown in Figure 2.1, Figure 2.2 and Figure 2.3, respectively.

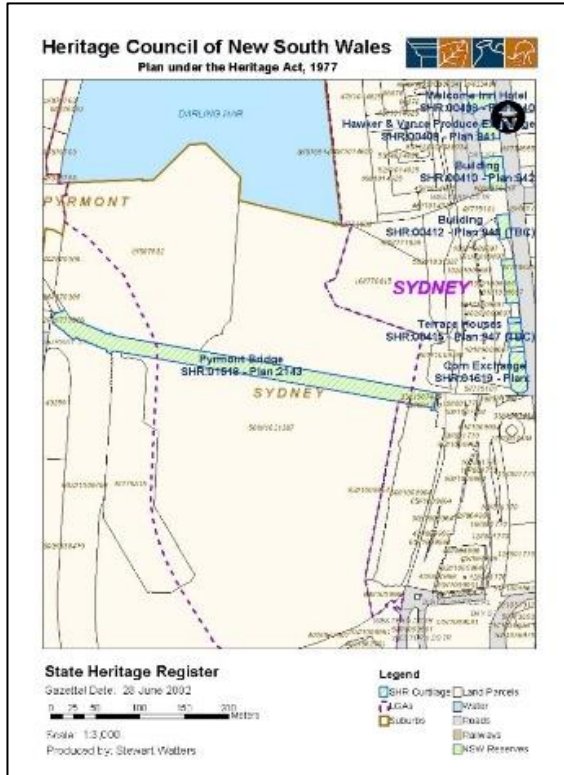


Figure 2.1 SHR curtilage map for Pyrmont Bridge. Source: Heritage NSW.

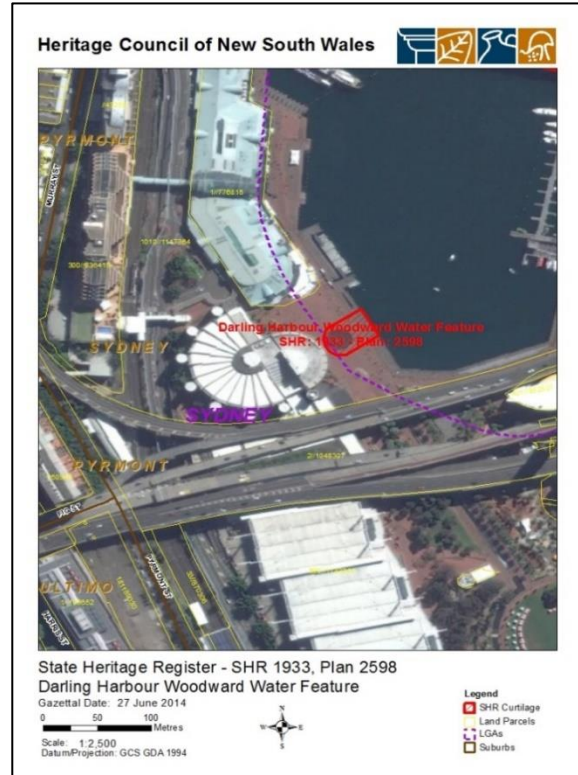


Figure 2.2. SHR curtilage map for The Darling Harbour Woodward Water Feature. Source: Heritage NSW.



Figure 2.3. SHR curtilage map for South Steyne (S.S.). Source: Heritage NSW

Section 170 Heritage and Conservation Register

Government Agencies are required to keep a register of heritage items that they own, occupy, and manage in accordance with Section 170 of the Heritage Act. This is known as a Heritage and Conservation Register, commonly referred to as a Section 170 (s170) Register. The agencies are required to identify, conserve, and manage the heritage assets included on this register.

The study area is located close to the following items listed on the s170 Heritage Conservation Registers:

- *Pymont Bridge* – Placemaking NSW – SHI no. 4500383
- *Water Cooling System and Manifold* – Sydney Harbour Foreshore – SHI no. 5061721

The HIS prepared by Curio in 2016 made the following comments regarding the Water Cooling System and Manifold:

Partial remains of the engineering equipment/manifold of this cooling system are located in the carpark of the Novotel, accessed from Murray Street and below the southern end of the Harbourside Shopping Centre. Up until c1990 the system was used by the Water Police as a training area for scuba diving in restricted areas. At that date the system was in good condition and substantially intact. It is noted in the Sydney International Convention Centre, Exhibition and Entertainment Precinct (SICEEP) International Convention Centre (ICC) Hotel Darling Harbour: Statement of Heritage Impact prepared by Tanner, Kibble, Denton Architects Pty Ltd (August 2013) that sections of the Water Cooling System and Manifold were located below-ground in their development site. The conduits run underneath the southern end of the Harbourside Shopping centre, spanning from west to east from Murray Street to the harbour, below the existing Harbourside development. As the item has structural integrity (i.e. underground tunnel structure) it is not technically defined as an archaeological 'relic' but as a work. Nevertheless, given that any proposed deep excavation in this area would have the potential to disturb the conduits, it would be managed as part of the archaeological methodology for the site.²

City of Sydney Local Environmental Plan 2012

The Sydney LEP 2012 provides local environmental planning provisions for land within the City of Sydney LGA. Clause 5.10 of the LEP sets out objective and planning controls for the conservation of heritage in the Council area, including the conservation of built heritage and archaeological sites.

The study area is located within view of the following items and HCAs:

- *The Woolbroker's Arms Hotel, 22 Allen Street* - Item no. I1206
- *The Corner Shop and Terrace Group, 224-302 Harris Street* - Item no. I1233
- *Retail Premises – Harris Street Group, 304-308 Harris Street* - Item no. I1234
- *Former Warehouse 'Harry Lesnie Pty Ltd', 47-49 Murray Street* - Item no. I1244
- *Former Warehouse 'HS Bird & Co, 51-53 Murray Street* - Item no. I1245
- *Pymont and Murray Street Residential Group, 142-168 Pymont Street* - Item no. I1246
- *Pymont Bridge Road Hotel, 11 Pymont Road* - Item no. I1255
- *John Taylor Woolstore, 137 Pymont Street* - Item no. I1263
- *Clarence Bonded and Free Stores, 139 Murray Street* - Item no. I1264
- *Pymont Fire Station, 147 Pymont Street* - Item no. I1265

² Curio Projects, 2016. *Heritage Impact Statement: Harbourside Redevelopment*. Prepared for Mirvac, p. 11.

- *Pyrmont Terrace Group, 86-92 Pyrmont Street* - Item no. I1276
- *Pyrmont Bridge Hotel, 94-96 Pyrmont Street* - Item no. I1277
- *Pyrmont Conservation Area* - Item no. C52

As the proposed works for SSDA 1 'Bulk Excavation works' will not directly or indirectly impact these items, they have not been addressed further in this report.



Figure 2.4 .Location of LEP listed items in relation to the study area (outlined in red). Source. City of Sydney.

3. Historical Context

3. Environmental and Historical Context

3.1. Aboriginal Sydney

Prior to European settlement and subsequent land clearing, the vegetation of the Pyrmont Peninsula would have generally comprised of low, dry sclerophyll open-woodland along ridges and upper slopes, with species commonly present including Red Bloodwood *Eucalyptus gummifera*, Scribbly Gum *Eucalyptus haemastoma*, Brown Stringybark *Eucalyptus capitellata* and Old Man Banksia *Banksia serrata*. More sheltered slopes would have commonly supported Black Ash *Eucalyptus sieberi*, Sydney Peppermint *Eucalyptus piperita* and Sydney Red Gum *Angophora costata*. The understorey of these plant communities would have consisted of a variety of native shrubs. However, the nature of the sandstone peninsula, water availability and drainage would have affected the growth of these various floral species.

While the diversity of flora on the peninsula would have supported a variety of fauna such as kangaroo, wallaby, wombat, echidna, flying fox, emus, quolls, various native rats and mice, snakes and lizards, this would also have been limited by the extent of the vegetation growth on the sandstone peninsula. Marine faunal resources would have also been easily accessed from the study area, both from the fresh water and estuarine environment of the Tank Stream, as well as from nearby Sydney Cove.

The Pyrmont Peninsula would definitely have been a focus for Aboriginal occupation. The Pyrmont Bridge Conservation Management Plan notes that:

Several distinct indigenous groups occupied the Sydney Basin in 1788. The traditional owners of the Sydney City area are the Cadigal clan.

The Cadigal clan used the foreshore of Port Jackson for hunting and gathering, for shelter and for ceremonial purposes. Though the Cadigal clan have had a long presence in the Sydney Harbour region, information in regards to their history pre European arrival in 1788 is largely reliant on physical traces of their activities and documentation made by early European colonists. Other sources include the oral tradition handed down through Aboriginal elders and by modern archaeological investigation. Evidence of the pattern of use of the harbour does survive, primarily in the areas that now form the Sydney Harbour National Park.

*A variety of food resources were available to the Aboriginal people of the Sydney harbour area, as evidenced in shell middens excavated at Balmoral Beach and Cammeray. Analysis of the shell species found has revealed that the Aboriginal people ate Rock Oysters (*Saccostrea glomerata*), Hairy Mussels (*Trichomya hirsuta*), Sydney Cockles (*Anadara trapezia*), Mud Oysters (*Ostrea angasi*) and Hercules Club (Whelks *Pyrazus ebeninus*).*

3.2. Post-European Arrival

The study area has been the subject of a number of heritage reports previously completed by Curio as summarised in Section 1.7. This historical outline below was previously completed for the 2016 Historical Archaeological Assessment and has been included here to provide some historical background.

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.
- 1820s–1830s—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 c1832. 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. 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.

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.
- 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.

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

4. Physical Analysis

4. Physical Analysis

4.1. Site Context

Site inspections for the project were undertaken in January and February 2016 to understand the site context, as well as identify evidence of existing archaeological features or evidence of ground disturbance that may inform the assessment of archaeological potential. The findings of these inspections have been used to inform the following physical analysis.

The Harbourside Shopping Centre is located on the western foreshore of Darling Harbour. The Harbourside Shopping Centre consists of a three-storey building and does not have a basement.

The subject site extends from Pymont Bridge in the north to the International Convention Centre site currently under redevelopment to the south (Figure 4.1). On the west the site is bounded by Darling Drive (Figure 4.2) and extends east to the public promenade on the Darling Harbour foreshore (Figure 4.3). The northern boundary of the site abuts the south-western end of Pymont Bridge. In several locations the existing shopping centre complex has a direct physical or visual interface with Pymont Bridge (Figure 4.4 to Figure 4.7).

The former monorail station is located above the northern end of the Harbourside Shopping Centre complex (Figure 4.5). A set of stairs provides access from Harbourside up to Pymont Bridge and the former monorail station (Figure 4.7). A pedestrian footbridge connects the former monorail station, Pymont Bridge and the northern end of Harbourside to the multistorey parking station and hotel on the western side of Darling Drive (Figure 4.7).

A second pedestrian bridge connects the upper level of Harbourside to the multistorey parking station and hotel on the western side of Darling Drive (Figure 4.8).

The external areas within the subject site adjacent to the waterfront promenade are paved in red brick, and are consistent with the rest of the public promenade, western approach to Pymont Bridge, Australian National Maritime Museum forecourt (Figure 4.3, Figure 4.4 and Figure 4.7).

A footpath and driveway to a loading dock provide access to the north-western side of the site. The Darling Drive ramp is located immediately west (Figure 4.8 and Figure 4.9).

The nearby route of the light rail runs along a section of the path of the former Darling Harbour Goods Line, and is located to the west of the site. The rail line sits at a similar level to Harbourside. Darling Drive rises up from this level via a ramp (and not natural topography or an extant historical feature) to meet the higher level of Murray Street (Figure 4.9).

Evidence of subsurface services were observed across the site, including stormwater drainage (Figure 4.10).



Figure 4.1: The Harbourside Shopping Centre, viewed from the eastern shore of Darling Harbour



Figure 4.2: Western boundary of the subject site, view facing south. The light rail line to the west of Darling Drive follows a route of the original Darling Harbour Goods Line.



Figure 4.3: Eastern boundary of the Harbourside site, showing interface with the public promenade on the waterfront



Figure 4.4: Western approach to Pyrmont Bridge, showing entrance to Harbourside



Figure 4.5: Interface between Harbourside (left) and Pyrmont Bridge (right), view facing west. the former Monorail Station is visible in the centre of the image.



Figure 4.6: Physical interface with the Pyrmont Bridge

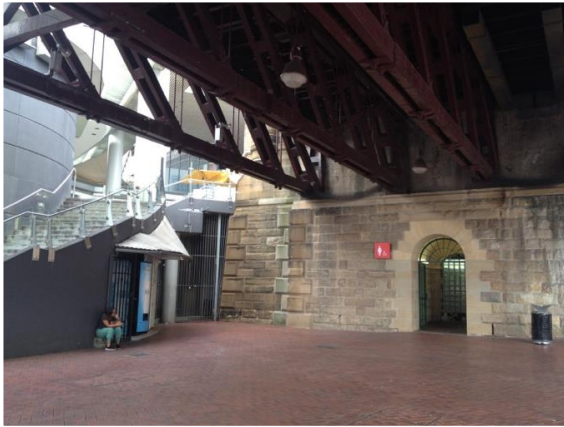


Figure 4.7: Northern boundary of Harbourside and the sandstone foundation of Pyrmont Bridge, showing gated entrance to loading dock



Figure 4.8: Darling Drive and pedestrian footbridge beyond the northern boundary of the subject site, showing former monorail station and Harbourside Shopping Centre.



Figure 4.9: Loading dock entrance on western side of Harbourside. Darling Drive rises on the left-hand side.



Figure 4.10: Example of subsurface services on the western side of Harbourside Shopping Centre

5. Heritage Significance

5. Heritage Significance Assessment

The *NSW Heritage Manual Guideline—Assessing Heritage Significance*, prepared by Heritage NSW, provides a framework for assessing significance of sites and heritage items, with the main aim of producing a succinct statement of significance to summarise an item or site's heritage values. The guidelines are predicated on the five types of cultural heritage value, as presented in *The Burra Charter 2013*: historical, aesthetic, scientific, social, and spiritual significance. The NSW heritage assessment criteria provides the following criterion for the assessment of heritage significance.

An item will be considered to be of State (or local) heritage significance if, in the opinion of the Heritage Council of NSW, it meets one of more of the following criteria:

- *Criterion (a)—an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);*
- *Criterion (b)—an item has strong or special association with the life or works of a person, or group of persons, of importance in the cultural or natural history of NSW (or the cultural or natural history of the local area);*
- *Criterion (c)—an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);*
- *Criterion (d)—an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;*
- *Criterion (e)—an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);*
- *Criterion (f)—an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);*
- *Criterion (g)—an item is important in demonstrating the principal characteristics of a class of NSW's (or a class of the local areas):*
 - *cultural or natural places; or*
 - *cultural or natural environments.*

The following statements of significance have generally been drawn from the NSW State Heritage Inventory (SHI) datasheet 'Summary statements of the significance' for the key heritage items that are considered to be most relevant to this HIS. Whilst twelve items of local significance exist within the general vicinity of the site and have been identified earlier in this report, it is only those items which are in 'close' vicinity to the site that have been included in this summary sub-section of the report.

5.1.1. Pyrmont Bridge³

The Pyrmont Bridge is potentially of national significance as a technologically innovative swing span bridge, the design of which combined recent American technology: the central pivot span, electricity and the d/c tram motor, with European steelwork and the locally developed Allan Truss bridge, an improvement made by Allan in 1894 to the American Howe Truss.

It is an early example of a swing span bridge powered by electricity, marking the transfer in Sydney from steam or hydraulic power to direct current electricity, which powered the swing span and the arc lights to the decking and the navigational lights, predating the use of electricity for street lighting in Sydney by 2 years. Its sister the

³ The summary statement of significance for Pyrmont Bridge has been drawn directly from the endorsed CMP.

Glebe Island bridge likewise predated electric street lighting. No other pair of similar electrically operated swing bridges have been located in Australia or worldwide.

The Pyrmont Bridge, and the now demolished bridge across Blackwattle Bay, provided a direct link to the city's produce markets, located in the vicinity of Market Street, from the western suburbs, the abattoirs on Glebe Island and the inland market gardens and orchards. The current and former Pyrmont Bridges both facilitated supplying the city with goods intended for sale in Sydney and for export. The Pyrmont Bridge has continued to be used, by pedestrians, for over a century, continuing a route that has existed since the 1850s.

Believed by many to be the finest of the 583 bridges in NSW designed by Percy Allan, the PWD Engineer-in-Chief of Bridge Design. The elegant steelwork to the swing span and the carved stone detailing to the Sydney sandstone piers and balustrade to the approaches are combined with utilitarian timberwork to the piles and Allan Trusses, employed below the deck, a rare if not unique application of the Allan Truss.

The first of a series of major design competitions for a NSW public work held during the 1890s, reflecting lobbying that major designs should be undertaken by the private sector rather than by the PWD. When compared to the competition designs, the high standard of the design, at an international level, produced by Allan and his associates is testament to the very high degree of both design excellence and technical knowledge maintained by the Department. The success of PWD staff in the initial competition is further testament to this standard.

The design continued the high standard of civil engineering works undertaken by the NSW Department of Public Works since its formation in 1857; engineering works that were both a source of pride to Australians and innovative at an international level. Allan, a cadet of the PWD, was one of three prominent Australian born engineers involved with the design of the bridge, including John Bradfield and Gordon Edgell.

Despite the removal of the eastern approach the essence of the original design remains evident as does the original fabric of one of the approaches, both side spans and the central swing span. With the exception of the Arc Lighting the technological advances remain intact, particularly the original GE tram motors. The removal of the eastern approach has not impacted on the ability of the Pyrmont Bridge to be a fine example of its type, one of the world's first electrically operated swing span bridge.

Considerable research potential exists into the pioneering use of structural steel by the Department of Public Works in NSW and the prefabrication, in Belgium, of the steel and wrought iron of the swing span and the construction of the bridge involved the use of divers in sinking the permanent wrought iron caisson and pouring concrete under water.

For its time the steelwork to the swing span is potentially one of the largest steel spans in Australia. The design, and surviving structure, provides evidence of the transfer from the use of wrought and cast iron to steel, contains surviving examples of each: the wrought iron caisson; the ornate cast iron work to the control cabinet and the steelwork that supports the decking of the swing span. The use of steel indicates the extent to which the NSW Department of Public Works was keeping up with international developments in USA, England and Europe.

Demonstrating the widespread use of Australian hardwoods in building and bridge construction in NSW prior to World War 1, reflecting a deliberate decision by the Public Works Department to use locally produced materials in bridge construction, implementing the bridge testing methods developed by Professor Warren.

An example of the careful application of the Burra Charter principles to an Engineering structure, conserving the surviving original fabric, including the associated machinery, whilst also maintaining the use.

5.1.2. Darling Harbour Woodward Water Feature

The Darling Harbour Woodward Water Feature is of state significance as it demonstrates aesthetic significance at the state level as a spectacular fountain and an outstanding work of modern movement design in water and stone located in an uninterrupted plane of the west Darling Harbour promenade. Completed in 1988, the fountain design was acknowledged as one of exemplary architectural design for its period, winning several awards including the Walter Burley Griffin Award of the Royal Australian Institute of Architects and the NSW Chapter Civic Design Award in 1991 and the Australian Institute of Landscape Architects National Civic Design Award in 1992.

The Darling Harbour water feature is of state significance as it has special associations with its designer Robert Raymond Woodward AM (1923-2010), a notable architect and a World War II Veteran whose career as a fountain designer was of national and international prominence. Together with other iconic buildings at the Darling Harbour it is associated with the historically significant 1988 NSW Bicentennial celebrations.⁴

5.1.3. South Steyne (S.S.)

The South Steyne was the best known of the Manly ferry line which played a major role in the suburbanisation of Sydney and in the development of its recreational patterns. It is a very high quality example of naval architecture and an outstanding example of the plating (having no flat plates) for which Henry Robb of Leith was famous. It is the finest example of the most significant Australian contribution to sea navigation technology - the development of high speed, double-ended operation in deep sea conditions. It has an intact operating example of propulsion by steam reciprocating engine. It epitomised the Manly ferry as part of Sydney's image and its popular urban culture; and remains, like the Harbour Bridge, a powerful piece of Sydney imagery. It is held in high esteem by the local community and remains in the collective memory of the nation. It provides a working example of the propulsion and auxiliary functions of marine steam power.⁵

⁴ NSW Heritage SHI listing: <https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5061721>

⁵ NSW Heritage SHI listing: <https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5045049>

6. Preliminary Archaeological Assessment

6. Preliminary Archaeological Assessment

The following section discusses the study area's potential to contain Aboriginal and non-Aboriginal (European) archaeological resources. It has been drawn directly from the following reports prepared by Curio:

- Curio Projects, 2016. *Redevelopment of Harbourside Shopping Centre Aboriginal Heritage Due Diligence Assessment*. Report for Mirvac
- Curio Projects, 2016. *Harbourside Shopping Centre, Darling Harbour Historical Archaeological Assessment*. Report for Mirvac
- Curio Projects, 2021. *Harbourside, Darling Harbour: Archaeological Research Design*. Report for Mirvac
- Curio Projects, 2022. *Aboriginal Cultural Heritage Assessment Report (ACHAR)*. Report for Mirvac.

The potential for archaeological remains to survive in a landscape is significantly affected by past, ground-disturbing activities. Therefore, this assessment considers known development in the study area, landforms, environmental factors and previous investigations in and around the site.

6.1. Aboriginal Archaeology

The site, and its surrounding inner-city suburbs have an important and strong legacy of Aboriginal connections to the region. An extensive search of the Aboriginal Heritage Information Management System (AHIMS) database was undertaken on 21 March 2022 centered on the study area with a buffer of 1km and returned seven results. No registered sites were located directly within the current boundaries of the study area. The extensive AHIMS search is attached within the draft ACHAR in Appendix D.

This section of report contains a summary of the potential for intact Aboriginal archaeological deposits to be present at the Harbourside site, with specific reference to the current proposed development.

6.1.1. Assessment of AHIMS Search

The general distribution of sites from the AHIMS search around the study area is simply a representation of the archaeological work that has been undertaken across the Sydney CBD and surround, it also appears, visually, to be relatively evenly dispersed across the general Sydney CBD area.

This is, therefore, also suggestive of the actual nature of the distribution of Aboriginal archaeological sites in the area which is that Aboriginal archaeological sites may exist across the entire CBD area, wherever conditions allow them to survive (i.e. incomplete levels of ground disturbance, along the edge of the original sandstone outcrops and geology, along water sources, and where natural soil profiles are still present).

Only one site has previously been registered on the Pyrmont Peninsula/on the western side of Darling Harbour (#45-6-2960). However, this is likely a reflection of the lack of previous Aboriginal archaeological work undertaken in this area as opposed to a direct reflection of the actual Aboriginal archaeological potential of the peninsula over other surrounding areas.

6.1.2. Summary of Aboriginal Archaeological and Environmental Context

The study area is located on the south-eastern edge of the Pyrmont peninsula, directly along the western shoreline of Darling Harbour. Named by European settlers as Cockle Bay, while the area was not developed extensively until the late 1800s, early historical accounts provide evidence that

extensive use was made of the shell middens that lined the bay to provide mortar in lime kilns for civic development programs for the early colony.

While the Pymont peninsula would definitely have been a focus for Aboriginal occupation and habitation prior to 1788, the study area itself is located across the boundary between the original shoreline and reclaimed land (part of extensive land reclamation processes that were undertaken across the Sydney estuary in the 1800s to enable development of harbours, wharfage and associated industries). In addition, the study area (both the area that may have been across the original shoreline of the bay, as well as across the areas of reclaimed land), was subject to extensive industrial use from the 1850s following the construction of rail lines into Pymont, and the development of the Darling Harbour Railway Goods Yard, rail tracks and neighbouring industrial services and yards.

A nearby Aboriginal archaeological site (Darling Quarter) excavated in 2011 recovered an Aboriginal shell midden site with Aboriginal stone artefacts. However, while the Darling Quarter site was located in a similar landscape positioning to the current study area (i.e. along the original shoreline of Cockle Bay), the Darling Quarter site lay closer to the head of the cove, along the eastern side of the bay, and immediately adjacent to a documented, relatively undisturbed area of the Gynea soil profile. Conversely, the current study area is located along the western shoreline of Darling Harbour, adjacent to the sandstone peninsula of Pymont, and in conjunction with mapped disturbed soil profiles (associated with land reclamation).

Therefore, while the study area is likely located right at the edge of what once would have been the original shoreline, land reclamation processes would have removed, covered or disturbed all Aboriginal cultural deposits, were they once present at this location. In addition, it is likely that the majority of the study area, overlapping the mapped area of original shoreline of Darling Harbour, would have been a swamp and estuarine environment that would not have been suitable for human occupation.

Aboriginal archaeological deposits, should they be present within the vicinity of the study area, would most likely be either stone artefact sites, shell middens, or a combination of both. In order for these archaeological deposits to be present in situ, they would require the retention of natural soil profiles in the area that would be extant from 1788. The historical development at the study area including the large area of land reclamation within the study area itself, as well as the use of the area and surrounds for railway lines and the Darling Harbour Railway Goods Yards, indicates that there is low to nil potential for natural intact soil profiles to be retained in this area. The soil landscape mapping of the region is consistent with this assessment, as the study area is mapped to lie within 'Disturbed Terrain'. It should be noted that the study area boundary is immediately adjacent to a mapped area of the 'Deep Creek' soil profile, however it is also highly unlikely that any natural soil profiles are retained in this location due to the nature of the industrial development along the western shoreline of Darling Harbour from the 1850s to the 1970s.

Therefore, assessment of the environmental and archaeological context of the study area has determined that there is **low to no potential** for in situ Aboriginal archaeological deposits to be present within the Harbourside study area.

6.1.3. Potential for Aboriginal Archaeological Deposits—Conclusions

Based on the above assessment of environmental and archaeological context, as well as in consideration of the historical background for the site, previous land use and disturbance, and in the current statutory context (SSD development application), the following conclusions are made with respect to potential Aboriginal archaeology within the curtilage of the Harbourside redevelopment:

- The study area does not contain any previously registered sites.
- The study area is located predominantly on reclaimed land along the western shoreline of Darling Harbour/Cockle Bay.
- The study area and surrounds were historically an integral part of the industrial use of Darling Harbour from the 1850s through to the 1970s, and were part of/adjacent to the Darling Harbour Railway Goods Yard and Railway tracks.
- The study area is located wholly across the soil profile of 'Disturbed Terrain', associated with the extensive land reclamation of the area in the 1870s and 1910s, and no natural soil profiles are likely to have been retained in this area.
- There is low to no potential for in situ Aboriginal archaeological deposits to be present within the study area.
- There is a low potential for Aboriginal archaeological deposits such as stone artefacts or shell middens to be located at the study area in a disturbed context.

6.2. Non-Aboriginal Archaeology

The following assessment has been drawn from the HAA and ARD and Excavation Methodology prepared for the project in 2016 and 2021, respectively. These are included as attachments in Appendix B and C of this report.

6.2.1. Previous Assessment of Archaeological Potential

The 2016 Historical Archaeological Assessment (attached in Appendix B) for 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. 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. 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.

6.2.2. 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 are presented below.

Darling Harbour/Barangaroo

The former wharves and docks area of the eastern 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.⁶

In 2010 Austral Archaeology was commissioned to complete an assessment of the Barangaroo north project area.⁷ The 2013 assessment identified early wharf structures and stores as of State

⁶ Casey and Lowe, 2012, Archaeological Excavation Barangaroo South, Preliminary Results, report to Lend Lease.

⁷ Austral Archaeology, 2010, Barangaroo, Archaeological Assessment and Management Plan. Unpublished report for Barangaroo Delivery Authority; 2013, Integration concept Barangaroo, NSW: Historical archaeological assessment, statement of heritage impact & research design, final report for Boulderstone

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.⁸The 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.

Honeysuckle Point, Newcastle

In 2006 the AMAC Group completed an Assessment and Research Design for the Lee Wharf area on Honeysuckle Point, Newcastle.⁹ 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.

In addition, the substantial remains of the vessel the Leo, which was buried in the land reclamation.¹⁰ International studies have highlighted the potential presence of remains of maritime vessels reused as structures in port and harbour facilities.¹¹

⁸ Casey and Lowe, 2016, Sydney Entertainment Convention, Exhibition and Entertainment Precinct, Non-Indigenous Archaeological Investigation, for Lend Lease.

⁹ 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.

¹⁰ AMAC Group, 2012 Final Archaeological Report, Lee Wharf Project State 3 (a), Honeysuckle Precinct, Newcastle, NSW report to Lee Wharf Developments in 2 Vols -

¹¹ see Ford, B, 2013, "The Reuse of Vessels as Harbor Structures: A Cross-Cultural Comparison" *Journal of Maritime Archaeology*, 8, [2], pp. 197-219.

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.¹² 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.¹³

6.2.3. Geo-technical Information

In March 2021 Douglas Partners completed a geo-technical investigation of the Harbourside site.¹⁴ The work was comprised of the drilling of eight boreholes and the installation of three temporary groundwater monitoring wells (Figure 6.1). This geo-technical work supplemented previous investigations in 2013 (Coffey Geotechnics Pty Ltd) and 1985 (Jeffery & Katauskas Pty Ltd).¹⁵

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 and clay. The natural soils comprise soft clays and loose sands, with some organic clay encountered in BH7.*¹⁶

An overlay of the borehole locations with the basement impact indicates that the relevant 2021 boreholes and deposit sequences are (Figure 6.1 to Figure 6.4):

- 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.¹⁷ This report described the site geology and soils as:

¹² 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 1984.2002, pp. 7-18.

¹³ Scharma, S etc al, 1993, "The Development of Cape Town's Waterfront in the Earlier Nineteenth Century: History and Archaeology of the North Wharf"pp. 98-103; Delgado, J, 1991, "Archaeological investigations of a mid-19th-century shipbreaking yard, San Francisco, California", 25, pp.61-77 and 2009, *Gold Rush Port: The Maritime Archaeology of San Francisco's Waterfront*, University of California Press.

¹⁴ Douglas Partners, 2021, Report on Geotechnical Investigation Harbourside Redevelopment 2 – 10 Darling Drive, Darling Harbour Prepared for Mirvac Projects Pty Ltd.

¹⁵ 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.

¹⁶ Douglas Partners, *op cit*, p. 5.

¹⁷ JBS&G, 2021, Detailed Site Investigation Harbourside Shopping Redevelopment 2-10 Darling Drive Sydney for Mirvac Residential (NSW) Developments Pty Ltd.

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 (OEH 2021). The soil profile consists of four main horizons with various properties as described in Table 6-1 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.¹⁸

Table 6-1. Soil Type Summary (Source: JBS&G 2021, p. 4)

Soil Horizon	Typical depth (m)	Soil Description Summary
1	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).
2	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.
3	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.
4	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.

6.2.4. 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 6.2.2) 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).

¹⁸ Ibid, p. 4-5.

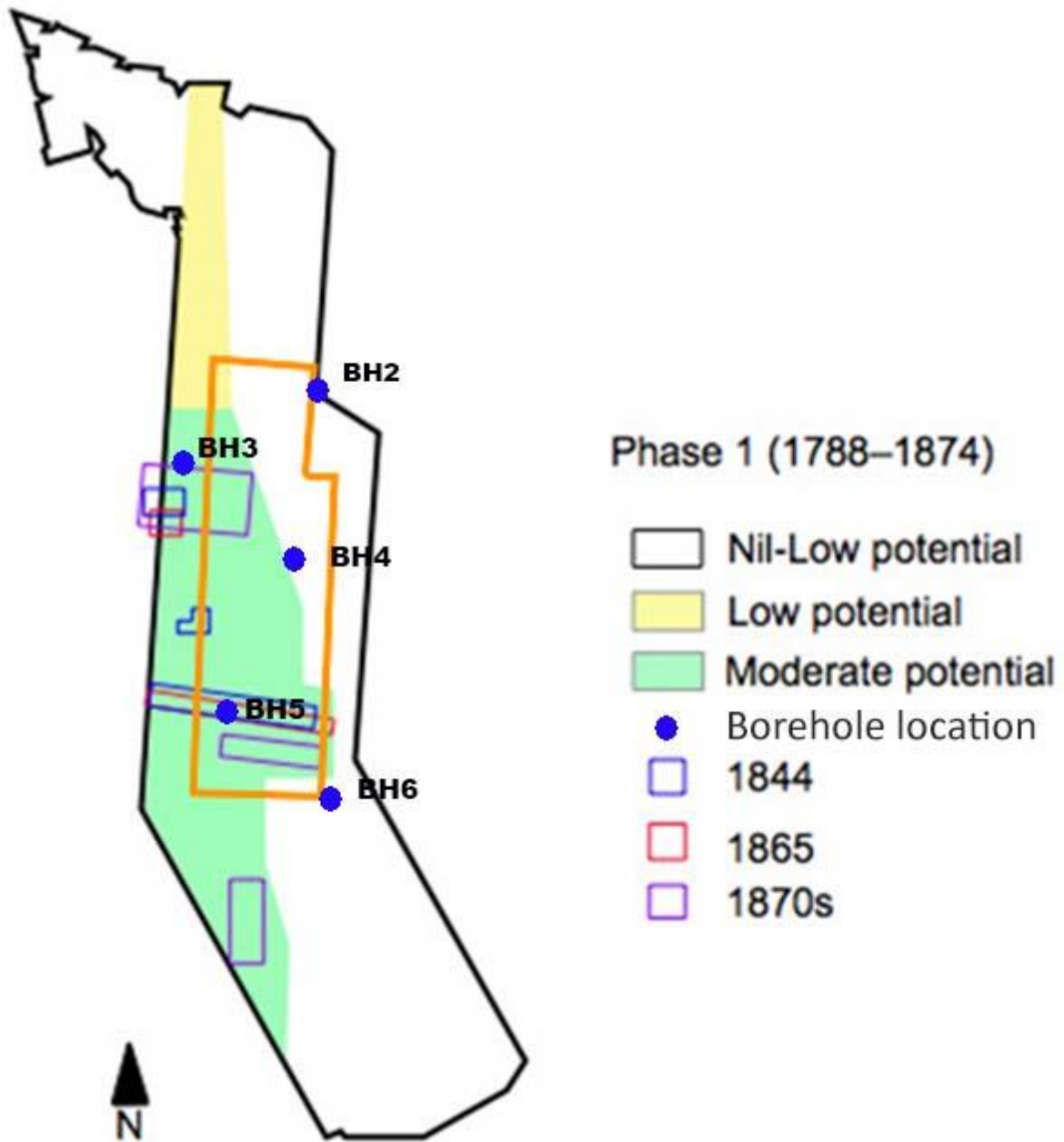


Figure 6.1. Plan of Historical Archaeological Potential related to Phase 1 occupation. The footprint of the proposed basement is indicated in orange and the boreholes adjacent to the basement in blue. (Source: Curio 2016).

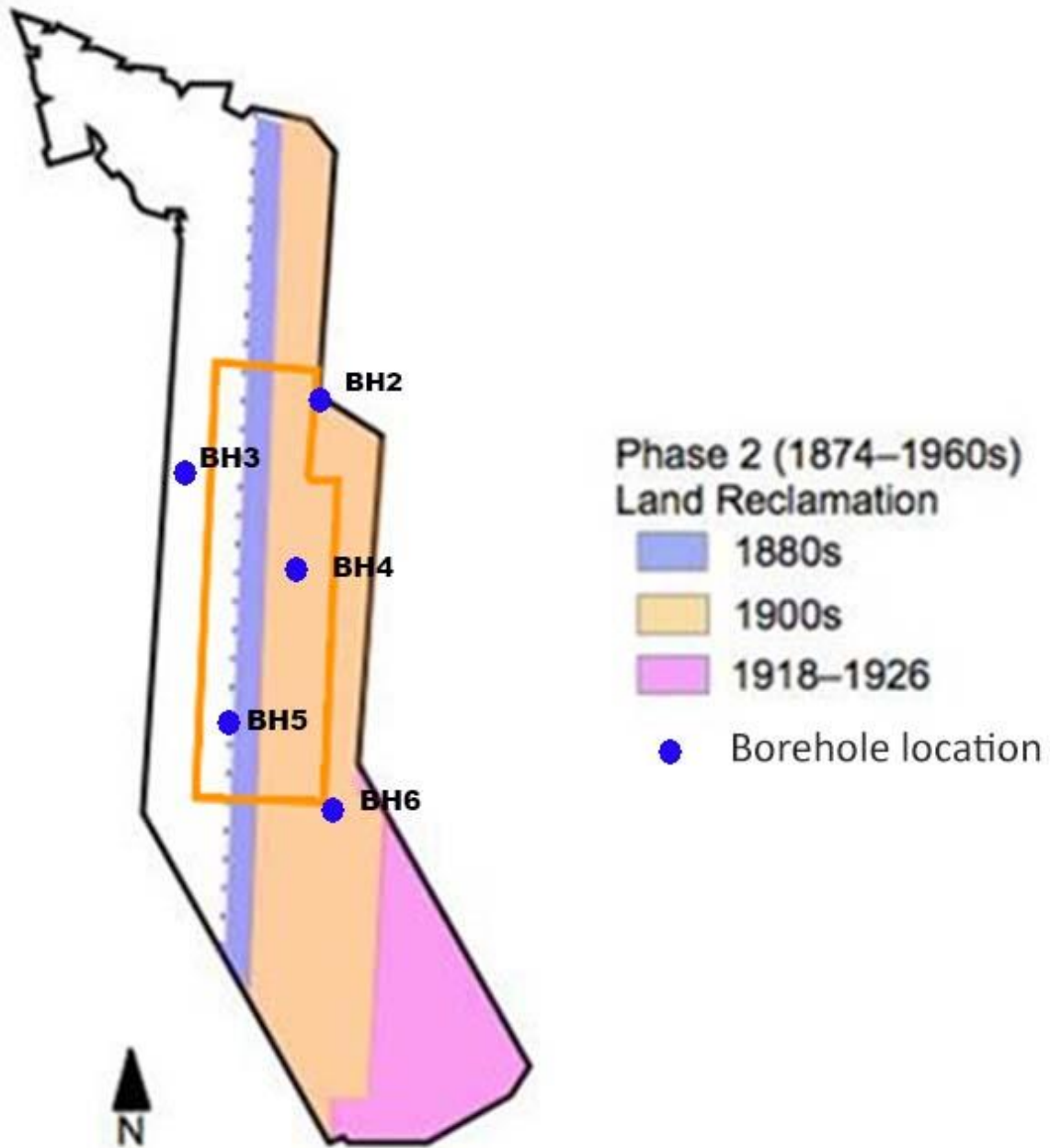


Figure 6.2. Plan of successive reclamation phases. The footprint of the proposed basement is indicated in orange and the boreholes adjacent to the basement in blue. (Source: Curio 2016).

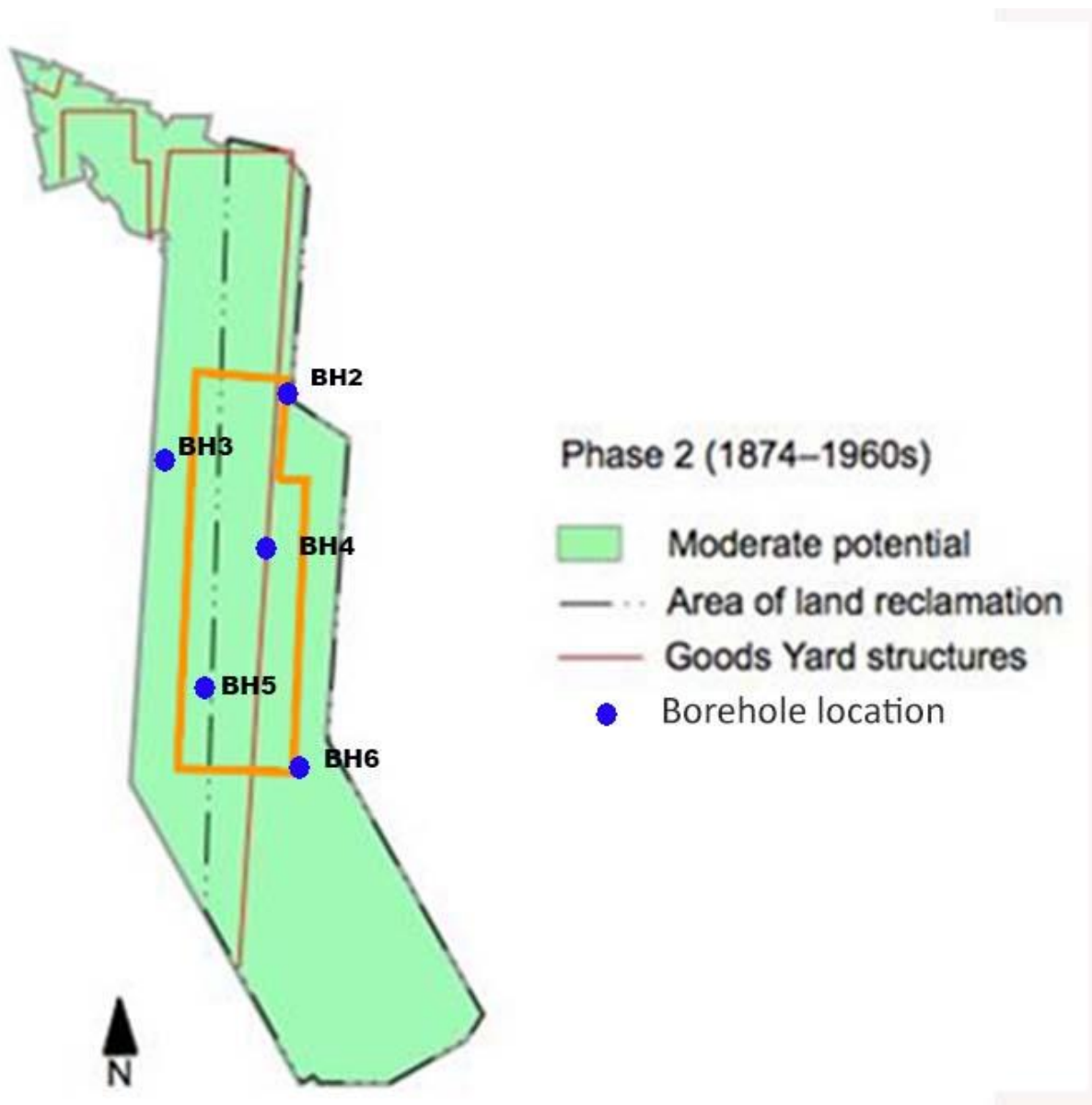


Figure 6.3. Plan of Historical Archaeological Potential related to Phase 2 land reclamation (dotted line) with the remains of the goods yard structures shown in red. The footprint of the proposed basement is indicated in orange and the boreholes adjacent to the basement in blue (Source: Curio 2016).

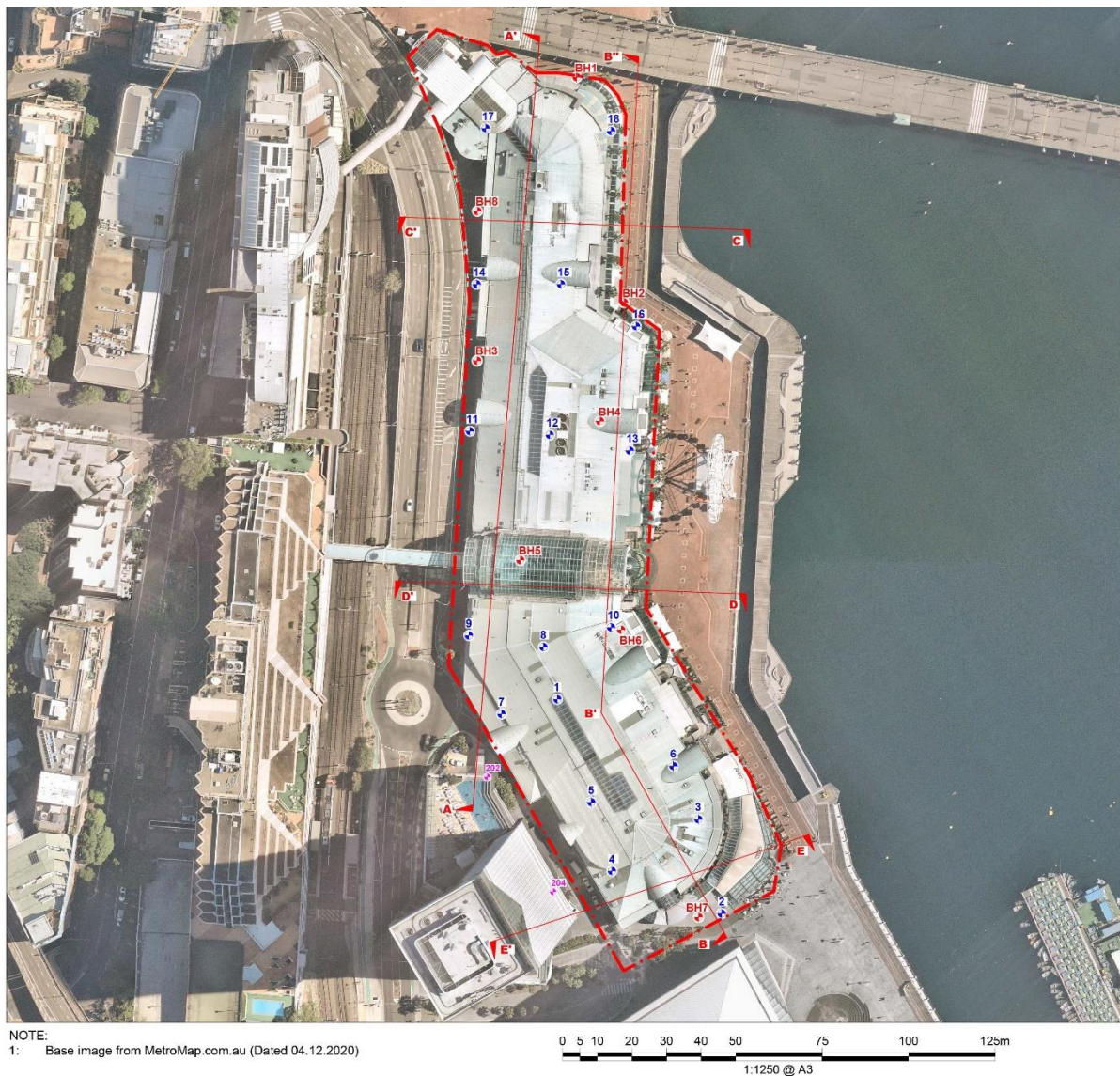


Figure 6.4. Geotechnical investigations Harbourside. The red borehole numbers correspond to the current work, the pink to the 2013 and the blue to the 1985 boreholes respectively. (Source: Douglas Partners)

6.2.5. 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.

7. Assessment of Heritage Impact

7. Heritage Impact Assessment

The following section assesses potential impacts to heritage items and potential Aboriginal and non-Aboriginal archaeological resources that may occur as a result of the project.

7.1. Proposed Works

Stage 2, SSDA 1 will involve the following works:

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

These are illustrated in Appendix F. For more information, refer to the EIS prepared by Ethos Urban to which this report is attached.

7.2. Physical impacts

The proposed works are limited to demolition of existing ground floor slab and bulk excavation works. Therefore, they will not directly impact any significant heritage fabric or items either within, nor close to, the study area.

However, regardless of the lack of direct impact posed by these SSDA works, Mirvac have commissioned the preparation of a Construction Noise and Vibration Management Plan (Acoustic Logic 2022¹⁹, attached to this report as Appendix G) so that any vibration associated with the SSDA 1 construction program is monitored and managed (if required) to avoid potential for vibrations to have an indirect physical impact to the State significant Pyrmont Bridge, historic piers and associated maritime features, including the water manifold.

The Vibration Management Plan includes management recommendations to reduce and monitor vibrations associated with the construction works and develops recommendations for the ongoing monitoring and proactive management of any risk of indirect impacts to heritage items during the construction program. The Vibration Management Plan specifically identifies Pyrmont Bridge as one of the “noise sensitive receivers” (Receiver 3 in the report) requiring consideration and management of any potential for indirect impacts from vibration during works.

For full suite of recommendations, reference should be made to the Acoustic Logic report (Appendix G), however the following pertinent recommendations relevant to management of potential indirect impact to heritage fabric are quoted as:

8.1. Site Specific Recommendations

Excavation and Piling

- *Wherever feasible, hydraulic hammering should be minimised in favour for the use of excavators with a bucket*
- *...*
- *When selecting construction equipment to be used on the project, the noise levels of plant and equipment should be considered, whereby equipment selected has an equivalent or lower sound power level than the predictive sound power levels of equipment maintained within this report.*

¹⁹ Acoustic Logic 2022, *Harbourside. Excavation Phase- Construction Noise and Vibration Management Plan*, prepared for Mirvac Office Developments Pty Ltd, Rev 1. 4 March 2022

- *A conscientious effort should be made to avoid works near the nearest sensitive receivers wherever feasible. Compounding high generating activities simultaneously near receivers should be avoided where possible.*²⁰

With respect to monitoring of vibration during works, the Noise & Vibration Management Plan recommends that:

Vibration monitoring will be required during the excavation stages of the development to ensure that vibration levels to surrounding receivers are managed to surrounding receivers

*AL recommends that vibration monitoring is undertaken at all sensitive receivers throughout the construction of the project. Any vibration monitor is to have SMS notification capability to enable contractor to be immediately informed when vibration limits are reached.*²¹

Thus, it is considered that potential for vibrations to have indirect impact to heritage fabric will be avoided and/or readily managed in accordance with the strategies and recommendations of the Acoustic Logic Vibration Management Report throughout the Stage 1 SSDA works construction program of works.

7.3. Visual impacts

The proposed works are limited to internal demolition and bulk excavation only. They will not involve modifications to exterior components of the study area. Consequently, they will have no visual impact to nearby heritage listed items (*Pyrmont Bridge, Darling Harbour Water Feature, South Steyne (S.S.)* and the *Darling Harbour Woodward Water Feature*) or the existing character of the area.

The proposed works will have a neutral visual impact.

7.4. Archaeological Impacts

7.4.1. Aboriginal Archaeology

Curio completed an Aboriginal Due Diligence Assessment for the Harbourside study area in 2016. The report identified nil to low Aboriginal archaeological potential within the study area. Based on the 2016 assessment, it is therefore considered unlikely that the proposed excavation works will encounter and/or impact Aboriginal objects/archaeological deposits.

However, correspondence with Heritage Council, referring to 'Response to Submissions for Harbourside Shopping Centre Redevelopment SSD 7874' advised that:

While the proposed development appears to have low potential to impact on Aboriginal cultural heritage, we provide the following recommendations:

We note the mitigation measures in Table 12 of the RTS states the benefit of undertaking historical archaeological test excavation prior to the finalisation of the Stage 2 DA in order to inform potential design outcomes. We recommend that any proposed historical testing include consideration of Aboriginal cultural heritage values to address whether the project area does have potential for Aboriginal objects.

In response, Curio is currently preparing an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the project. ACHARs are reports that document the process of investigation, consultation, and

²⁰ Acoustic Logic 2022: p. 22

²¹ Ibid: p. 26

assessment with regards to Aboriginal cultural heritage and Aboriginal archaeology specific to the proposed development works of a study area. This includes background research and assessment of evidence and information about material traces of Aboriginal land use in the study area and surrounds, significance assessment of potential Aboriginal sites, places, landscapes and/or other values, impact assessment and management recommendations, as well as Aboriginal Community Consultation.

At this time, the draft assessment included within the 2022 draft ACHAR report (attached as Appendix D) has not identified any further archaeological potential in relation to the 2016 Due Diligence Report—that is to say, the preliminary conclusions within the draft ACHAR confirm that there is a low to nil potential for intact natural soil profiles to be present within the study area.

In the unlikely event that Aboriginal objects are encountered during the non-Aboriginal archaeological testing program, work would cease in the immediate vicinity of the find and as under s89A of the NPW Act, reported to Heritage NSW. Management of unexpected Aboriginal objects encountered during the test excavation program has been addressed in the 2021 ARD prepared by Curio. The management of any potential Aboriginal objects, including options ranging from in situ retention, interpretation or excavation will be discussed and agreed with the RAPs for the project and will be included in the updated archaeological impact statement proposed to be prepared and submitted, once test excavation works are completed.

7.4.2. Aboriginal Community Consultation

Aboriginal community consultation in accordance with statutory guidelines *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010) was initiated for the Harbourside project in February 2022 (as required by project SEARs). Eight project RAPs were identified for the project and were consulted throughout the process of preparing the ACHAR (see ACHAR in Appendix D for full details).

As part of the ACHAR assessment process, it was determined that the Harbourside study area held nil-low potential for Aboriginal archaeological material due to the highly disturbed nature of the area and its surrounds through land reclamation processes and extensive occupation and industrial use. The predictive model for the study area stated two zones of archaeological potential could be divided:

- Zone 1 – portions of the study area situated along the Disturbed Terrain soil profile and identified reclamation lands. The ACHAR identified that this zone has **low to nil potential** for subsurface Aboriginal cultural material to be present.
- Zone 2 – portions of the study area that are situated along the original shoreline of Darling Harbour. This section is still classified as being within the Disturbed Terrain landscape with land reclamation works, and also borders the Deep Creek soil profile to the southwest. The ACHAR has identified that this zone has **low potential** for subsurface Aboriginal cultural material to be present where pockets of residual natural soils may remain within the historical fill and land reclamation.

As a part of the ACHAR recommendations, it was recommended that an Unexpected Finds Procedure be put in place, stating:

An Unexpected Finds Procedure to be enacted for all works within the Project area. Should Aboriginal objects or natural soil landforms be identified or suspected during works, all works are to cease immediately and the Unexpected Finds Procedure be

followed. This applies to historic archaeological test excavations proposed within the study area.

A historical archaeological test excavation program was held in May and June 2022, and no evidence of Aboriginal archaeological material was uncovered. Whilst evidence of the former shoreline was identified, no evidence of Aboriginal occupation was observed, and it was determined that overall, the site was extremely disturbed from an Aboriginal archaeological perspective. Therefore, there was no need to enact the Unexpected Finds Procedure at this time. No further testing was proposed.

7.5. Non-Aboriginal Archaeology

The 2016 Archaeological Assessment prepared Curio assessed the study area as having:

- **Moderate potential** for archaeological resources associated with the Phase 1 occupation and commercial/industrial use of the original intertidal zone, particularly activities that postdate the 1840s. This archaeological evidence is likely to primarily be of **local significance**, depending on its nature, extent and integrity. Whilst there is nil-low potential for pre-1844 archaeological evidence to exist on site - if present, archaeological evidence of the early (pre-1844) use of the site's foreshore zone may be of State significance.
- **High potential** for physical evidence of **land reclamation** undertaken to expand the Goods Yard during Phase 2 to survive at the site, including reclamation deposits and sea walls. Archaeological evidence of these features is likely to be of **local significance**.
- **Moderate potential** for archaeological remains of the Goods Yard to survive. This physical evidence is likely to be limited to some structural remains including foundations of sheds and other structures, and footings of other infrastructural elements. This evidence would be **unlikely to meet the threshold of local significance**, and would be unlikely to be considered relics.

In response to findings of the 2016 HAA, the following Condition of Consent for SSDA 7874 was made:

***Condition 28:** Future Development Application(s) must be informed by Historical, Maritime and Aboriginal Archaeology testing and demonstrate how the results of such testing have been used to minimise impacts to State Significant archaeological resources. The results of the archaeological testing must be documented in a report which outlines opportunities for conservation in situ as a preference, development and interpretation.*

In order to address Condition 28, an Archaeological Research Design and Excavation Methodology for test excavations (Appendix C) to support a s140 excavation permit application was lodged with Heritage NSW, DPC in February 2022 (Appendix A).

The archaeological test excavations were undertaken in May and June 2022. Six test trenches of a planned eight, (shown in Figure 7.1) were excavated and areas for further archaeological excavation were identified within the basement footprint. The remaining two trenches were not excavated due to site safety conditions. Several trenches exposed evidence of the 1880s reclamations in this area of Darling Harbour. Other trenches identified former shoreline, remains of the Atlas Engineering Works and prior historical occupation of the foreshore. Remains of the boat slip and jetty associated with Newstead House were not exposed as the trenches planned for these areas could not proceed. The areas noted above would be removed during bulk excavation of the area.

The excavation report (appended to this report as Appendix H) concluded that none of the identified archaeological remains met the threshold for State Significance, but they were of Local Significance.

On that basis the report recommended an Addendum to the existing Archaeological Research Design and Excavation Methodology be completed to undertake excavations and archaeological recording in conjunction with the program of bulk excavation on the site. No further testing was proposed.

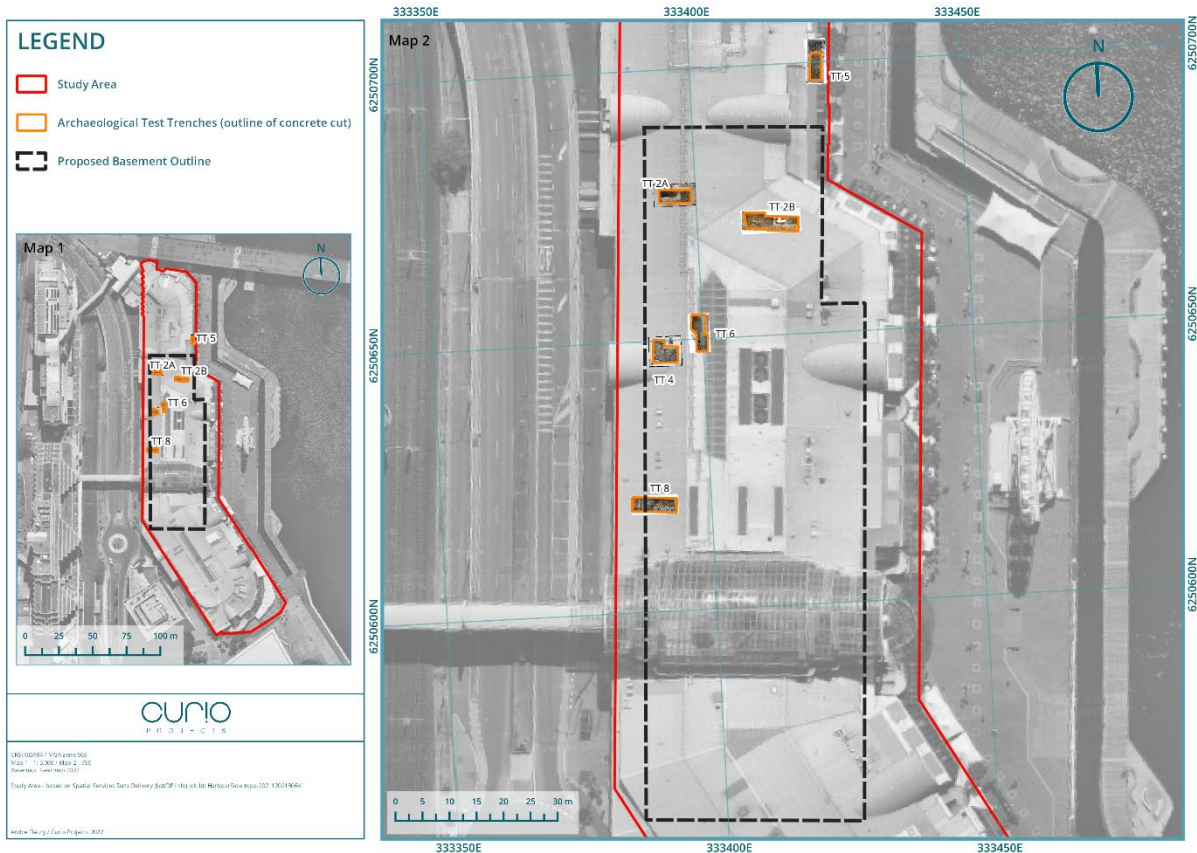


Figure 7.1: Location of test trenches over footprint of existing Harbourside complex and proposed basement excavation (Source: Curio 2022- Test Excavation Report)

7.5.1. Maritime Archaeology

The proposed scope of works will involve land-based physical impacts (i.e. Historical Archaeology and Aboriginal Archaeology) only and not extend into Darling Harbour. Therefore, bulk excavation works for the SSDA 1 scope of works only have the potential to impact maritime archaeological resources within what is now reclaimed ground in the study area.

While the SSDA1 scope of works will not impact any potential maritime archaeological resources (should they be present adjacent to the study area within the harbour), maritime archaeologists have been engaged by Mirvac to undertake a condition and dilapidation assessment of the existing maritime structures within/adjacent to the subject site to ensure that key maritime structural elements (i.e. s170 water cooling manifold, harbour piers etc) are assessed for current condition, including archival recording, prior to the commencement of any bulk excavation works on site.

The condition report (undertaken in June 2022 Appendix I) found that the stone sea wall, both above and below water, was in generally good condition with some evidence of mortar loss and repairs. The toe of the wall has been undermined in parts but is generally stable.

The dive survey was not able to survey the external condition of the saltwater conduits as access through later entrances was not possible. The gates and concrete surrounds of the entrances all appear in sound condition, although the uppermost gate from the southern entrance is missing.

The Maritime survey findings will inform the management and/or protection of maritime archaeological resources that may be present, including any additional research questions, features or activities that should be considered for future archaeological works, development impacts and SSDA submissions for the Harbourside project.

The maritime assessment report (Appendix J) concluded that potential historic maritime archaeological remains within the study area include wharves and related material and seawalls, in and under reclamation fill.

Maritime archaeologists have reviewed the results of the test excavation report and will provide input into the any subsequent AIS or ARD and Excavation Methodologies for the project to ensure any potential impacts to archaeological resources are managed and mitigated appropriately.

7.5.2. Summary of heritage impacts

Table 7-1 presents a summary of heritage impacts associated with the SSDA1 impacts (i.e. bulk excavation works) for the project.

Table 7-1. Summary of Heritage Impacts (SSDA 1)

Item/Resource	Physical	Visual	Archaeological
Pyrmont Bridge	No direct impact Any potential for indirect impact managed by Vibration Management Plan during works	No impact	N/A
Darling Harbour Water Feature	No direct impact Any potential for indirect impact managed by Vibration Management Plan during works	No impact	N/A
South Steyne (S.S.)	No direct impact Any potential for indirect impact managed by Vibration Management Plan during works	No impact	N/A
Aboriginal Archaeology	N/A	N/A	Low to nil potential. Impact unlikely.
Non-Aboriginal Archaeology	N/A	N/A	Impacts on potential archaeology 1840s-1880s
Maritime Archaeology	N/A	N/A	Impacts on potential archaeology 1840s-1880s

8. Conclusions and Recommendations

8. Conclusions and Recommendations

This HIS and AIS has made the following conclusions and recommendations for SSDA 1.

8.1. Conclusions

- The study area is located in close proximity to the following State and locally significant heritage items:
 - Pyrmont Bridge
 - Darling Harbour Woodward Water Feature
 - Darling Harbour Water Feature
 - South Steyne (S.S.)
- **Aboriginal Archaeology**
 - There is low to no potential for in situ Aboriginal archaeological deposits to be present within the study area.
 - There is a low to no potential for Aboriginal archaeological deposits such as stone artefacts or shell middens to be located at the study area in a disturbed context, in areas near the original shoreline (declared zone 2).
 - The final ACHAR has been prepared by Curio (Appendix D) and guides the information within this HIS.
 - The Final ACHAR report has not identified any further archaeological potential in relation to the 2016 Due Diligence Report—that is to say, the conclusions within the ACHAR confirm that there is a low to nil potential for intact natural soil profiles to be present within the study area.
- **Non-Aboriginal Archaeology**
 - The test excavations demonstrated that archaeological remains are present on the site related to occupation of the area from the 1840s to the 1880s.
 - These remains have been assessed as of Local Significance.
 - There is potential within the study area for maritime archaeological remains of Local Significance.
- **Heritage Impacts**
 - The proposed works are limited to demolition of existing ground floor slab and bulk excavation works. Therefore, they will have **no direct physical impact** to any significant heritage fabric or items either within, nor close to, the study area.
 - The works proposed under SSDA1 are limited to internal site demolition and bulk excavation only, with no modifications to exterior components of the study area. Consequently, they will have **no visual impact to nearby heritage listed items** or the existing character of the area.
 - The proposed scope of works will involve land-based physical impacts (i.e. Historical Archaeology and Aboriginal Archaeology) only and not extend into Darling Harbour.
 - There is potential for the proposed works to have the following heritage impacts:
 - Indirect vibration impacts to nearby heritage listed items (mitigated by the development and application of the Noise & Vibration Monitoring Report-Acoustic Logic 2022)

- Potential for direct impacts to Non-Aboriginal archaeological resources and to maritime resources within reclamation fills.
- Low likelihood of impacts to Aboriginal archaeological resources—*also to be confirmed during historical archaeological test excavation, as well as finalisation of ACHAR- pending RAP review and comment.*

8.2. Recommendations

- In order to mitigate indirect vibration impacts to nearby heritage items, the proposed works would be guided by the Heritage NSW document *Assessing Vibration: a technical guideline* (2006)
- Mitigation measures and recommendations made in the Noise and Vibration Management Plan (Acoustic Logic 2022) should be adhered through throughout the development process to ensure any potential for indirect impact to heritage fabric can be avoided and/or readily managed throughout the Stage 1 SSDA works construction program of works.
- An addendum to the existing Archaeological Research Design (ARD) should be completed to guide the following proposed archaeological program;
- The ARD addendum should be completed in conjunction with a maritime archaeologist to ensure that any remains associated with maritime activities are properly considered in the proposed archaeological program;
- An open area excavation program should be undertaken on the site of the Atlas engineering works, based on information provided in the ARD addendum above, to further investigate the site and record any significant features and deposits associated with that establishment and the pre-foundry occupation of the rock platform below Newstead House;
- This excavation program can be undertaken in conjunction with the bulk excavation works;
- Further investigation of the area of the boat slip and jetty should be undertaken in conjunction with the bulk excavation works and, if it is present, an archaeological recording program should be undertaken prior to its removal;
- All archaeological works outlined in the ARD addendum should be programmed into the development works to ensure adequate time is available for salvage excavations etc. as required;
- The Interpretation Plan for the site should incorporate significant results from the archaeological program
- In the unlikely event that Aboriginal objects are encountered during the non-Aboriginal archaeological open area excavation program, work would cease in the immediate vicinity of the find and as under s89A of the NPW Act, reported to Heritage NSW. Management of unexpected Aboriginal objects encountered during the test excavation program has been addressed in the 2022 ACHAR prepared by Curio. The management of any potential Aboriginal objects, including options ranging from in situ retention, interpretation or excavation will be discussed and agreed with the RAPs for the project and will be included in the updated archaeological impact statement proposed to be prepared and submitted, once all excavation works are completed.

9. References

9. References

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<https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5061721>

South Steyne (S.S.), 2022, NSW Heritage SHI listing:
<https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5045049>

Appendix A—s140 Excavation Permit Application Lodgement

Section 140 Excavation Permit Application Lodgement Confirmation

From: no-replyheritage@dpc.nsw.gov.au
To: [Oliver Maxwell](#)
Subject: Lodgement confirmation – ID 749: Application for s140 Excavation Permit
Date: Monday, 7 February 2022 9:29:59 AM
Attachments: [1.png](#)



Dear Oliver

Your Application for s140 Excavation Permit has been submitted successfully to Heritage NSW.

Application ID: 749

Item/Site: S140 Excavation Permit – 749

You will receive communication from Heritage NSW via email and you will be required to login to the Heritage Management System (HMS) to view the details. You can track your application in the [Heritage Management System](#) and view requests for additional information.

This is an automated email. Please do not reply. For questions and enquiries, call us at 02 9873 8500 or email heritagemailbox@environment.nsw.gov.au

Regards

Heritage NSW



Appendix B—Historical Archaeological Assessment (2016)

Appendix C—Test Excavation ARD & EM (2021)


Appendix D—Aboriginal Cultural Heritage Assessment Report

Appendix E—Aboriginal Consultation Advertisement

ACHAR Community Consultation Request for Known Stakeholders Advertising

buy search sell
.com.au

**ABORIGINAL COMMUNITY CONSULTATION,
REQUEST FOR KNOWN STAKEHOLDERS.
PROJECT: HARBOURSIDE SHOPPING
CENTRE, DARLING HARBOUR**



On behalf of Mirvac (the proponent)

Curio Projects (heritage consultants) seek registration from local Aboriginal groups and people with respect to a proposed development. The project site is the Harbourside Shopping Centre, Darling Harbour, within the City of Sydney LGA.

The Harbourside Shopping Centre and surrounding portions of the pedestrian bridge links across Darling Drive and obsolete monorail infrastructure is proposed to be demolished for the construction of a new mixed commercial and residential building complex with a basement. This will require excavation works across the site, and the demolition of all the existing features on the site.

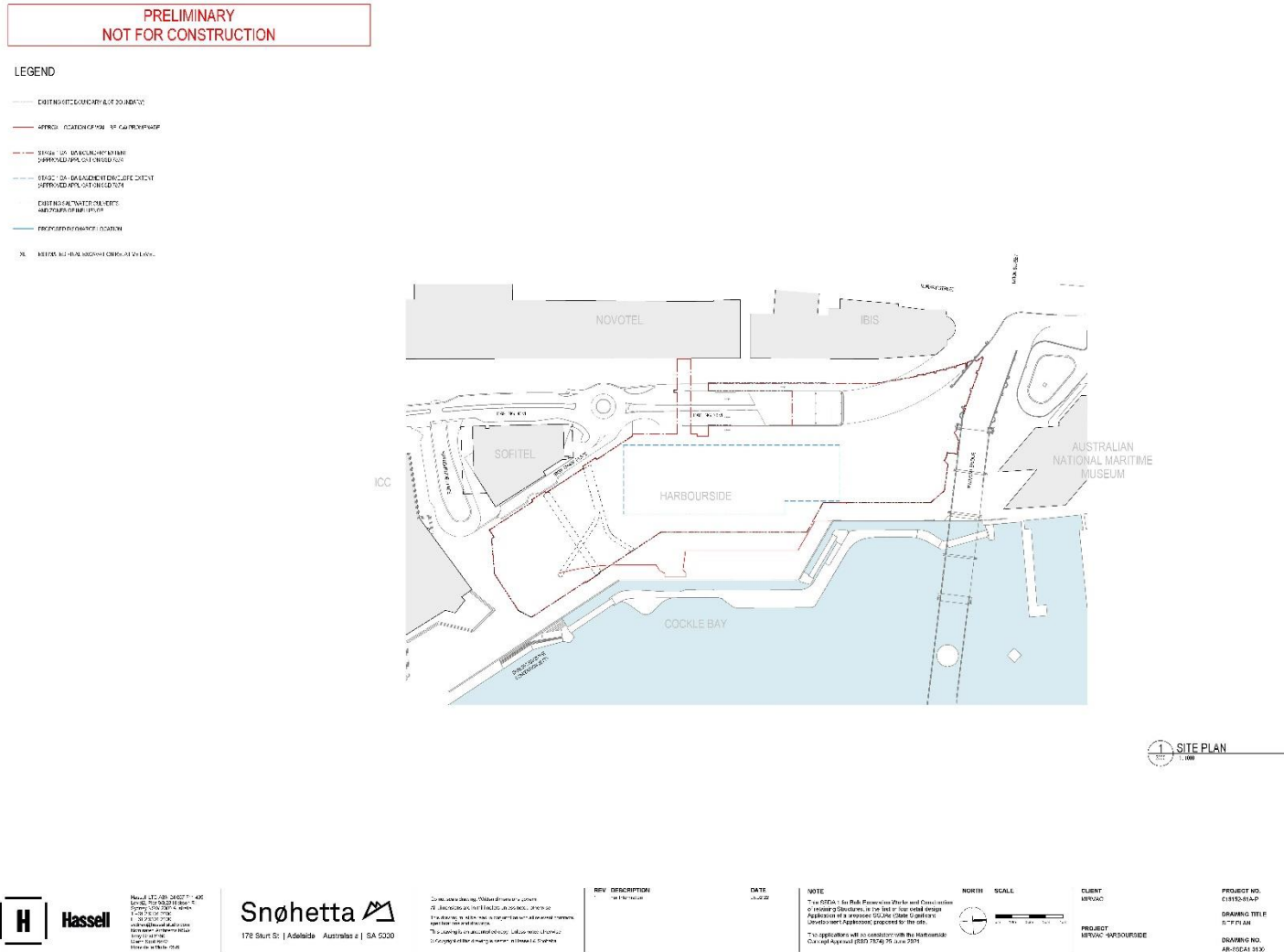
The purpose of community consultation with Aboriginal people is to assist the proposed applicant in the preparation of an application for an Aboriginal Heritage Impact Permit (AHIP) in accordance with Section 90 of the NSW National Parks and Wildlife Act 1974, and to assist the NSW Department of Planning, Industry & Environment in their consideration and determination of the application.

Curio Projects invite local Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal object(s) and/or places in the area to register an Interest in a process of community consultation.

Please forward registrations to Curio Projects no later than 14 March 2022, via phone, email or mail to:

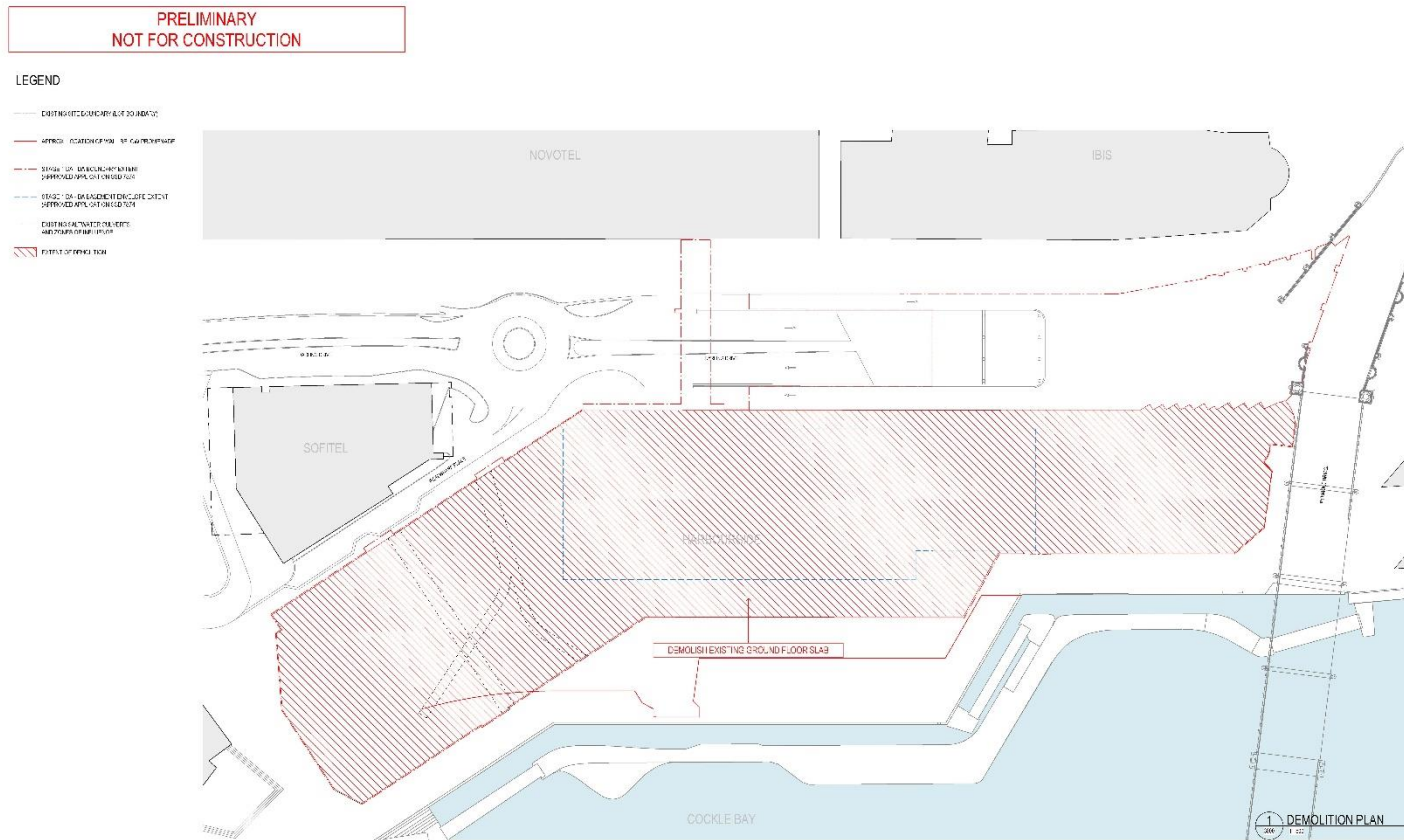
Rebecca Agius, Curio Projects
5 Blackfriars Street, Chippendale NSW 2008
rebecca.agius@curioprojects.com.au
(02) 8014 9800

Appendix F—SSDA1 Proposed Works



<p style="font-size: 8px; margin-top: 5px;"> Hassell Pty Ltd 177 Sturt Street, Adelaide SA 5000 Australia Phone: +61 8 8232 3333 Fax: +61 8 8232 3334 Email: info@hassell.com.au Website: www.hassell.com.au </p>	<p style="font-size: 8px; margin-top: 5px;"> Snøhetta 178 Sturt St Adelaide Australia SA 5000 </p>	<p>© Snøhetta and Hassell Pty Ltd. All rights reserved.</p> <p>This drawing is the property of Snøhetta and Hassell Pty Ltd. It is not to be used, copied, or reproduced in any form without the prior written consent of Snøhetta and Hassell Pty Ltd.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">REV</th> <th style="text-align: left;">DESCRIPTION</th> <th style="text-align: left;">DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REV	DESCRIPTION	DATE				<p>NOTE</p> <p>This SSDA is for the proposed Stage 2 Excavation/Retainment Wall/Underpass/Underpass. It is not to be used for any other purpose without the prior written consent of Snøhetta and Hassell Pty Ltd.</p> <p>This drawing is the property of Snøhetta and Hassell Pty Ltd. It is not to be used, copied, or reproduced in any form without the prior written consent of Snøhetta and Hassell Pty Ltd.</p>	<p>NORTH SCALE</p>	<p>CLIENT MTRAC</p> <p>PROJECT MTRAC-HARBOURSIDE</p>	<p>PROJECT NO. MTRAC-SSDA1</p> <p>SCALE @ A1 As Shown</p> <p>DRAWING TITLE SSDA1 PLAN</p> <p>DRAWING NO. AR-SSDA1-01X</p>
REV	DESCRIPTION	DATE											

Figure 0.2. SSDA 1 site plan. Source: Ethos Urban.



Hassell
 175 Sturt Street, Adelaide
 South Australia 5000
 Australia
 Phone: +61 8 8232 3333
 Fax: +61 8 8232 3333
 Email: info@hassell.com.au
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Consultation and Stakeholder Engagement
 The information contained in this document is confidential and intended for the use of the client only. It is not to be distributed to any other party without the prior written consent of the client. The client is responsible for ensuring that the information contained in this document is accurate and up-to-date.

REV DESCRIPTION

DATE

NOTE

This SSDA1 is the Public Assessment of the level of demolition of the existing building, in the form of a demolition permit application. It is not a demolition permit. The demolition permit application process is the responsibility of the client. The client is responsible for ensuring that the information contained in this document is accurate and up-to-date.

NORTH SCALE



CLIENT

MIRVAC - HARBOURSIDE

PROJECT NO.

AR-15000

SCALE @ A1

As Shown

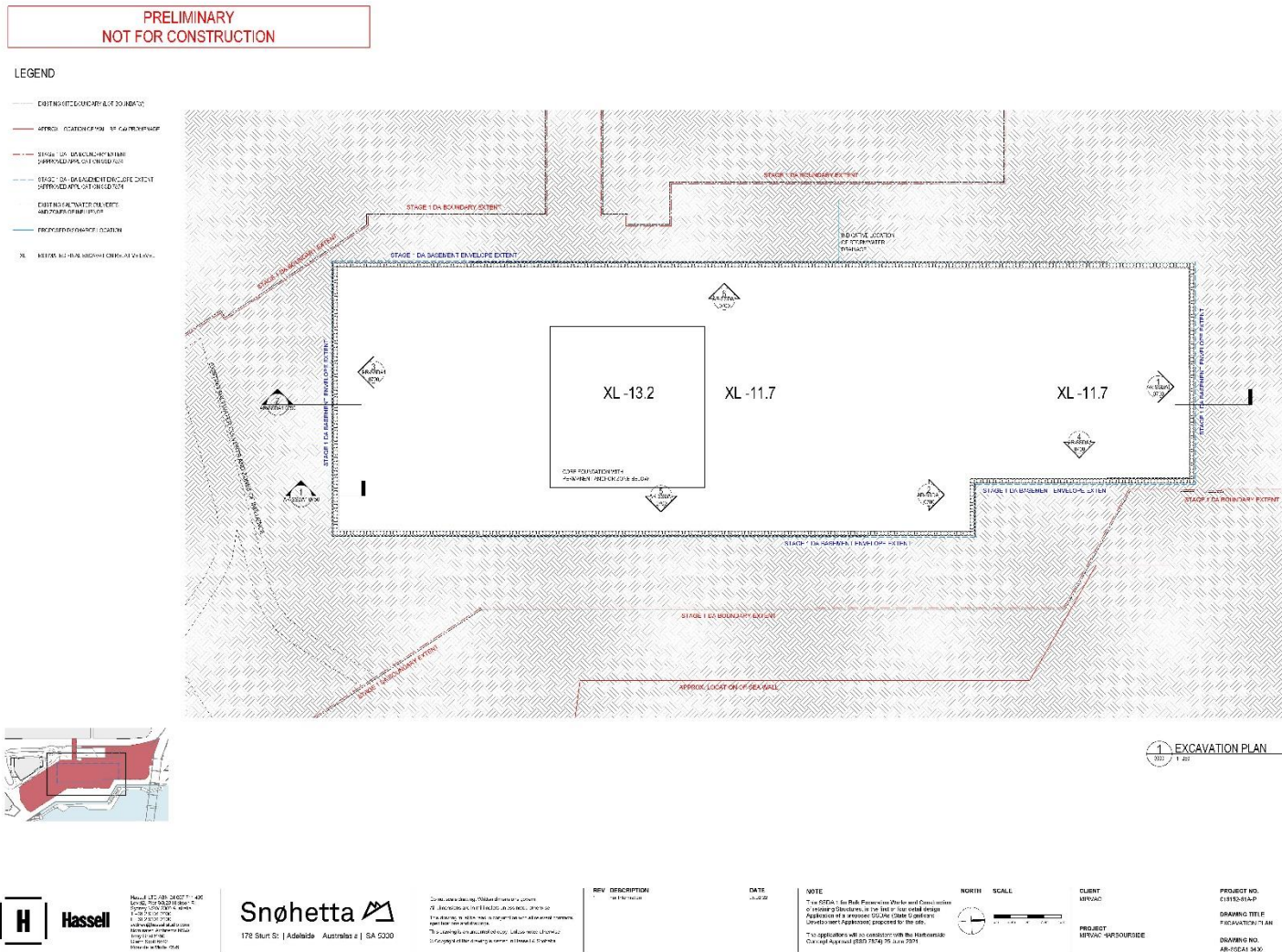
DRAWING TITLE

DEMOLITION PLAN

DRAWING NO.

AR-15000

Figure 0.4. SSDA 1 Demolition Plan. Source: Ethos Urban.



<p>Hassell</p> <p><small>Level 37, 100, 240, 277, 400 Crown Street, Sydney, NSW 2000 T +61 2 9230 9700 www.hassell.com.au</small></p>	<p>Snøhetta</p> <p><small>178 Skutt St Adelaide Australia SA 5000</small></p>	<p><small>© 2022 Snøhetta, Hassell & Partners All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of Snøhetta, Hassell & Partners.</small></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">REV</th> <th style="text-align: left;">DESCRIPTION</th> <th style="text-align: left;">DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REV	DESCRIPTION	DATE				<p>NOTE</p> <p><small>This project is the result of a collaborative effort between Snøhetta, Hassell & Partners, and the client. All design and construction details are the responsibility of the client. The client is responsible for obtaining all necessary permits and approvals for the project.</small></p>	<p>NORTH </p> <p>SCALE </p>	<p>CLIENT MTRAC - HARBOURSIDE</p> <p>PROJECT MTRAC - HARBOURSIDE</p>	<p>PROJECT NO. CHS-2022-01</p> <p>SCALE A1 (1:200)</p> <p>DRAWING TITLE EXCAVATION PLAN</p> <p>DRAWING NO. AR-FSEA1-14X</p>
REV	DESCRIPTION	DATE											

Figure 0.5. SSDA 1 Excavation Plan. Source: Ethos Urban.

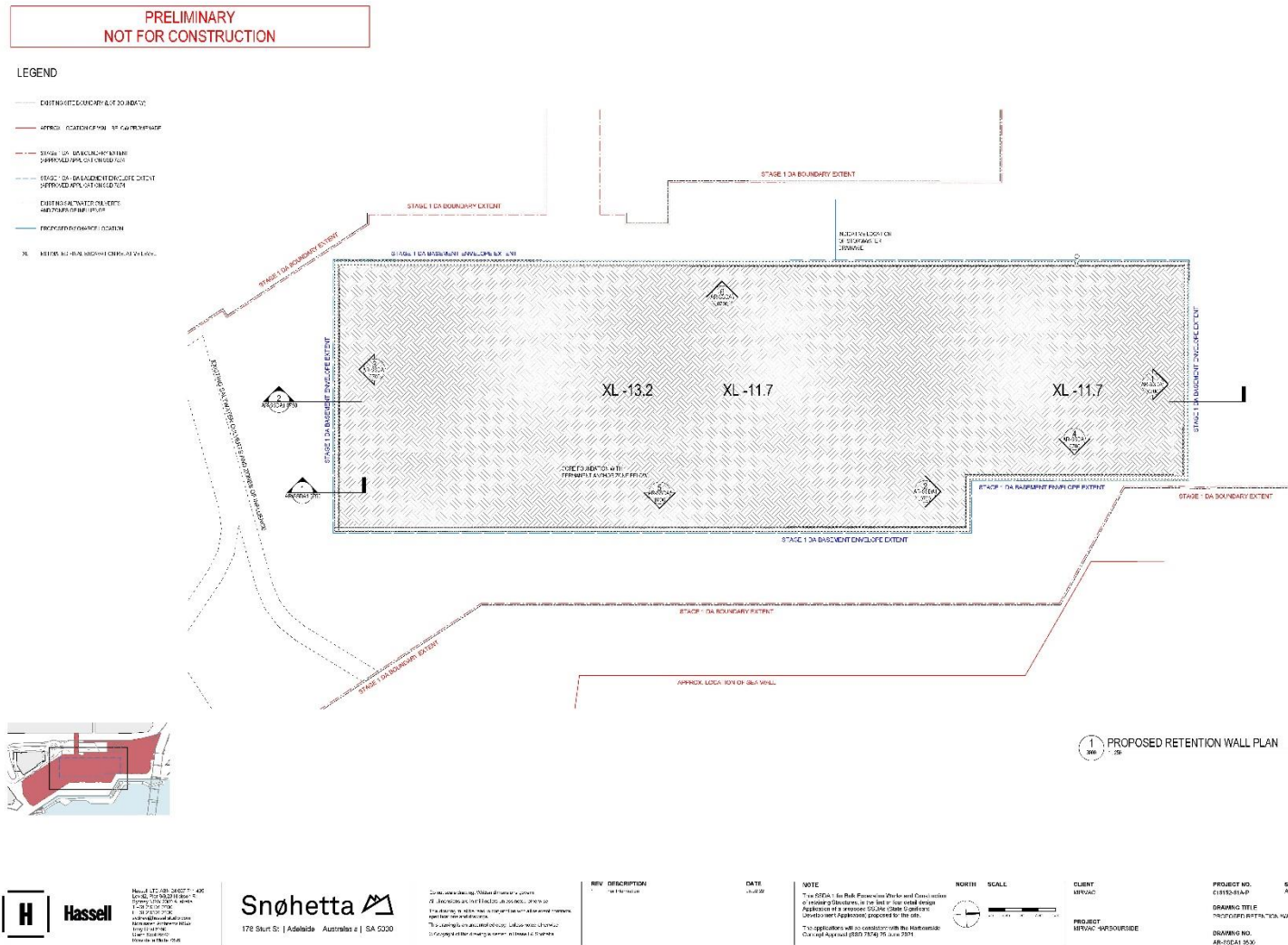
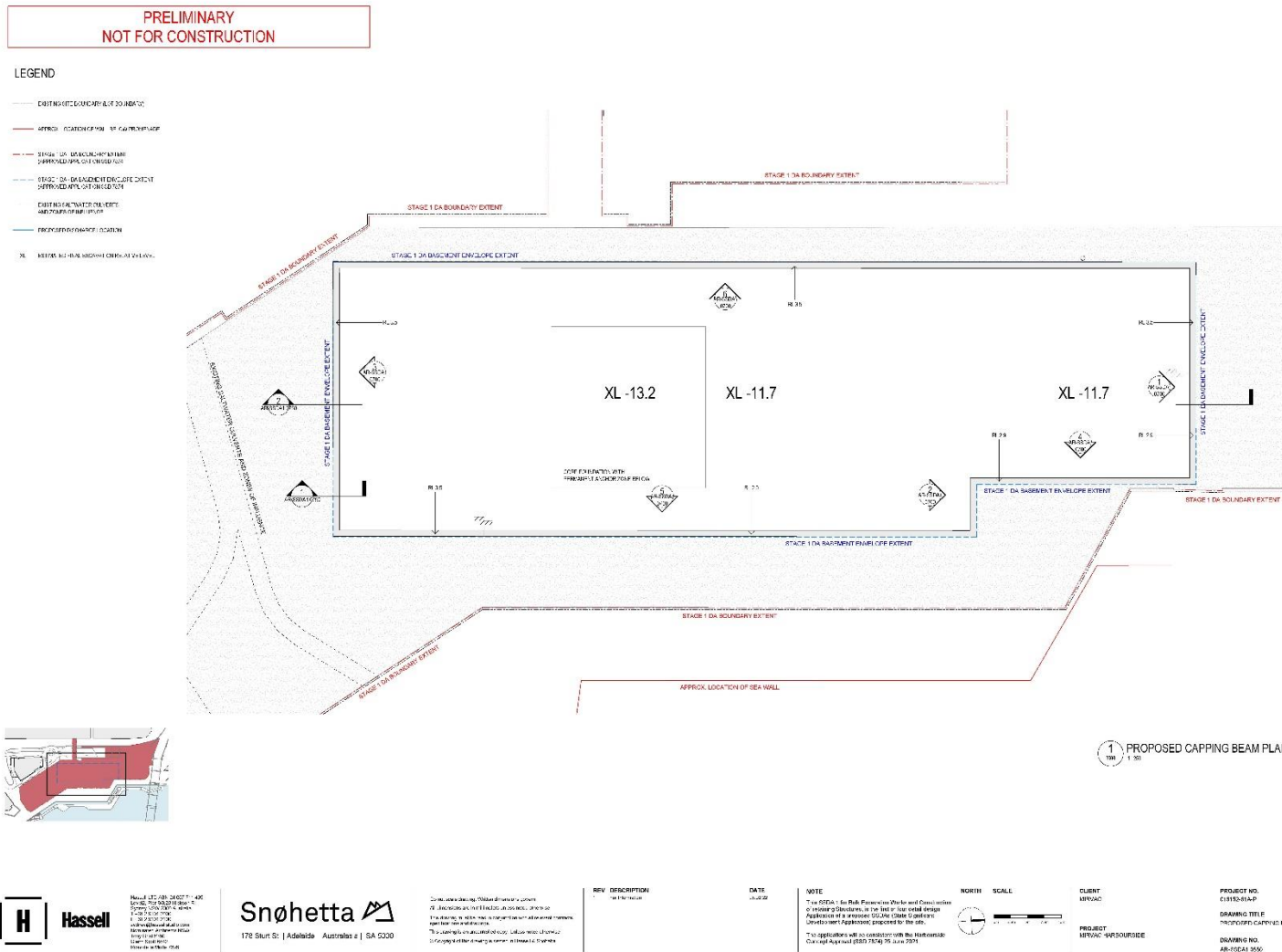


Figure 0.6. SSDA 1 proposed retention wall plan. Source: Ethos Urban.



 <p>Hassell 175 Sturt St Adelaide Australia SA 5000</p>	 <p>Snøhetta 175 Sturt St Adelaide Australia SA 5000</p>	<p>REV. DESCRIPTION</p> <p>1. Initial design of capping beam</p> <p>2. Final design of capping beam</p> <p>3. Final design of capping beam</p>	<p>DATE</p> <p>2024</p>	<p>NOTE</p> <p>This drawing is for information only and does not constitute an offer of any services. It is the responsibility of the client to ensure that the information provided is accurate and complete. The client is responsible for obtaining all necessary permits and approvals for the proposed works.</p>	<p>NORTH SCALE</p> 	<p>CLIENT</p> <p>MTRAC - HARBOURSIDE</p>	<p>PROJECT NO.</p> <p>01555000</p> <p>SCALE</p> <p>A1 (Full Size)</p> <p>DRAWING TITLE</p> <p>PROPOSED CAPPING BEAM PLAN</p> <p>DRAWING NO.</p> <p>AR-SSDA1-350</p>
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Figure 0.7. SSDA 1 proposed capping beam plan. Source: Ethos Urban.

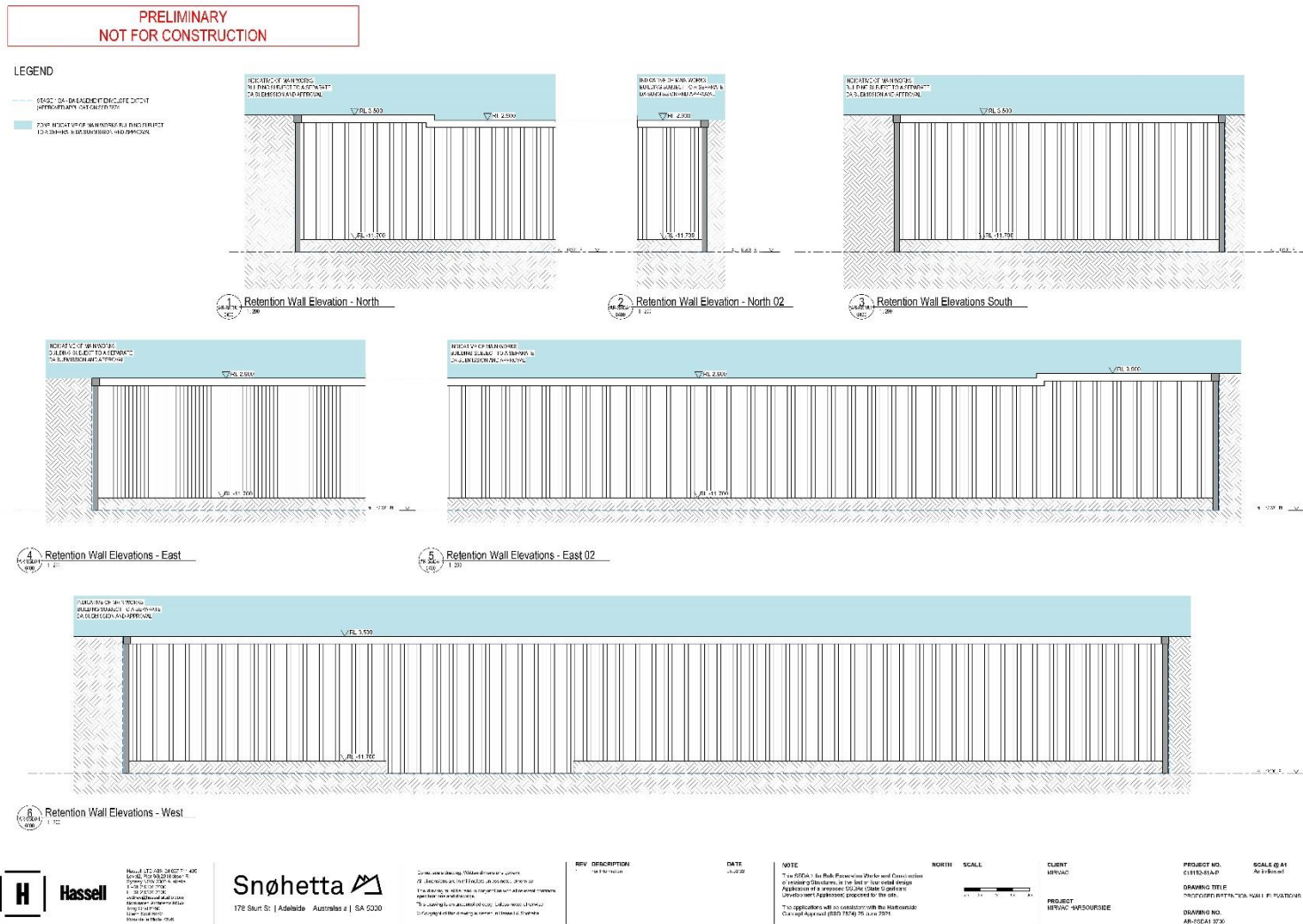
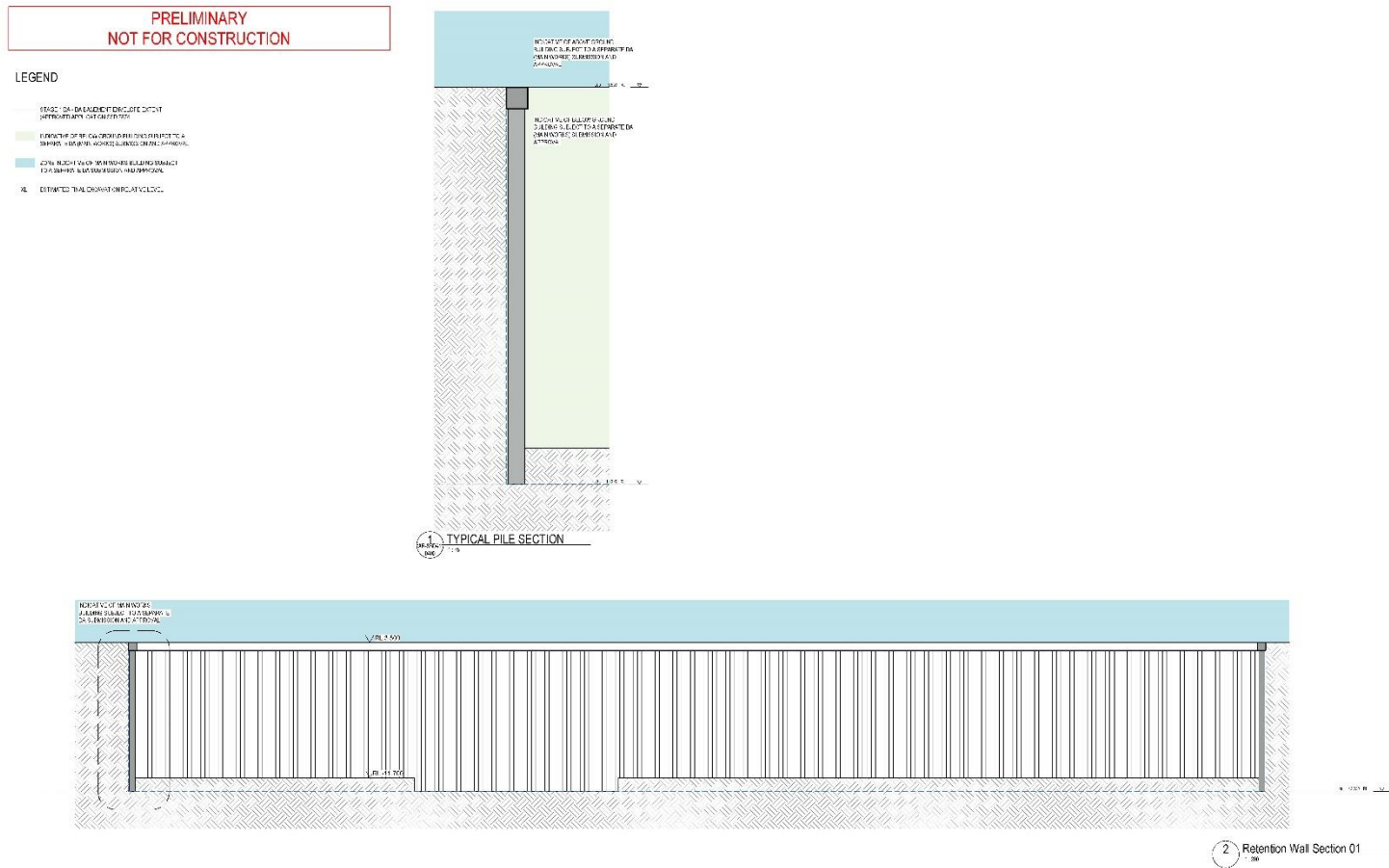


Figure 0.8. SSDA 1 proposed retention wall elevations. Source. Ethos Urban.



178 Skurt St | Adelaide | Australia | SA 5000

REV DESCRIPTION

DATE

NOTE

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CLIENT

PROJECT NO.

SCALE @ A1

PROJECT HARBOURSIDE

DRAWING TITLE

DRAWING NO.

Figure 0.9. SSDA 1 proposed retention wall section. Source. Ethos Urban.

Appendix G—Noise & Vibration Management Report (Acoustic Logic 2022)

Appendix H—Final Test Excavation Report Harbourside July 2022

Appendix I—Maritime Heritage
Dilapidation Survey Report (Cosmos
Archaeology 2022)

Appendix J—Maritime Archaeology Assessment (Cosmos Archaeology 2022)



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