



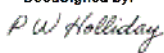
Division 5.1 Determination

Determination Statement

I, the Chief Executive Officer (CEO) of Port Authority of New South Wales (Port Authority), having considered the impact on the environment of the proposed activity referred to in Schedule 1, pursuant to Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), have determined:

- the proposed activity is not likely to have a significant impact on the environment and therefore an Environmental Impact Statement (EIS) is not required.
- the proposed activity will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats or impact biodiversity values, meaning a Species Impact Statement (SIS) and/or Biodiversity Development Assessment Report (BDAR) is not required.
- the proposed activity may proceed subject to the implementation of the mitigation measures specified in Schedule 2.

Yours sincerely,

DocuSigned by:

 50E2CFCB\05C465...

13-12-2024 | 9:40 AM AEDT

Philip Holliday

Chief Executive Officer & Director

Date:

Schedule 1

Item	
Proponent	Port Authority of New South Wales
Determining Authority	Port Authority of New South Wales
Land	Moore's Wharf Building, located at 4 Towns Place, Barangaroo (the site).
Activity	The Activity described in the Moore's Wharf Building Renewal Project Review of Environmental Factors (REF), 10 December 2024.
Activity under Division 5.1 of the EP&A Act	The development is an Activity under Division 5.1 of the EP&A Act, because it is a development of a kind described in Section 2.89(1)(a) of the State Environmental Planning Policy (Transport and Infrastructure) 2021 (TI SEPP).

Schedule 2

No.	Issue	Mitigation Measure	Responsibility	Timing
1.	Design	The height of the lift over run is to be reduced as far as possible to minimise heritage and visual impacts.	Port Authority / Contractor	Detailed design and pre-construction of lift
2.	Sustainability	Sustainability initiatives as described in the ESD Matrix (Appendix D) will be implemented to ensure the sustainability goals are being met for the project.	Port Authority/ Contractor	Detailed design, Construction and Operation
3.	Crown building work certification	Port Authority to obtain a 'For Construction' design certified for BCA compliance, i.e. a 'Crown Certificate'. Port Authority shall be responsible for the BCA compliance inspections and final certification.	Port Authority	Pre-construction / Construction
4.	Construction environmental management	<p>A Construction Environmental Management Plan (CEMP) is to be prepared to Port Authority's satisfaction prior to works commencing to describe how the works will be managed through the construction phase in order to minimise and manage potential environmental impacts.</p> <p>The CEMP to be implemented will include:</p> <ul style="list-style-type: none"> • A description of all activities to be undertaken on the site during the works, including an indication of stages and hold-points, where relevant. • Statutory and other obligations required to be fulfilled / met during the works, including all approvals, consultations and agreements required from authorities and other stakeholders. • An environmental risk assessment in order to identify potentially high risk construction activities. • Environmental management and mitigation practices and procedures to be implemented during each stage of the works. • Details of how the environmental performance of the works will be monitored, and what actions will be taken to address identified adverse environmental impacts. • Environmental incident management and reporting procedures and protocols. • A description of the roles and responsibilities for all relevant employees involved in the works. • Details of environmental training and awareness including site inductions. • Complaints handling procedure(s) during works and site preparation. <p>The CEMP will be a working document, subject to ongoing review and update as necessary to respond to changes to any information contained in the CEMP or its sub-plans and to take account of events or circumstances which will or may affect the works.</p>	Contractor	Pre-construction / Construction
5.	Construction environmental management	<p>On-site staff, local residents and businesses surrounding the site will be notified by Port Authority prior to each stage of construction, as required, and at least 5 working days prior to the commencement of external construction activities.</p> <p>The contractor will provide the information needed to support any notification and consultation requirements.</p>	Contractor / Port Authority	Pre-construction

No.	Issue	Mitigation Measure	Responsibility	Timing
6.	Construction environmental management	<p>All personnel working on site will receive a detailed heritage induction and training to ensure awareness of environment protection and impact mitigation requirements to be implemented during the activity. This will include up-front site induction and regular “toolbox” style briefings.</p> <p>Further, all staff and contractors working at the site will need to complete Port Authority’s online RapidGlobal inductions prior to commencing any work or activity at Moore’s Wharf, including: i. Contractor – WHS, Environment and Security Induction and iii. Moore’s Wharf Site induction.</p> <p>The heritage induction is to include briefings of onsite works staff in recognition of maritime heritage items (if any) and appropriate reporting, and management strategies.</p>	Contractor	Pre-construction / Construction
7.	Photographic archival recording	<p>To maintain a record of changes to the heritage item, prior to any alteration of the site, an archival photographic record is to be prepared in accordance with the relevant requirements of the NSW Heritage Office (2006) guidelines for the Photographic Recording of Heritage Items Using Film or Digital Capture. It is recommended that a copy of the archival photographic record be digitally stored by Port Authority.</p>	Port Authority / Contractor	Pre-construction
8.	Heritage induction	<p>The Contractor, including all construction workers, must be briefed by the project’s Heritage Specialist on the heritage significance of the site, and any site-specific heritage matters/issues and approval documents prior to works commencing.</p>	Port Authority / Contractor	Pre-construction
9.	Construction noise and vibration	<p>Demolition works, lift excavation and piling and internal refurbishment works have the potential to exceed cosmetic damage and human comfort criteria to the Moore’s Wharf Building.</p> <p>The Contractor is to prepare a Construction Noise Management and Vibration Plan to Port Authority’s satisfaction that identifies all potential noise and vibration generation activities, outlines measures for reducing the source noise levels and vibration impacts of construction equipment by construction planning and equipment selection where practicable and monitoring requirements against relevant criteria.</p> <p>All construction works will be generally undertaken between Monday to Friday 7am to 6pm; Saturdays 8am to 1pm; no works on Sundays or Public Holidays.</p> <p>For any required out of hours work, the Contractor is required to prepare an application, including the justification of the proposed out of hours works and consideration of noise and vibration impacts and mitigations, for approval by Port Authority. In order to reduce construction noise to a minimum, where possible prioritise low noise emission construction equipment.</p> <p>Construction machinery shall be kept in good working order to reduce noise emissions as far as practicable.</p>	Contractor	Pre-construction / Construction
10.	Construction traffic and access	<p>A site-specific Construction Traffic Management Plan (CTMP) is to be prepared to Port Authority’s satisfaction and implemented in accordance with Safe Work Australia Guidelines General Guide for Workplace Traffic Management and the Guide for Construction Work, to the satisfaction of Port Authority.</p>	Contractor	Pre-construction / Construction

No.	Issue	Mitigation Measure	Responsibility	Timing
11.	Hazardous materials	Any hazardous materials uncovered would be identified, removed and disposed of in a controlled manner.	Contractor	Pre-construction / Construction
12.	Historical Archaeological Assessment (HAA)	<p>A HAA, including a Maritime Archaeological Desktop Assessment (MADA) will be undertaken prior to lift excavation works to assist in determining the potential for archaeological remains and relics to be present within the lift pit area.</p> <ul style="list-style-type: none"> a) The HAA is to be prepared by a suitably qualified and experienced historical archaeologist in accordance with the guidelines Archaeological Assessment (1996) and Assessing Significance for Historical Archaeological Sites and Relics (2009). b) The HAA is to identify what relics, if any, are likely to be present (known as archaeological potential), assess their significance and consider the impacts from the proposal on this potential archaeological resource. c) Where harm is likely to occur, the significance of the relics is to be considered in determining an appropriate mitigation strategy. d) If harm cannot be avoided in whole or part, a s140 permit is to be completed. As part of the permit application, an appropriate Research Design and Excavation Methodology, with a nominated Excavation Director, is to be prepared to guide any proposed excavations or salvage program. e) A s.140 application may be required if any ground disturbance in areas including the lift footprint, replacement of concrete floor slab and masonry on the ground floor is likely to harm relics. <p>The construction contractor is to include additional mitigation measures (if any) from the HAA into their Construction Environmental Management Plan (CEMP).</p>	Contractor	Pre-construction of lift
13.	MADA	<p>A Maritime Archaeological Desktop Assessment (MADA) is to be undertaken to assess the potential for maritime heritage items in the proposal area. The MADA is to investigate:</p> <ul style="list-style-type: none"> a) The past use of the area and possible maritime archaeological heritage items which are known to exist within the proposal area, including Underwater Cultural Heritage (UCH) such as: historic shipwrecks, historic maritime infrastructure and submerged Aboriginal Cultural Heritage objects, and whether these sites are likely to have been buried by landfill reclamation. b) Statutory databases are to be consulted and summarised in this regard (including both Commonwealth and State Maritime/ UCH Databases – dependent on jurisdiction). c) The MADA is to similarly address the conditions outlined in the HAA (see Mitigation No. 2). <p>The construction contractor is to include additional mitigation measures (if any) from the MADA into their CEMP.</p>	Port Authority / Contractor	Pre-construction of lift
14.	Maritime Statement of Heritage Significance	If potential maritime heritage items are identified within the proposal area, then the following studies are to be undertaken (by a suitably qualified and experienced	Port Authority / Contractor	Pre-construction of lift

No.	Issue	Mitigation Measure	Responsibility	Timing
	(MSOHI) & Maritime Archaeological Research Design and Excavation Methodology (MARDEM)	<p>maritime archaeologist as defined in the Australasian Institute for Maritime Archaeology Code of Ethics s2.e):</p> <p>a) A MSOHI and MARDEM to assess the nature, extent and significance of any UCH or maritime heritage items /sites/ relics/ artefacts that may exist within the proposal area.</p> <ul style="list-style-type: none"> i. The MSOHI is to consider both the direct and indirect impacts of the proposed works and any ancillary works over short- and long-term periods on any maritime/ UCH heritage item(s) both in the proposal area and adjacent regions. ii. The MSOHI is to be guided by the principles of Commonwealth Guidelines for Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (https://www.dcceew.gov.au/parksheritage/heritage/publications/assessing-managing-impacts-underwatercultural-heritage). iii. Maritime archaeological testing may be required and an appropriate MARDEM is to be prepared to guide any proposed excavations. Where harm may possibly occur, the significance of the relics is to be considered in determining an appropriate mitigation strategy, to be undertaken in consultation with Heritage NSW. <p>b) A specific Maritime Unexpected Finds Protocol (MUFP), which in addition to standard historical UFP items, is to include:</p> <ul style="list-style-type: none"> i. briefings of onsite works staff in recognition of maritime heritage items and appropriate reporting, and management strategies. ii. consideration of short- and long-term management, conservation, storage, restoration and interpretation of any significant maritime heritage items, along with how these aspects will be funded. iii. possibility for redesign is to be considered if significant maritime heritage items are discovered during works. <p>The construction contractor is to include the above additional mitigation measures (MSOHI, MARDEM, MUFP) into their CEMP.</p>		
15.	Heritage consultant	<p>The project's Heritage Specialist is to provide direction on any design issues which impact upon heritage fabric.</p> <p>Further, the Heritage Specialist is to be employed to periodically monitor the work during design and construction and provide advice on-site regarding heritage issues. This is particularly pertinent during demolition activities and the introduction of new services, when more original fabric will likely be exposed.</p> <p>The Contractor is to develop hold points to provide opportunities for the Heritage Specialist to inspect the works and to help avoid unintended impacts to the heritage fabric.</p>	Contractor	Construction

No.	Issue	Mitigation Measure	Responsibility	Timing
16.	Heritage tradespeople	Any works involving original fabric, including sandstone masonry and structural timber elements, are to be carried out by suitably qualified heritage tradespeople who have adequate experience working on historic structures.	Contractor	Construction
17.	Temporary protection measures	Temporary protection measures are to be introduced to the sandstone masonry façade that could be impacted by vehicular movements. This will involve the south and west elevations. There will be no penetrations made to the sandstone and no temporary fencing will be affixed to the sandstone. The CEMP is to specify where protection will be placed around the building.	Contractor	Construction
18.	Damage to significant fabric	In the instance of unexpected damage to significant fabric, works are to cease to allow for inspection by the Heritage Specialist. The Heritage Specialist is to provide advice on the repair methodology for any damaged fabric.	Contractor	Construction
19.	Connections to sandstone masonry	Where possible, existing penetrations to heritage fabric are to be reused. Creating new penetrations, for example for plumbing and electrical services, should be avoided. Where structurally possible, penetrations for new building elements are to be installed into the mortar joints only. The architect is to provide detailed plans of proposed fix points to help avoid unnecessary impacts.	Contractor	Construction
20.	Unexpected archaeological finds	If unexpected archaeological finds are discovered during any excavation activities, all work in the area shall cease forthwith and the Heritage Council of NSW is to be notified immediately. A s146 notification to the Heritage Council of NSW is to be lodged through the Heritage Management System (HMS). Additional assessment and approval may be required prior to works continuing in the affected area(s) based on the nature of the discovery. Advice would be provided in response to the lodged s146 notification.	Contractor / Port Authority	Construction
21.	Waste management	All waste to be managed using the principles of avoid, reuse and recycle, in accordance with the waste hierarchy, and classified in accordance with NSW EPA Waste Classification Guidelines (EPA, 2014). A waste classification is required for all soil and soil impacted material that will require offsite disposal, including: <ul style="list-style-type: none"> • Assessment of material for waste classification prepared by a suitably qualified environmental consultant and comply with the NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste (2009). • Building and demolition waste can be disposed offsite as pre-classified waste in accordance with NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste (2009). All building and demolition waste that is stockpiled with soil material will be required to be divided and classified separately. • All other excavated material intended to be reused is to be managed in accordance with the <i>Protection of the Environment Operations Act 1997</i> (NSW) (POEO Act). 	Contractor	Construction

No.	Issue	Mitigation Measure	Responsibility	Timing
		Excavated material and all waste will be disposed of to an appropriately licenced waste facility or to a development lawfully able to accept the material.		
22.	Soil and dust management	Controls to manage soil erosion and dust generation will be implemented in accordance with the <i>Guidelines for Erosion and Sediment Control on Building Sites 2024</i> (Department of Planning, Housing and Infrastructure) and outlined in the CEMP. This includes excavation and spoil management.	Contractor	Construction
23.	Sediment & water quality	<p>If groundwater is encountered during excavation activities and dewatering is required, this will be undertaken so that the groundwater is captured and removed from site by a licensed contractor.</p> <p>Appropriate spill kits will be kept onsite, and all site personnel appropriately trained in the use of available spill response equipment.</p> <p>In the event of a pollution incident causing or threatening material harm to the environment, this must be notified to each of the following 'relevant authorities' as per Section 4.2.4 of this REF.</p>	Contractor	Construction
24.	Construction air quality	<p>Air quality measures will be implemented as part of the CEMP. These will include, but not be limited to:</p> <ul style="list-style-type: none"> • Identify potential sources of air pollution. • Measures to manage work during strong winds or other adverse weather conditions. • Plant and machinery would be regularly checked and maintained in a proper and efficient condition. Plant and machinery would be switched-off when not in use, and not left idling. • Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation. • Stockpiles or areas that may generate dust are to be managed to suppress dust emissions. 	Contractor	Construction
25.	Interpretation strategy	Introduce additional interpretative media such as interpretative plaque at the entrance of the site to communicate the history and values of the site, the building users and wider public.	Port Authority	Operation
26.	Grading of significance	The grading of significance (as established through the detailed heritage significance work already undertaken) will be incorporated into a future maintenance plan for Moore's Wharf, in accordance with the Heritage Asset Management Strategy (HAMS) for Port Authority.	Port Authority	Operation



PORT AUTHORITY OF NEW SOUTH WALES

Moore's Wharf Building Renewal Project

Review of Environmental Factors



10 December 2024

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PROJECT 311012-01011 - Moore's Wharf Building Renewal Project - Review of Environmental Factors							
Rev	Description	Originator	Reviewer	Worley Approver	Revision Date	Customer Approver	Approval Date
Rev A	Draft				07 November 2024		N/A
		T. Simonato	C. Jones	C. Jones		N/A	
Rev 0	Final	<i>Troy Simonato</i>	<i>C. Jones</i>	<i>C. Jones</i>	10 December 2024		N/A
		T. Simonato	C. Jones	C. Jones		N/A	

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Certification

This Review of Environmental Factors (REF) has been prepared in accordance with the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act), the *Environmental Planning and Assessment Regulation 2021* (NSW) (EP&A Regulation) and the Guidelines approved under section 170 of the EP&A Regulation; the information in this document is neither false nor misleading.

Signed: 

Name: Claire Jones

Position: Principal Environmental Planner, Worley Consulting Pty Ltd

Qualifications: Bachelor of Planning (Honours Class 1), University of New South Wales
Graduate Diploma in Heritage Conservation, University of Sydney
NSW Registered Environmental Assessment Practitioner

Date: 10 December 2024

Certification

I certify that I have reviewed and endorsed the contents of this REF document, and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation, and the Guidelines approved under section 170 of the EP&A Regulation, and the information it contains is neither false nor misleading.

Signed:

Name: Ryan Bennett

Title: Senior Manager, Planning and Sustainability

Qualifications: Bachelor of Science, University of Calgary
Master of Environmental Design (Environmental Science), University of Calgary

Date: XX December 2024



Executive Summary

Proposal Overview

Worley Consulting has been commissioned by Port Authority of New South Wales (Port Authority), to prepare a Review of Environmental Factors (REF) which relates to the proposed Moore's Wharf Building Renewal Project (the proposal), located at 4 Towns Place, Barangaroo (the site).

The scope of works involves a major internal refurbishment of the three-storey Moore's Wharf Building to accommodate the requirements of the maritime base operations for the Port Authority. The proposal also includes the installation of a new lift to meet current accessibility, emergency access and building regulation requirements.

The proposal aligns with Port Authority's Strategic Pillars of Sustainable Port Assets Supporting Growth, Operational Excellence, and One Leading Port Authority, by optimising efficiency of the space, providing a safe, sustainable and compliant asset, supporting operational improvement, and encouraging operational staff to work and collaborate in a shared space. Moreover, the preferred design considers Port Authority's Diversity and Inclusion and sustainability targets and has been developed in consultation with representatives from the Employee Reference Group to ensure the design incorporates the needs of the current and future workforce.

Description of the Proposal

The proposed alterations and additions include:

- Constructing a new external lift and connecting structure to the existing building.
- Major internal refurbishment of the Moore's Wharf building, involving:
 - Demolition of majority of partitions, glazed partitions, joinery and doors on Ground Level.
 - Demolition of all partitions, glazed partitions, joinery and doors on Level 1.
 - Removal of ceiling tiles and plasterboard ceilings on Ground Level and Level 1.
 - Introduction of new layout to the Ground Level and Level 1 utilising lightweight partitions and glazed partitions.
 - New services and fittings in bathroom and kitchen areas.

Statutory Considerations

Section 2.89(1)(a) of the State Environmental Planning Policy (Transport and Infrastructure) 2021 (TI SEPP) specifies that development for the purpose of alterations of or additions to a public administration building, may be carried out by, or on behalf of a public authority without consent. The proposal can therefore be assessed and determined by Port Authority under Division 5.1 of the EP&A Act. Development consent under Part 4 of the EP&A Act from the City of Sydney Council is therefore not required.



Stakeholder Consultation

Port Authority has consulted with Heritage NSW during the preparation of the REF. Written advice was provided on 12 November 2024. Comments raised by Heritage NSW have been responded to within the REF.

The REF would not be publicly displayed for comment; however, the certified REF would be published on Port Authority's website in accordance with Section 171(4) of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation).

On-site workers, local residents and businesses surrounding the site would be notified by Port Authority prior to each stage of construction, as required.

Environmental Impact Assessment

The purpose of the REF is to describe the proposal and assess the likely impact(s) having regard to the provisions of Section 5.5 of the EP&A Act, including the identification of suitable mitigation measures to reduce the likely impact(s), if any, of the proposal. Sections 171 and 171A of the EP&A Regulation and the factors in *Guidelines for Division 5.1 assessments* (Department of Planning and Environment, 2022) have also been considered in preparing this REF.

The proposal involves a major internal refurbishment of the three-storey Moore's Wharf Building to accommodate the requirements of the maritime base operations for the Port Authority. The proposal also includes the installation of a new lift to meet current accessibility, emergency access and building regulation requirements. The proposal would achieve the identified objectives in Section 2.2, to improve efficiency of the marine operation base and provide better accessibility to the building for workers and visitors.

Based on the environmental assessment carried out in Section 6 of this REF, the impacts of the proposal are considered to be minor. The potential impacts can be reasonably mitigated and managed through adoption of best practices and adherence to accepted industry guidelines and standards, as outlined in Section 7.

Conclusion

This REF has considered and assessed these impacts in accordance with Sections 171 and 171A of the EP&A Regulation and the requirements of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Based on the assessment contained herein, it is considered that the proposal is not likely to have a significant impact upon the environment or any threatened species, populations or communities or their habitats. Accordingly, an Environmental Impact Statement (EIS) and/or a Biodiversity development assessment report (BDAR) are not required, nor is the approval of the Minister for Planning and Public Spaces under Division 5.2 of the EP&A Act.



Terms and Acronyms

Acronym/abbreviation	Definition
BC Act	<i>Biodiversity Conservation Act 2016</i> (NSW)
BC SEPP	State Environmental Planning Policy (Biodiversity and Conservation) 2021
BCA	Building Code of Australia
the Contractor	Company to be engaged by Port Authority to undertake construction of the proposed works
CEMP	Construction Environmental Management Plan
CNVG	Construction Noise and Vibration Guideline
DPE	Department of Planning and Environment (NSW) (now DPHI)
DPHI	Department of Planning, Housing and Infrastructure (NSW) (previously DPE)
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
EHC SEPP	State Environmental Planning Policy (Precincts—Eastern Harbour City) 2021
ESD	Ecologically Sustainable Development
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning & Assessment Act 1979</i> (NSW)
EPA	Environment Protection Authority (NSW)
EP&A Regulation	Environmental Planning & Assessment Regulation 2000 (NSW)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
HAA	Historical Archaeological Assessment
HAMS	Heritage Asset Management Strategy
ICNG	Interim Construction Noise Guideline
LEP	Sydney Local Environmental Plan 2012
LGA	Local Government Area
MADA	Maritime Archaeological Desktop Assessment
MNES	Matter of National Environmental Significance
NIA	Noise Impact Assessment
NSW	New South Wales
PS SEPP	State Environmental Planning Policy (Planning Systems) 2021
Port Authority	Port Authority of New South Wales
PoEO Act	<i>Protection of the Environment Operations Act 1997</i> (NSW)
proposal	The proposed works assessed in this REF
REF	Review of Environmental Factors
RH SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
SEPP	State Environmental Planning Policy
SHR	State Heritage Register
SoHI	Statement of Heritage Impact
TfNSW	Transport for NSW
TI SEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021



1. Introduction

1.1 Proposal Overview

Worley Consulting has been commissioned by Port Authority of New South Wales (Port Authority), to prepare a Review of Environmental Factors (REF) which relates to the proposed Moore's Wharf Building Renewal Project (the proposal), located at 4 Towns Place, Barangaroo (the site).

The scope of works involves a major internal refurbishment of the three-storey Moore's Wharf Building to accommodate the requirements of the maritime base operations for the Port Authority. The proposal also includes the installation of a new lift to meet current accessibility, emergency access and building regulation requirements. No works are proposed to occur in the waterway. Section 3 outlines the details of these upgrades in more detail.

1.2 Site Location

The "Moore's Wharf Building" is a heritage item listed on the Port Authority Heritage and Conservation Register prepared under Section 170 of the *Heritage Act 1977* and has been assessed as having State heritage significance (not listed on the State Heritage Register). This building (circa 1836-1837) was originally located further west in Darling Harbour, however, was moved to its current location between 1978-1981. The site is situated on Lot 51 DP1213772 within the City of Sydney Local Government Area (LGA). The building along with the mooring infrastructure are owned by Port Authority with the building used as the marine operation base office which operates 24 hours a day, seven days a week.

Vehicular and pedestrian access to the site is via Towns Place through secure gates. The site is not publicly accessible. The hardstand areas around the building includes line marked car parking for use by Port Authority personnel.

The site is located adjacent to Barangaroo Reserve including the swimming enclosure at Marrinawi Cove to the west (opened January 2023), which are managed by Placemaking NSW. Walsh Bay Pier 8/9 is located to the east. Towns Place Wharf located to the south-east is currently closed by Transport for NSW (TfNSW) for maintenance.

The overall site can be found in Figure 1-1 and a more zoomed in extent of the Moore's Wharf Building can be found in Figure 1-2. Photographs of the site are in Figure 1-3 and Figure 1-4.



Figure 1-1 Location of the site (Source: Nearmap, 2024)

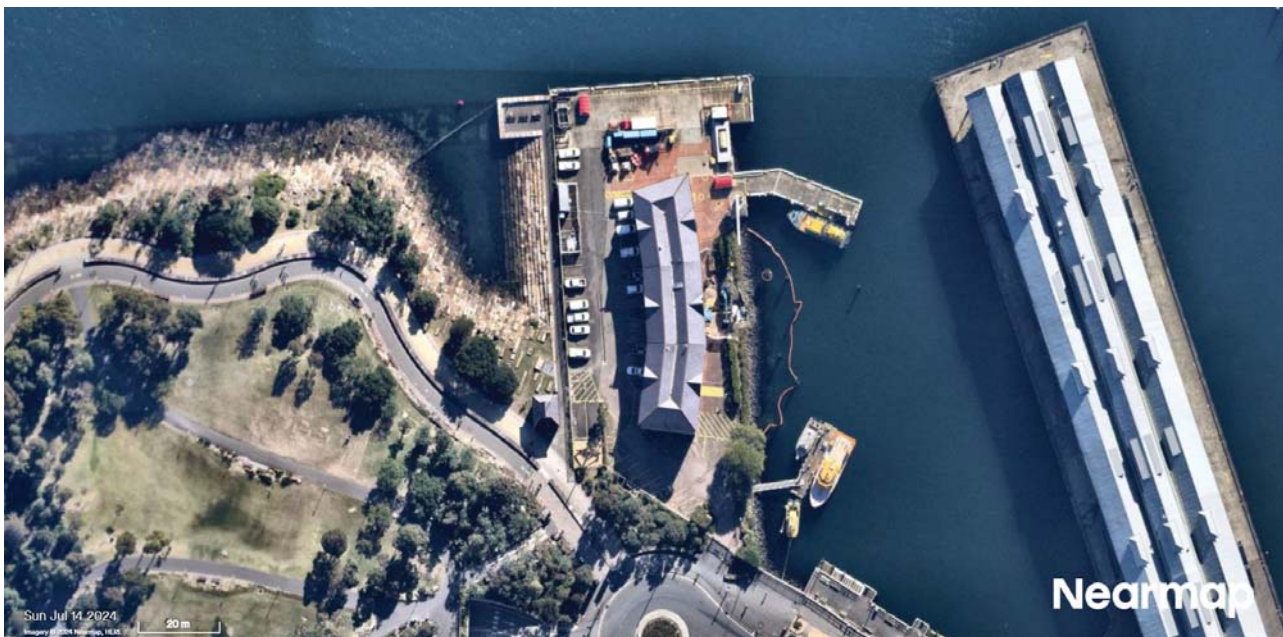


Figure 1-2 Zoomed in extent of the Moore's Wharf Building (Source: Nearmap, 2024)



Figure 1-3 View of site from the nearby Walsh Bay Pier 8/9 (Source: Worley, 2024)



Figure 1-4 View of building west elevation, middle section is proposed area of the lift (Source: Worley, 2024)



1.3 Purpose of the REF

The REF has been prepared by Worley Consulting to enable Port Authority to determine the environmental impacts of the proposal. For the purposes of the proposal, Port Authority is the proponent and determining authority under Division 5.1 of the EP&A Act.

The purpose of the REF is to describe the proposal and assess the likely impact(s) having regard to the provisions of Section 5.5 of the EP&A Act, including the identification of suitable mitigation measures to reduce the likely impact(s), if any, of the proposal. Sections 170, 171 and 171A of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) and the factors in Guidelines for Division 5.1 assessments (Department of Planning and Environment, 2022) have also been considered in preparing this REF.

This assessment also considers the relevant provisions of other relevant NSW environmental legislation and environmental planning instruments (EPIs), including the State Environmental Planning Policy (Transport and Infrastructure) 2021 (TI SEPP), State Environmental Planning Policy (Precincts—Eastern Harbour City) 2021 (Eastern Harbour City SEPP), State Environmental Planning Policy (Resilience and Hazards) 2021 (RH SEPP), State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BC SEPP) and State Environmental Planning Policy (Planning Systems) 2021 (PS SEPP).

Having regard to the relevant provisions of the Commonwealth *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act), this REF considers whether there is the potential for the proposal to have a significant impact on Matters of National Environmental Significance (MNES) or Commonwealth land and, in turn, any need to make a referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) for any necessary approvals under the EPBC Act. Further information regarding statutory considerations is provided in Section 5 of this REF.



2. Background and Justification

2.1 Strategic Context

The proposal aligns with Port Authority's Strategic Pillars of Sustainable Port Assets Supporting Growth, Operational Excellence, and One Leading Port Authority, by optimising efficiency of the space, providing a safe, sustainable and compliant asset, supporting operational improvement, and encouraging operational staff to work and collaborate in a shared space.

Moreover, the preferred design considers Port Authority's Diversity and Inclusion and sustainability targets and has been developed in consultation with representatives from the Employee Reference Group to ensure the design incorporates the needs of the current and future workforce.

2.2 Proposal Objectives

The objective of the proposal is to update the internal areas of the building to improve efficiency of the marine operation base and provide better accessibility via the installation of the external lift.

2.3 Alternatives and Options Considered

The following options have been determined and assessed against the criteria of aligning the building with current Building Code of Australia (BCA) requirements, enhancing the building's efficiency and creating a space to meet Port Authority's diversity and inclusion requirements.

During the design phase of the proposal, heritage consultant, Heritage 21 had involvement to ensure advice was provided in relation to the balancing of heritage considerations. The Statement of Heritage Impact (SOHI) (Appendix B), Section 5.2.1 Heritage design constraints details the advice provided which takes into account the Heritage Management Framework.

Below is a list of the provided advice:

- The general form of the building must be conserved, including the building envelope and roof form.
- The general fenestration pattern should be retained, including the window proportionality.
- All fabric to be considered to be original and of high significance should be retained and conserved.
- External fabric to be conserved includes the sandstone ashlar masonry, sandstone windowsills and lintels.
- Internal fabric to be conserved includes all original timber joinery (Columns, beams and lintels). If these are damaged, it is recommended, where possible, strengthening as opposed to the introduction of new. Alternatively, it is recommended the use of the splicing method for timber repairs to retain as much of the original fabric as possible.



- There is an opportunity to undertake conservation works to the sandstone masonry. This would generally include removing the pointing and repointing with a lime-based mortar to create a recessed joint line.
- There is scope to introduce a modest number of new openings to the building envelope – this could entail an additional window or new doorway to facilitate functional requirements. However, this should follow the proportionality of existing openings and should not detract from the fenestration pattern.
- Considering there is very limited significant fabric, there is an opportunity to conduct an internal refurbishment of the building. There is also no evidence of the original layout and therefore a new layout can be introduced to facilitate renewed functional requirements.
- There is scope to replace sympathetic later addition fabric with sympathetic alternatives if there is a functional requirement to do so. This includes the external windows and doors; however, these should remain in timber and follow the original profiles.
- The structural roof frame appears to be a later addition fabric. It is recommended retaining this fabric; however, if there are damaged elements, they can be replaced like-for-like.
- The internal timber stairs can be replaced with a sympathetic alternative.
- The external timber fire stairs can be replaced with a sympathetic alternative.
- The concrete slab flooring is not original and can be removed (if it does not cause damage to the building envelope during this process). Carpets or timber flooring can be introduced over the concrete.

Port Authority ruled out the option of an internal lift for several reasons, including the absence of a load-bearing substrate beneath the building, the need for significant interventions to the buildings fabric and the impracticality of using pile-driving equipment within the structure. Further, the complex methodology required for the installation made it an unfeasible solution.

2.3.1 Option 1 – Complete refurbishment of Ground Level and Level 1

Option 1 addresses current BCA non-compliance as well as provides a safer, more efficient and modern working environment for current and future staff. The option promotes a progressive workplace and activity-based workspaces, and accelerates relevant projects in the Net Zero program, helping to position Port Authority as a leader in sustainability.

The proposed works include:

- Complete refurbishment of Ground Level and Level 1 including: new furniture, furnishings, and fittings; new floor finishes including vinyl tiles and carpet; acoustic ceiling panels; upgrade of services including power, lighting and communications services and air conditioning system.



- Complete refurbishment of amenities areas, including new lockers, showers, toilets, partitions, and laundry areas.
- New breakout areas including upgraded, modern kitchen facilities and tea areas.
- Upgrade of Ground Level workshop area with new line marking, signage and storage.
- New compliant vertical access, including new staircases and a new passenger lift servicing all levels.
- Upgrade of essential fire services.
- Installation of energy efficient fittings and infrastructure, including new LED lighting and water efficient fixtures, and upgraded hot water system with a heat pump equivalent.
- Installation of roof solar panels. Note: This option was later discounted due to incompatibility with placing solar panels on the slate roof of this heritage building.

2.3.2 Option 2 – Refurbish current amenities on Ground Level, a minimal refurbishment of Ground Level and Level 1 plus existing workshop and storage area on Level 2

Option 2 limits the improvements to basic floor covering replacement and refurbishment of aging amenities and specific areas to improve appearance and functionality.

The proposed works include:

- Installation of new floor finishes.
- Complete refurbishment of lockers and bathrooms (in existing location).
- New tea area on Ground Level and upgraded kitchen on Level 1.
- Refurbishment of existing workshop and an upgraded storage space on Level 2.
- Refurbishment of Ground Level reception area and Executive office.

2.3.3 Option 3 – Refurbishment inclusions as per above Option 1 with the addition of an upgrade to Level 2

Option 3 involves refurbishment of the entire building, including all the benefits of Option 1, with the addition of realising opportunities in currently underutilised areas of the asset to create additional meeting spaces and amenities, opening the use of the building to corporate staff for meeting and collaboration activities. In addition to the Option 1 scope, this option includes:

- New boardroom and modern meeting spaces on Level 2, designed to encourage collaboration.
- New bathrooms, locker facilities and kitchen on Level 2, providing room for growth.



2.4 Preferred Option

Option 1 is recommended as it supports a number of key objectives aligned with Port Authority's strategic commitments to sustainability, One-Port culture and diversity. In addition, the Option 1 scope upgrade works would transform the building into a more operationally efficient and safer environment and increase the asset value. The full benefits of recommended Option 1 are further elaborated below.

Whilst Option 2 addresses compliance issues and replacement of end-of-life amenities, it does not provide the benefits associated with design for future staff diversity and inclusion requirements, or any gains to operational and space efficiency. Moreover, upgrade of amenities only would leave large portions of the building unrenovated and outdated, which is not aligned with the recently completed project to update the Moore's Wharf marine facilities.

Option 3 is also not preferred as although fit-out of Level 2 would provide some additional workspaces and meeting/collaboration areas, it cannot accommodate all of Port Authority corporate staff and therefore alternate accommodation at Bond One (current corporate head office) would still be required. Completion of Option 1 does not preclude the future fit-out of Level 2, which may be further considered following completion of the current research into flexible work arrangements being conducted by People & Culture.

2.4.1 Benefits of Recommended Option (Option 1)

2.4.1.1 Diversity and Inclusion

Port Authority's Workforce Plan outlines aggressive targets for increasing the number of female maritime workers by 50% by 2030. Currently, women represent around 2% of the maritime work force worldwide, and with the maritime sector facing a shortage of workers, increasing female participation is one important way to sustain the maritime industry, whilst promoting equality and diversity.

The existing building amenities are not designed to accommodate an increase in female employees. The female amenities cannot be expanded without major works and are currently undersized and poorly designed for privacy. Attracting and retaining women into Port Authority's workforce would require a significant change to the amenities to allow room for ongoing expansion, and provide safe, flexible and inclusive workplaces for women.

Moreover, providing improved accessibility would drive inclusion for staff and visitors with disabilities, promoting a safer and progressive workplace.

2.4.1.2 Compliance and Safety

The BCA compliance review undertaken in 2020 revealed some non-compliances with existing standards, largely around services, accessibility, and amenities. Any upgrade to the building would trigger the need to address all compliance issues, and as a result, create a safer and more accessible workplace.



2.4.1.3 Optimised Assets and Operational Efficiency

The building interior has not undergone a large-scale refurbishment since its construction in 1981. Isolated areas have been renovated to accommodate changes to operational requirements and technology needs, however, the building fitout is outdated, and the amenities areas are at end-of-life, displaying signs of cracking, leaking and accelerated breakdowns.

The current layout of operational and office areas is not optimal. Storage areas are hard to access and not consolidated.

The upgrade works would involve extensive consultation with staff to ascertain operational needs and involve design to optimise space and utilise currently vacant areas. Providing lift access to Level 2 would allow consolidation of storage on the upper floor, freeing space for improved staff utilisation and expansion on Ground Level and Level 1. It is noted that the upgrade works would deliver optimum accommodation solutions for the current staff based at the site and is not intended to increase space to accommodate additional office staff.

2.4.1.4 Sustainability

Proceeding with the recommended works under Option 1, allows Port Authority to embed sustainability programs early at Moore's Wharf and achieve committed Net Zero targets progressively by 2040.

A recent (Type 2) 2022 Energy Audit Report of Moore's Wharf building identified potential areas of energy and cost savings. Some areas of opportunity include:

- Installing a solar panel system. (This was later discounted, due to incompatibility with placing solar panels on the slate roof on a heritage building).
- Upgrading the lighting system
- Upgrading the HVAC system
- Replacing the electric hot water system

Implementation of the nominated energy efficiency initiatives, together with water saving measures, and initiatives to improve the overall quality of the indoor environment, would facilitate delivery of Port Authority's sustainability targets.

2.4.1.5 One-Port Culture

Upgrade of the building would provide an updated, modern, and attractive facility, where staff would be encouraged to use common working spaces designed for collaboration in various formats and be motivated to return to the office to utilise an enjoyable place to work. Increasing participation levels in the office and collaboration activities would build the One-Port culture.

3. Description of the Proposal

3.1 The Proposal

The proposed alterations and additions include:

- Constructing a new external lift and connecting structure to the existing building (Figure 3-1 and Figure 3-2).
- Major internal refurbishment of the Moore’s Wharf building, involving:
 - Demolition of majority of partitions, glazed partitions, joinery and doors on Ground Level.
 - Demolition of all partitions, glazed partitions, joinery and doors on Level 1.
 - Removal of ceiling tiles and plasterboard ceilings on Ground Level and Level 1.
 - Introduction of new layout to the Ground Level and Level 1 utilising lightweight partitions and glazed partitions.
 - New services and fittings in bathroom and kitchen areas.

A copy of the proposal drawings is in Appendix A.

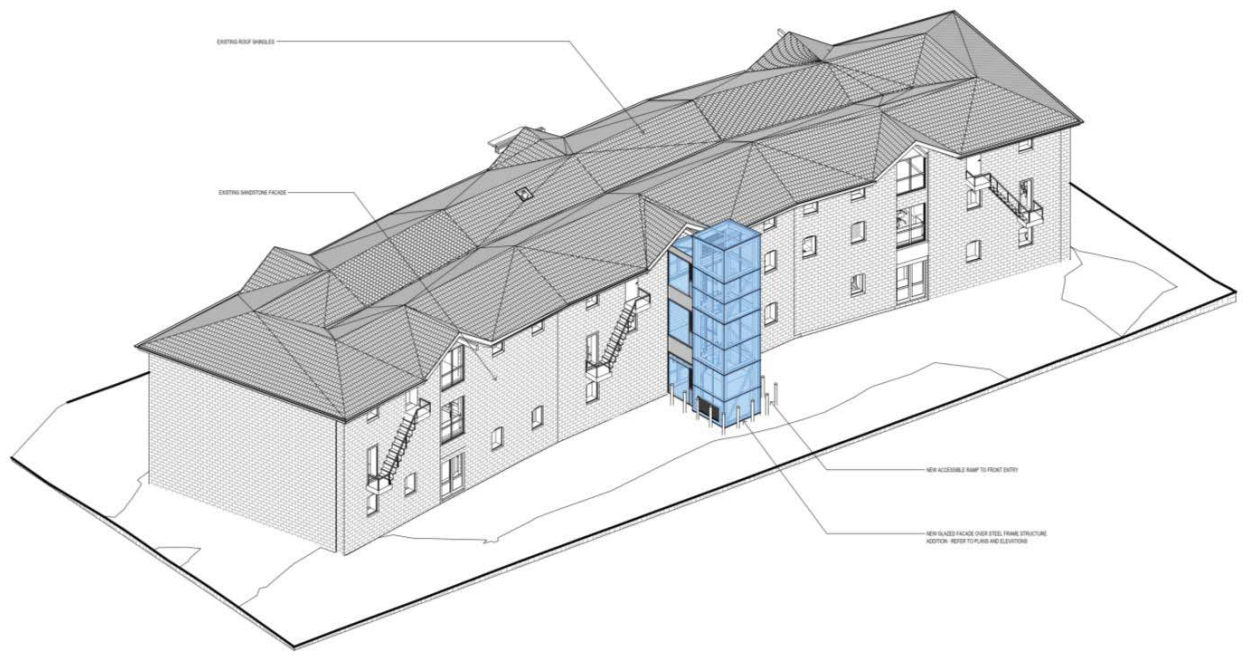


Figure 3-1 Axonometric view west (Source: Group GSA, 2024)

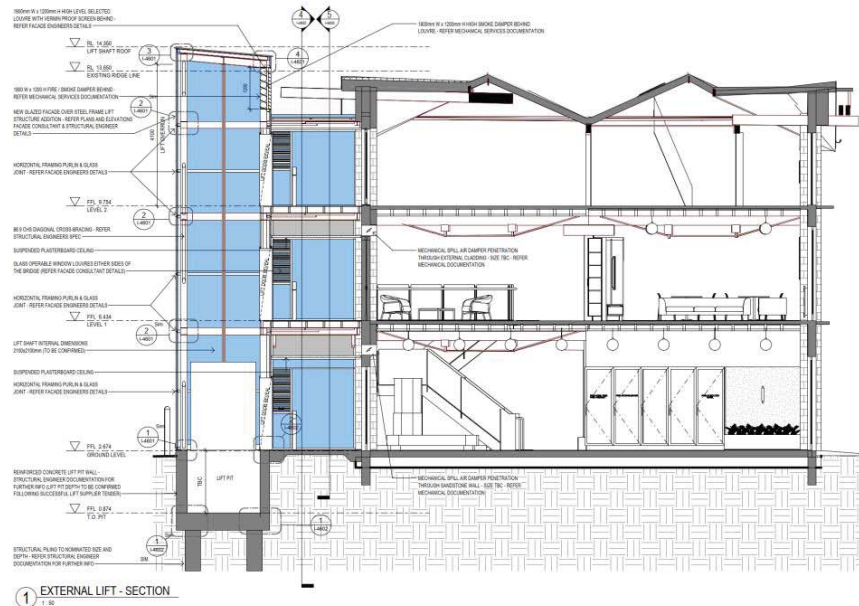


Figure 3-2 Lift section (Source: Group GSA, 2024)

3.2 Design Features

The external lift would be attached in line with the central gable on the west elevation of the building providing access to all levels. The total height of the external lift shaft from Ground Level is about 11.6 metres (m). The height of the lift over run would be reduced as far as possible to be relatively in line with the ridgeline of the building. The internal lift shaft dimensions would be 2.1 m x 2.1 m (to be confirmed). A new glazed façade over the steel frame would be installed to allow viewing of the stone fabric. Minor site earthworks are proposed for the construction of the lift pit and structural piling. The lift would have a pit excavation of between 1.5 m to 2 m deep, and up to 3 m x 3m (9m²) in area depending on selected lift size.

New internal stairs are to be in the same location as the existing stairs inside Moore’s Wharf building, which is a central circulation space.

The preferred building layout maximises efficiency and supports operational and IT functions, including:

- Workstations (some dedicated and some hot desk).



- Meeting rooms.
- A large communal breakout area to allow staff to come together on break and for town hall meetings.
- A large training/incident room.
- Fatigue rooms to ensure shift staff are adequately rested to perform duties.
- Amenities and locker areas designed with flexibility to accommodate the growing number of female staff.
- A mud room to store and dry wet gear.
- Storage areas on Level 2, to maximise functional space on Ground and Level 1.

The installation of new services would re-use existing openings and wet area plumbing stacks, where possible. All required fixings are to be made into stone joints.

3.3 Sustainability Initiatives

Section 2.4.1.4 examines the sustainability context of the proposed works.

The 2022 Energy Audit Report of Moore's Wharf building identified potential areas of energy and cost savings. Some areas of opportunity included:

- Installing a solar panel system (this was later discounted due to incompatibility with placing solar panels on the slate roof of this heritage building)
- Upgrading the lighting system
- Upgrading the HVAC system
- Replacing the electric hot water system

Implementation of the nominated energy efficiency initiatives, together with water saving measures, and initiatives to improve the overall quality of the indoor environment, would facilitate delivery of Port Authority's sustainability targets and align with the NSW Government Resource Efficiency Policy. A copy of the Ecologically Sustainable Design (ESD) matrix of sustainability initiatives that will be pursued as part of the proposal is included in Appendix D.

3.3.1 Ecologically Sustainable Development

The following sustainability initiatives will be implemented in the ESD scope:

- Energy: The proposal will aim to improve the energy efficiency of the building which includes the use of efficient electrical appliances, equipment, lighting and the proposal will continue to source renewable energy.
- Water: The proposal will incorporate water-efficient appliances, fittings and fixtures that aim to continually improve the fit out's water efficiency.



- Indoor Environment Quality: The proposal will aim to establish a comfortable and thriving environment for occupants.
- Waste: The proposal will adopt methods to reduce operational waste.
- Materials and Embodied Carbon: The proposal will incorporate design and construction practices that reduce the embodied carbon as compared to a standard practice fit out through Life Cycle Assessment (LCA) methodology.
- Responsible Construction Practices: Ensuring that the head contractor implements best practice environmental sustainability measures on site during construction and ensures implementation of site workers' health and wellbeing support during the construction.
- Monitoring and Reporting: Ensuring that the ESD targets agreed on by the project during the concept design stage are measured and tracked during design and construction phase.

3.4 Construction Activities

3.4.1 Work Methodology

It is expected that the internal works would include alterations to room functionality and overall upgrades. The external works would include the attachment of an elevator. These additions and alterations would be undertaken in accordance with the architectural drawings supplied which are to cover aspects of removal, waste management and performance. The works are to be undertaken by suitably qualified contractors in accordance with the final design specifications and a site-specific Construction Environmental Management Plan (CEMP), covering all aspects of environmental management and performance, including all commitments and mitigation measures in this REF.

The proposal would mostly entail internal works with the exception of the elevator, connecting façade/footbridge, and associated engineering works. The proposal would also entail some structural remediation to nominated internal building elements and remediation of hazardous materials. Hence, the proposal is likely to comprise the following overall methodology:

- Site establishment including setting up temporary fencing and enabling works and establishing any ancillary/storage facilities within a suitable location within the site.
- Transport of plant, equipment, and materials to site to perform removal works, followed by alterations and additions for construction of the proposal.
- Decommissioning of any ancillary facilities and site demobilisation.
- Testing and certification of the new lift.

It should also be noted that the building remains operational and therefore construction include stages

- Stage 1 to nominally include ground floor works (except for marine operations workshop, storage and maintenance area). Stage 1 early or express works identified as



ground floor comms room (to be operational prior to de-commission of Level 1 comms room and Level 1 demolition.

- Stage 2 (or 3) works to include demolition and construction of Level 1 shower / locker / amenity areas. (This area is to remain functional for use by Port Authority marine operations for a maximised period during construction, with access via external north-west fire stair.

3.4.2 Demolition Plans

The proposal would require some demolition works to be conducted for the site. Below are the demolition plans for the ground floor, level 1 and level 2. A detailed drawing of the demolition works can be found in Appendix A.

3.4.3 Construction Duration and Hours

Construction duration is expected to take approximately 12 months and is scheduled to commence in quarter 1, 2025.

Standard working hours are proposed for the construction phase:

- Monday to Friday: 7am – 6pm.
- Saturday: 8am – 1pm.
- Sunday and Public Holidays: No works.

For any required out of hours work, the Contractor is required to prepare an application, including the justification of the proposed out of hours works and consideration of noise and vibration impacts and mitigations, for approval by Port Authority.

3.4.4 Plant and Equipment

Various machinery, handheld tools and equipment would likely be utilised. These include, for example, generators, jackhammers, concrete saws, grinders, rollers and pumps. Waste storage bins are also expected to be placed in the vicinity of construction activities.

Lift excavation and installation:

- Hydraulic rock breakers, rock saws or impact breakers
- Small to medium excavator
- Cranes
- Concrete mixers scaffolding
- Forklifts
- Hoists
- Lifting equipment such as a winch



- Power Tools

Internal refurbishment:

- Demolition equipment such as jackhammers, sledgehammers and demolition saws
- Hand tools both electrical and non-electrical
- Painting equipment
- Flooring equipment like tile cutters, extractors and flooring nailers
- Scissor lifts or cherry pickers if needed for high reach work
- HVAC systems
- Dumpsters

3.4.5 Ancillary Facilities

A temporary Contractor’s administrative area would be established on Level 2 and Contractor’s external ancillary facilities (i.e. demarcation of Contractor’s dedicated area, and marine operations dedicated areas) would be made within part of the existing car park. An indicative staging diagram is provided in Figure 3-3.

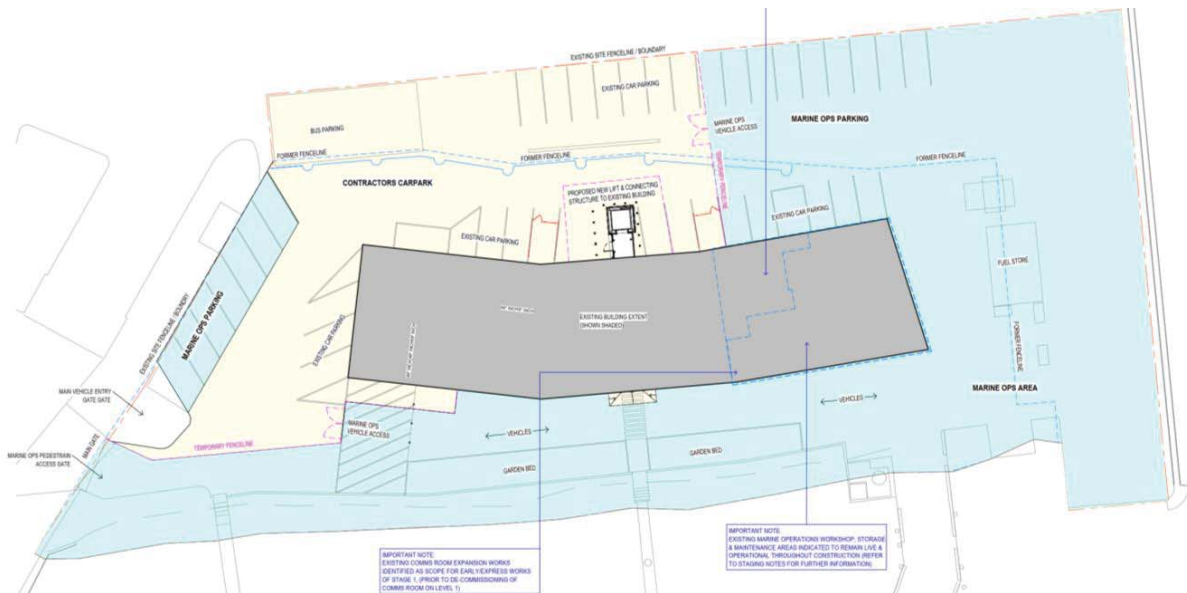


Figure 3-3 Indicative site staging diagram with yellow area proposed contractors car park/ancillary facilities and blue is the Marine Operations area (Source: Group GSA, 2024)

3.4.6 Traffic Management and Access

Traffic and pedestrian management would be required within the site, which is not publicly accessible. The Contractor is able to access the site via the existing accesses. Temporary fencing is to be set up to ensure the safety of construction personnel, staff and visitors to the



site. Temporary fencing or hoardings would not be secured to the heritage building. It is not expected that there would be disruptions to traffic during construction outside of temporary mobilisation and demobilisation of vehicles. Temporary fencing, enabling works and establishing any ancillary/storage facilities within a suitable location within the site would be set up to ensure the safety of construction personnel, visitors and staff members.

During construction, there may be slight disruptions to workers impacted by a reduction in car spaces available to staff.

3.5 Operation

The proposal would not change existing operations at Moore's Wharf by Port Authority. Periodic lift maintenance would be carried out by a contractor engaged by Port Authority.



4. Statutory Planning Framework

4.1 Commonwealth Legislation

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act, a referral is required to be submitted to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for actions that have the potential to significantly impact on Matters of National Environmental Significance (MNES) or the environment where: A) actions proposed are on, or would affect Commonwealth land and the environment, or B) Commonwealth agencies are proposing to take an action.

The nine MNES protected under the EPBC Act are:

- World heritage properties.
- National Heritage places.
- Wetlands of international importance (Listed under the Ramsar Convention).
- Listed threatened species and ecological communities.
- Migratory species protected under international agreements.
- Commonwealth marine areas.
- The Great Barrier Reef Marine Park.
- Nuclear Actions (including uranium mines).
- A water resource, in relation to coal seam gas development and large coal mining development.

An 'action' is defined to include a project, development, undertaking, activity or series of activities. An approval for such an action may be required from the Minister for the Environment and Water. The site is located within the vicinity of the "Sydney Harbour Bridge" which is inscribed on the National Heritage List, however the proposal would not impact on this heritage item. There would be no impact to threatened species listed under the EPBC Act. As the proposal would not have a significant impact on the item or any other MNES or on Commonwealth land, a referral to the Commonwealth's DCCEEW is not required.

4.1.2 Disability Discrimination Act 1992

The Disability Discrimination Act 1992 (DDA) aims to eliminate as far as possible, discrimination against persons on the ground of disability in areas including access to premises and the provision of facilities, services and land. The proposal has been designed to provide DDA compliant access to the building via the installation of the new lift and through internal refurbishment to each level.



4.2 NSW Legislation

4.2.1 Environmental Planning and Assessment Act 1979

The EP&A Act is the principal planning legislation for NSW. Section 5.5 of the EP&A Act requires determining authorities, when assessing an 'activity' under Part 5, to "examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity". Section 6 of this REF contains an environmental assessment of the proposed activity against the requirements of Section 5.5 of the EP&A Act.

Section 6.7(2) of the EP&A Act states that a construction certificate is not required for Crown building work that is certified under Part 6 of the EP&A Act to comply with the BCA. As per Section 6.28 of the EP&A Act and the associated definitions ('Crown building work', 'Crown' and 'building'), the proposed 'Crown building work' cannot commence unless the Crown building work is certified by or on behalf of the Crown (in this case, Port Authority) to comply with the BCA.

4.2.2 Environmental Planning and Assessment Regulation 2021

Part 8, Section 171 of the EP&A Regulation provides that the determining authority "must take into account the environmental factors specified in the environmental factors guidelines that apply to the activity" for the purposes of Part 5 of the EP&A Act. These requirements are considered in Table 4-1.

Section 171A of the EP&A Regulation requires:

"(1) When considering the likely impact on the environment of an activity proposed to be carried out in a regulated catchment, a determining authority must take into account—

(a) the matters a consent authority must consider under State Environmental Planning Policy (Biodiversity and Conservation) 2021, sections 6.6(1), 6.7(1), 6.8(1) and 6.9(1), and

(b) the matters of which a consent authority must be satisfied under State Environmental Planning Policy (Biodiversity and Conservation) 2021, sections 6.6(2), 6.7(2), 6.8(2) and 6.9(2).

4) When considering the likely impact on the environment of an activity proposed to be carried out in the Sydney Harbour Catchment, the determining authority must, in addition to the matters referred to in subsection (1), take into account the matters a consent authority must consider under State Environmental Planning Policy (Biodiversity and Conservation) 2021, section 6.28(1)."

The site is located within the Sydney Harbour Catchment which is a regulated catchment. Section 4.3.4 of this REF provides an assessment of the proposal in accordance with the abovementioned sections of the BC SEPP.



Table 4-1 Section 171 of EP&A Regulation considerations

Factor	Impacts
(a) the environmental impact on a community	The proposal is not anticipated to cause any adverse environmental impact upon its community and surrounds. All minor impacts can be reasonably mitigated provided the mitigation measures contained herein and any other relevant environmental management plan/s are implemented.
(b) the transformation of the locality	The proposal would see the minor transformation of the locality through the construction and installation of the external lift.
(c) the environmental impact on the ecosystem of the locality	As noted above, the proposal is considered to promote a net positive environmental benefit to the ecosystem of the locality.
(d) reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality	The proposal would see the temporary reduction in the aesthetic quality during the construction phase which would see temporary construction equipment and fencing around Moore’s Wharf building site.
(e) the effects on any locality, place or building that has – (i) aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance, or (ii) other special value for present or future generations	The proposal is considered to have a positive socio-economic benefit for both present and future generations for building workers and visitors and also aligns with the ecologically sustainable development (ESD) principles. The principles are: Integration of Environmental, Economic, and Social Considerations, Precautionary Principle, Intergenerational Equity, Conservation of Biodiversity and Ecological Integrity, Improved Valuation and Pricing of Environmental Resources and Polluter Pays Principle. The proposal would generally not affect the cultural heritage significance of the site, and significance of heritage items, heritage conservation areas and historical archaeological potential located in the vicinity of the site during construction and operation.
(f) the impact on the habitat of protected animal, plant or other form of life, whether living on land, in water or in the air	Nil.
(g) the endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air	Nil.
(h) long-term effects on the environment	Nil.
(i) degradation of the quality of the environment	Results for the construction noise assessment shows some potential exceedances in worst-case scenario with the relevant noise management levels. Impacts are anticipated to be mainly to occupants of the building. Best use practices and high-quality tools and equipment are recommended to alleviate any potential temporary noise impacts to the site and to nearby sensitive receivers in accordance with the Interim Construction Noise Guideline. There would be no operational impacts that degrade the quality of the environment.
(j) risk to the safety of the environment	The proposal is unlikely to cause any safety risks to the environment provided the adoption and implementation of safe work practices and the provisions of the proposed CEMP and any mitigation measures outlined herein are adopted.



Factor	Impacts
(k) reduction in the range of beneficial uses of the environment	Nil.
(l) pollution of the environment	The proposal is unlikely to generate any significant pollution risks to the environment.
(m) environmental problems associated with the disposal of waste	The proposal is unlikely to cause any adverse environmental impacts associated with the disposal of waste. A Construction Environmental Management Plan is to be prepared prior to commencement of works, and include a waste management section to manage waste. All waste is to be disposed of thoughtfully and at an appropriately licensed waste facility.
(n) increased demands on natural or other resources that are, or are likely to become, in short supply	Nil.
(o) the cumulative environmental effect with other existing or likely future activities	Placemaking NSW have a proposal to expand the dry land area of Marrinawi Cove and use some of the Moore's Wharf hardstand for this purpose. However, there is no timeline for this and consultation is ongoing with Placemaking NSW to ensure effective management of the two proposals.
(p) the impact on coastal processes and coastal hazards, including those under projected climate change conditions	Nil. The proposal is not anticipated to have any significant impacts to coastal processes and coastal hazards, including those under projected climate change conditions.
(q) applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	<p>The Greater Cities Commission was officially dissolved on 1 January 2024.</p> <p>Regardless, the proposal is consistent with the Eastern City District Plan (Greater Sydney Commission, March 2018) (Plan), which states that Sydney Harbour contributes as a working harbour.</p> <p>As per Section 3.9 of the EP&A Act, the City of Sydney Local Strategic Planning Statement (30 March 2020) must be consistent with the Eastern City District Plan. The site is within the City of Sydney LGA, but is not subject to any Council planning controls.</p>
(r) other relevant environmental factors	Nil.

The EP&A Regulation (s171(4)) requires publication of a REF for activities with:

- An estimated development cost (EDC) of more than \$5 million or,
- An approval or permit for activity that requires approval under:
 - *Fisheries Management Act 1994* (NSW) sections 144, 201, 205 or 219, or
 - *Heritage Act 1977* (NSW) section 57, or
 - *National Parks and Wildlife Act 1974* (NSW) section 90 or
 - *Protection of the Environment Operations Act 1997* (NSW) sections 47-49 or 122, or
- If the determining authority considers it to be in the public interest.



The proposal triggers the above requirements for publishing as it has an EDC of more than \$5 million. The REF would be published on Port Authority's website.

4.2.3 Heritage Act 1977

The *Heritage Act 1977* contains the provisions for listing sites or places on the State Heritage Register (SHR) and the protection of relics. The site is not listed on the SHR.

Section 170 of the *Heritage Act 1977* requires State Government Agencies to establish and keep a Heritage and Conservation Register. Each Government Agency is responsible for ensuring that the items entered on its Heritage and Conservation Register are maintained with due diligence in accordance with the guidelines, "State Agency Heritage Guide: Management of Heritage by NSW Government Agencies" (SAHG). The Moore's Wharf building is listed in the Port Authority's Section 170 Register of having State significance. A SoHI has been prepared with a summary included in Section 6.1 and copy in Appendix B.

Clause 4.14 of the SAHG states that:

Proposals involving the alteration, disposal or demolition of the heritage assets of State heritage significance (not listed on the State Heritage Register) should be referred to the Heritage Council for comment. Note that the Heritage Council will provide comment to the State Agency within 40 days of receipt of the proposal.

Port Authority invited written feedback from Heritage NSW, as delegate to the Heritage Council, via letter dated 9 October 2024. Written advice was provided by Heritage NSW in a letter dated 11 November 2024 (see Appendix C).

The Heritage Act 1977 defines a "relic" as follows:

"relic means any deposit, artefact, object or material evidence that:

(a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and

(b) is of State or local heritage significance."

The Two Mooring Anchors and other remaining industrial relics on the site include the hoist beams on the gable frontages and the hoisting system to the east elevation. There are no known maritime heritage sites listed at or in the vicinity of the site.

As per the recommendation by Heritage NSW in their letter dated 11 November 2024, a Historical Archaeological Assessment (HAA), including a Maritime Archaeological Desktop Assessment (MADA) will be undertaken prior to lift excavation works to assist in determining the potential for archaeological remains and relics to be present within the lift pit area.

Expected mitigation measures related to the HAA and MADA have been added to this REF. Any requirements arising out of the HAA (including MADA) will be undertaken as part of the project. The construction contractor is to include additional mitigation measures (if any) from the HAA and MADA to their Construction Environmental Management Plan (CEMP).



4.2.4 Other Relevant NSW Legislation

Table 4-2 considers other relevant NSW legislation and regulations.

Table 4-2 Other relevant NSW legislation considerations

Applicable Legislation	Considerations
<i>Biodiversity Conservation Act 2016</i>	The site does not contain suitable habitat for any listed threatened species or community and is unlikely to have a significant impact on any threatened species or community.
<i>Contaminated Land Management Act 1997</i>	The site has not been declared under the Act as being significantly contaminated.
<i>Fisheries Management Act 1994</i>	The site does not involve works to aquatic habitats.
<i>National Parks and Wildlife Act 1974</i>	<p>A basic Aboriginal Heritage Information Management System (AHIMS) search by Port Authority of the Lot & DP with a 50m buffer was undertaken on the 19 September 2024 and found 1 recorded Aboriginal site (AHIMS site 45-6-0519). In relation to this site, Lampert and Truscott (1984) excavated beneath the rubble floor at the former location of the Moore's Wharf Building in 1980 after Aboriginal midden material (open camp site) was identified during historical archaeological excavations (Artefact, 2016).</p> <p>The excavation at the former building location revealed a 10 cm shell midden layer overlying 30 cm of compact grey sand containing approximately 392 stone artefacts, including cores, flakes, and fabricators. Shells identified included rock and mud oyster, cockle, whelk, and mussel. The artefacts exhibited techniques such as bipolar flaking and the use of small pebbles, with materials like silcrete, quartz, quartzite, and chert. These findings align with the post-Bondaian phase of Aboriginal culture in the region. Evidence of continued Aboriginal presence into the historic period was indicated by a small number of European ceramic fragments found in the grey sand layer.</p> <p>The HAA will include a brief summary of Aboriginal heritage values on the site and identify any additional mitigation measures.</p>
<i>Protection of the Environment Operations Act 1997 (PoEO Act)</i>	<p>The proposal does not involve a 'scheduled activity' under Schedule 1 of the PoEO Act. Accordingly, an Environment Protection Licence (EPL) is not required for the proposal. However, in accordance with Section 148 of the POEO Act, pollution incidents causing or threatening material harm to the environment must be notified immediately to each 'relevant authority' (in this order):</p> <ul style="list-style-type: none"> • the appropriate regulatory authority (ARA) • the Environment Protection Authority (EPA) (if the EPA is not the ARA) • If the EPA is the ARA, the local authority for the area of the incident • the Ministry of Health via the Local Public Health Unit • SafeWork NSW • Fire and Rescue NSW. <p>The duty to notify applies to the person carrying on the activity, an employee carrying on the activity and the occupier of premises where the incident occurs. This would be managed in the CEMP to be prepared and implemented by the Contractor.</p>
<i>Water Management Act 2000</i>	The proposal is exempt from the requirement to obtain a 'controlled activity' approval under Clause 41 of the <i>Water Management (General) Regulation 2018</i> for work on waterfront land as it is being conducted by a public authority.



Applicable Legislation	Considerations
<i>Waste Avoidance and Resource Recovery Act 2001</i>	<p>The proposal would apply the hierarchy under the Act when devising and implementing waste management procedures using the principles of waste avoidance, waste reduction and waste re-use or waste recycling.</p> <p>A specialist sustainability consultant has been engaged for the proposed works, to target key sustainability issues, including construction waste reduction.</p>

4.3 Planning Instruments

4.3.1 State Environmental Planning Policy (Transport and Infrastructure) 2021

Section 2.89(1)(a) of the TI SEPP specifies that development for the purpose of alterations of or additions to a public administration building, may be carried out by, or on behalf of a public authority without consent. The proposal can therefore be assessed and determined by Port Authority under Division 5.1 of the EP&A Act. Development consent under Part 4 of the EP&A Act from the City of Sydney Council is therefore not required.

4.3.2 State Environmental Planning Policy (Planning Systems) 2021

State Environmental Planning Policy (Planning Systems) 2021 (PS SEPP) identifies development that is State significant infrastructure (SSI) and critical State significant infrastructure.

Section 2.6(1) of the PS SEPP declares development to be SSI if the development is, by the operation of a SEPP, permissible without development consent under Part 4 of the EP&A Act and the development is specified in Schedule 3 of the PS SEPP. The proposal is not SSI as declared by Schedule 3 of the PS SEPP.

4.3.3 State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021

The site is zoned RE1 Public Recreation under Appendix 5 of the State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021 (EHC SEPP) (Figure 4-1) as part of the Barangaroo site State Significant Precinct. The provisions of the EHC SEPP are not applicable pursuant to Appendix 5, Section 22(1) of the EHC SEPP as the proposal is permitted to be carried out without development consent under the TI SEPP as noted in Section 4.3.1 above.



Figure 4-1 Land zoning (Source: NSW Planning Portal, 2024)

4.3.4 Sydney Environmental Planning Policy (Biodiversity and Conservation) 2021

Part 6.2 of the BC SEPP applies to development in regulated catchments including the Sydney Harbour Catchment and Part 6.3 applies to Sydney Harbour Foreshores and Waterways Area.

Table 4-3 considers the relevant sections of the BC SEPP as required by Section 171A of the EP&A Regulation.

Part 6.3 of the BC SEPP covers all the waterways of Sydney Harbour, the foreshores and entire catchment. It also zones the waterways below mean high water mark into nine different zones to suit the differing environmental characteristics and land uses of the harbour and its tributaries. The proposal does not involve any works within the waterway.

Table 4-3 BC SEPP Part 6.2 considerations

BC SEPP Section	Impact
6.6 Water quality and quantity	
(1) In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following— (a) whether the development will have a neutral or beneficial effect on the quality of water entering a waterway, (b) whether the development will have an adverse impact on water flow in a natural waterbody, (c) whether the development will increase the amount of stormwater run-off from a site,	(a) Not applicable. (b) Not applicable. (c) Construction of the proposal would not increase stormwater run-off from the site. (d) Not applicable. (e) Not applicable. (f) No cumulative impacts from the proposal. (g) Not applicable.



BC SEPP Section	Impact
<p>(d) whether the development will incorporate on-site stormwater retention, infiltration or reuse,</p> <p>(e) the impact of the development on the level and quality of the water table,</p> <p>(f) the cumulative environmental impact of the development on the regulated catchment,</p> <p>(g) whether the development makes adequate provision to protect the quality and quantity of ground water.</p>	
<p>(2) Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied the development ensures—</p> <p>(a) the effect on the quality of water entering a natural waterbody will be as close as possible to neutral or beneficial, and</p> <p>(b) the impact on water flow in a natural waterbody will be minimised.</p>	<p>(a) Construction of the proposal would not affect the quality of water entering Sydney Harbour.</p> <p>(b) Not applicable.</p>
<p>6.7 Aquatic ecology</p>	
<p>(1) In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following—</p> <p>(a) whether the development will have a direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation,</p> <p>(b) whether the development involves the clearing of riparian vegetation and, if so, whether the development will require—</p> <p>(i) a controlled activity approval under the <i>Water Management Act 2000</i>, or</p> <p>(ii) a permit under the <i>Fisheries Management Act 1994</i>,</p> <p>(c) whether the development will minimise or avoid—</p> <p>(i) the erosion of land abutting a natural waterbody, or</p> <p>(ii) the sedimentation of a natural waterbody,</p> <p>(d) whether the development will have an adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area,</p> <p>(e) whether the development includes adequate safeguards and rehabilitation measures to protect aquatic ecology,</p> <p>(f) if the development site adjoins a natural waterbody—whether additional measures are required to ensure a neutral or beneficial effect on the water quality of the waterbody.</p>	<p>(a) There are no direct, indirect or cumulative impacts expected.</p> <p>(b) Not applicable.</p> <p>(c)(i) The proposal would have no adverse erosion impacts to the land abutting a natural waterbody.</p> <p>(c)(ii) Erosion and sedimentation impacts from the minor amount of external construction will be minimised or avoided through a site-specific CEMP that would be prepared and implemented.</p> <p>(d) Not applicable.</p> <p>(e) A site-specific CEMP would be prepared and implemented.</p> <p>(f) Works would be undertaken from landside only to minimise any disturbance to water quality.</p>
<p>(2) Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied of the following—</p> <p>(a) the direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals</p>	<p>(a) Not applicable.</p> <p>(b) No impacts to aquatic reserves.</p> <p>(c) Not applicable.</p>



BC SEPP Section	Impact
<p>or vegetation will be kept to the minimum necessary for the carrying out of the development,</p> <p>(b) the development will not have a direct, indirect or cumulative adverse impact on aquatic reserves,</p> <p>(c) if a controlled activity approval under the <i>Water Management Act 2000</i> or a permit under the <i>Fisheries Management Act 1994</i> is required in relation to the clearing of riparian vegetation—the approval or permit has been obtained,</p> <p>(d) the erosion of land abutting a natural waterbody or the sedimentation of a natural waterbody will be minimised,</p> <p>(e) the adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area will be minimised.</p>	<p>(d) The proposal would have no adverse erosion impacts to the land abutting a natural waterbody. A site-specific CEMP would be prepared and implemented.</p> <p>(e) Not applicable.</p>
<p>6.8 Flooding</p>	
<p>(1) In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the likely impact of the development on periodic flooding that benefits wetlands and other riverine ecosystems.</p>	<p>No changes to periodic flooding as a result of the proposal.</p>
<p>(2) Development consent must not be granted to development on flood liable land in a regulated catchment unless the consent authority is satisfied the development will not—</p> <p>(a) if there is a flood, result in a release of pollutants that may have an adverse impact on the water quality of a natural waterbody, or</p> <p>(b) have an adverse impact on the natural recession of floodwaters into wetlands and other riverine ecosystems.</p>	<p>(a) No adverse impacts on water quality are expected from the proposal.</p> <p>(b) No adverse impacts to wetlands or riverine ecosystems are expected.</p>
<p>6.9 Recreation and public access</p>	
<p>(1) In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider—</p> <p>(a) the likely impact of the development on recreational land uses in the regulated catchment, and</p> <p>(b) whether the development will maintain or improve public access to and around foreshores without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation.</p>	<p>(a) Not applicable.</p> <p>(b) Not applicable.</p>
<p>(2) Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied of the following—</p> <p>(a) the development will maintain or improve public access to and from natural waterbodies for recreational purposes, including fishing, swimming and boating, without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation,</p>	<p>(a) Not applicable.</p> <p>(b) Not applicable.</p> <p>(c) Not applicable.</p>



BC SEPP Section	Impact
<p>(b) new or existing points of public access between natural waterbodies and the site of the development will be stable and safe,</p> <p>(c) if land forming part of the foreshore of a natural waterbody will be made available for public access as a result of the development but is not in public ownership—public access to and use of the land will be safeguarded.</p>	
<p>6.28 General</p>	
<p>(1) In deciding whether to grant development consent to development in the Foreshores and Waterways Area, the consent authority must consider the following—</p> <p>(a) whether the development is consistent with the following principles—</p> <p>(i) Sydney Harbour is a public resource, owned by the public, to be protected for the public good,</p> <p>(ii) the public good has precedence over the private good,</p> <p>(iii) the protection of the natural assets of Sydney Harbour has precedence over all other interests,</p> <p>(b) whether the development will promote the equitable use of the Foreshores and Waterways Area, including use by passive recreation craft,</p> <p>(c) whether the development will have an adverse impact on the Foreshores and Waterways Area, including on commercial and recreational uses of the Foreshores and Waterways Area,</p> <p>(d) whether the development promotes water-dependent land uses over other land uses,</p> <p>(e) whether the development will minimise risk to the development from rising sea levels or changing flood patterns as a result of climate change,</p> <p>(f) whether the development will protect or reinstate natural intertidal foreshore areas, natural landforms and native vegetation,</p> <p>(g) whether the development protects or enhances terrestrial and aquatic species, populations and ecological communities, including by avoiding physical damage to or shading of aquatic vegetation,</p> <p>(h) whether the development will protect, maintain or rehabilitate watercourses, wetlands, riparian lands, remnant vegetation and ecological connectivity.</p>	<p>(a) The proposal is an upgrade of a building which is not publicly accessible, however the design for the lift has considered the visual impacts to the surrounding Sydney Harbour foreshore landscape.</p> <p>(b) Not applicable.</p> <p>(c) No adverse impacts are expected.</p> <p>(d) The proposal does not change existing land uses.</p> <p>(e) Not applicable as the proposal is primarily an internal refurbishment of an existing building.</p> <p>(f) Not applicable.</p> <p>(g) Not applicable.</p> <p>(h) Watercourses (Sydney Harbour) would be protected during construction and operation of the proposal.</p>



4.3.5 State Environmental Planning Policy (Resilience and Hazards) 2021

The proposal is located within the coastal environment area and the coastal use area under the State Environmental Planning Policy (Resilience and Hazards) 2021 (RH SEPP). Development on land within the coastal environment area (Section 2.10) and land within the coastal use area (Section 2.11) are not allowed except for land that is within the Foreshores and Waterways Area within the meaning of the BC SEPP. The site is located within the Foreshores and Waterways Area. Therefore, Section 2.10 and 2.11 provisions of the Resilience and Hazards SEPP are not applicable. The proposal would not have potential adverse impacts to the foreshore area and is consistent with the aims of the BC SEPP.

Chapter 4 of the RH SEPP applies to the whole of the State and aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment by specifying when consent is required, and when it is not required, for a remediation work.

In accordance with Chapter 4 of the RH SEPP, a consent authority must not consent to the carrying out of any development on land unless it has considered whether the land is contaminated and, if the land is contaminated, it is satisfied that the land is suitable in its contaminated state for the purpose for which the development is proposed to be carried out. A Geotechnical and Soil Contamination Investigation has been carried out for the site, refer to Section 6.4 and Appendix F for further discussion on soil contamination.

4.3.6 Sydney Local Environmental Plan 2012

As the land is subject to the TI SEPP, the Sydney Local Environmental Plan 2012 (LEP) is not a relevant environmental planning instrument for the site and does not apply to the proposal.



5. Consultation

5.1 Government Agency Consultation

Port Authority invited written feedback from Heritage NSW via letter dated 9 October 2024. Written advice was provided on 11 November 2024. Refer to copies of correspondence in Appendix C. Prior to receiving the response, two meetings were held with Heritage NSW on 23 October 2024 and 31 October 2024. Comments raised by Heritage NSW and the responses are summarised in Table 5-1.

Table 5-1 Heritage NSW comments

Heritage NSW Comment	Response
<p>The SoHI could be strengthened by including a detailed visual impact assessment.</p>	<p>A qualitative visual impact assessment has been prepared by Worley Consulting to document the potential construction and operational phase visual impacts of the proposal, and is included in Section 6.2 of this REF.</p>
<p>Include an options analysis in the REF that sets out how the proposed lift design and location has been selected, and how heritage considerations have been balanced in this decision making.</p>	<p>See Section 2.3 of this REF.</p>
<p>The SoHI should incorporate the detailed significance assessment of the Moore’s Wharf Building, which was completed as part of the Port Authority’s recent update to its s170 register.</p> <p>Heritage NSW recommend that:</p> <ul style="list-style-type: none"> • The grading of significance of different features of the building (as established through the detailed significance work already undertaken) is incorporated into detailed heritage management recommendations that form the basis for instruction to contractors. • Where possible, existing penetrations to heritage fabric are reused. Creating new penetrations, for example for plumbing and electrical services, should be avoided. • The architect should provide detailed plans of proposed fix points to help avoid unnecessary impacts. • A detailed heritage induction is provided to all construction workers. • Hold points are developed to provide opportunities for the heritage architect to inspect works and to help avoid unintended impacts to the heritage fabric. 	<p>The grading of significance will be incorporated into a future maintenance plan for Moore’s Wharf, in accordance with the Heritage Asset Management Strategy (HAMS) for Port Authority. The details of the proposal and the SoHI were informed by the detailed significance assessment.</p> <p>All other recommendations have been added as mitigation measures in this REF.</p>



Heritage NSW Comment	Response
<ul style="list-style-type: none"> The height of the lift well structure is reduced if possible, noting that the mechanics of the lift are a constraint in this regard. 	
<p>Potential archaeological values and impacts need to be assessed.</p> <p>A desktop assessment of the potential for historical or maritime archaeological deposits should be conducted to inform the REF.</p> <p>Historical and maritime archaeological assessments should be prepared by suitably qualified and experienced historical and maritime archaeologists (respectively) in accordance with the guidelines <u>Archaeological Assessment (1996)</u> and <u>Assessing Significance for Historical Archaeological Sites and Relics (2009)</u>. Any maritime archaeological works must be undertaken by a suitably qualified and experienced maritime archaeologist as defined in the <u>Australasian Institute for Maritime Archaeology Code of Ethics s 2 e.</u></p>	<p>A HAA, including a MADA will be undertaken prior to lift excavation works to assist in determining the potential for archaeological remains and relics to be present within the lift pit area. Any requirements arising out of the HAA (including MADA) will be undertaken as part of the project.</p> <p>The construction contractor is to include additional mitigation measures (if any) from the HAA and MADA into their CEMP.</p>
Heritage NSW is able to provide further advice on future proposed relocation of the anchors.	Noted.

5.2 Transport and Infrastructure SEPP Consultation

Part 2.2 General, Division 1 of the TI SEPP prescribes consultation to be undertaken by a public authority prior to the commencement of certain activities. A review of the TI SEPP consultation requirements for the proposal is provided in Table 5-2.

Table 5-2 TI SEPP consultation checklist

Development type	Potential impact	Yes / No	If 'yes' consult with	TI SEPP
Stormwater	Are the works likely to have a <i>substantial</i> impact on the stormwater management services which are provided by council?	No	City of Sydney Council	Section 2.10(1)(a)
Traffic	Are the works likely to generate traffic to an extent that will <i>strain</i> the capacity of the existing road system in a local government area?	No	City of Sydney Council	Section 2.10(1)(b)
Sewerage system	Will the works involve connection to a council owned sewerage system? If so, will this connection have a <i>substantial</i> impact on the capacity of any part of the system?	No	City of Sydney Council	Section 2.10(1)(c)
Water usage	Will the works involve connection to a council-owned water supply system? If so, will this require the use of a <i>substantial</i> volume of water?	No	City of Sydney Council	Section 2.10(1)(d)



Development type	Potential impact	Yes / No	If 'yes' consult with	TI SEPP
Temporary structures	Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a <i>minor</i> or <i>inconsequential</i> disruption to pedestrian or vehicular flow?	No	City of Sydney Council	Section 2.10(1)(e)
Road & footpath excavation	Will the works involve more than <i>minor</i> or <i>inconsequential</i> excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?	No	City of Sydney Council	Section 2.10(1)(f)
Local heritage	Is there a local heritage item (that is not also a State heritage item) or a heritage conservation area in the study area for the work? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than <i>minor</i> or <i>inconsequential</i> ?	No	City of Sydney Council	Section 2.11
Flood liable land	Is the work located on flood liable land? If so, will the works change flood patterns to more than a <i>minor</i> extent?	No	City of Sydney Council	Section 2.12
Flood liable land	Is the work located on flood liable land? (to any extent). If so, do the works comprise more than minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance?	No	State Emergency Services	Section 2.13
Development with impacts on certain land within the coastal zone	Is the proposal within a coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land?	No	City of Sydney Council	Section 2.14
National parks and reserves	Is the work adjacent to a national park or nature reserve, or other area reserved under the <i>National Parks and Wildlife Act 1974</i> , or on land acquired under that Act?	No	Environment and Heritage Group, DCCEEW	Section 2.15(2)(a)
Land zoned E1 or equivalent	Is the work on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	No	Environment and Heritage Group, DCCEEW	Section 2.15(2)(b)
Artificial light	Would the work increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky	No	Director of the Siding Spring Observatory	Section 2.15(2)(d)



Development type	Potential impact	Yes / No	If 'yes' consult with	TI SEPP
	region is within 200 kilometres of the Siding Spring Observatory)			
Defence communications buffer land	Is the work on buffer land around the defence communications facility near Morundah? (Note: refer to <i>Defence Communications Facility Buffer Map</i> referred to in section 5.15 of Lockhart LEP 2012, Narrandera LEP 2013 and Urana LEP 2011.	No	Secretary of the Commonwealth Department of Defence	Section 2.15(2)(e)
Mine subsidence land	Is the work on land in a mine subsidence district within the meaning of the <i>Mine Subsidence Compensation Act 1961</i> ?	No	Subsidence Advisory NSW	Section 2.15(2)(f)
Willandra Lakes region world heritage property	Is the development on, or reasonably likely to have an impact on, a part of the Willandra Lakes Region World Heritage Property?	No	The World Heritage Advisory Committee and Heritage NSW	Section 2.15(2)(g)
Western Parkland City land	Is the development within a Western City operational area specified in Schedule 2 of the Western Parkland City Authority Act 2018, with a capital investment value of \$30 million or more?	No	The Western Parkland City Authority constituted under that Act.	Section 2.15(2)(h)

5.3 Future Consultation

The REF would not be publicly displayed for comment; however, the certified REF would be published on Port Authority’s website in accordance with Section 171(4) of the EP&A Regulation.

On-site workers, local residents and businesses surrounding the site would be notified by Port Authority prior to each stage of construction, as required.



6. Environmental Assessment

This Section provides a description of the potential impacts (construction and operation) associated with the facilitation of the proposal. For each likely impact, an assessment is undertaken to ascertain how the proposal would impact the existing environment with mitigation measures to alleviate the impacts included in Section 7.

This environmental impact assessment has been undertaken in accordance with Section 171 of the EP&A Regulation. A checklist of the Section 171 factors and how they have been specifically addressed in this REF is included at Section 4.2.2.

6.1 Heritage

A SoHI has been prepared by Heritage 21 to assess the potential heritage impacts of the proposal. A summary of the SoHI is included below and a copy provided in Appendix B.

6.1.1 Existing Environment

6.1.1.1 Heritage Listings on the Site

There are two heritage listings found on the site (on Lot 51 DP1213772) which are listed in Table 6-1 and the curtilage of the Moore’s Wharf building is shown hatched in red in Figure 6-1.

Table 6-1 Heritage Listings on the Site

List	Item Name	Address	Significance	Item No
Port Authority of NSW Section 170 Heritage and Conservation Register	Moore’s Wharf Building	4 Towns Place, Millers Point	State	4560018
Port Authority of NSW Section 170 Heritage and Conservation Register	Two mooring anchors	4 Towns Place, Millers Point	Local	5063342



Figure 6-1 Port Authority s170 heritage register listings, with Port Authority land ownership outlined in blue. (Source: Port Authority)

It is noted that the Moore's Wharf Building was relocated to the north-east in the late 1970s and the fourth bay was not relocated, hence, the reconstructed building only features three bays (Figure 6-2 and Figure 6-3).

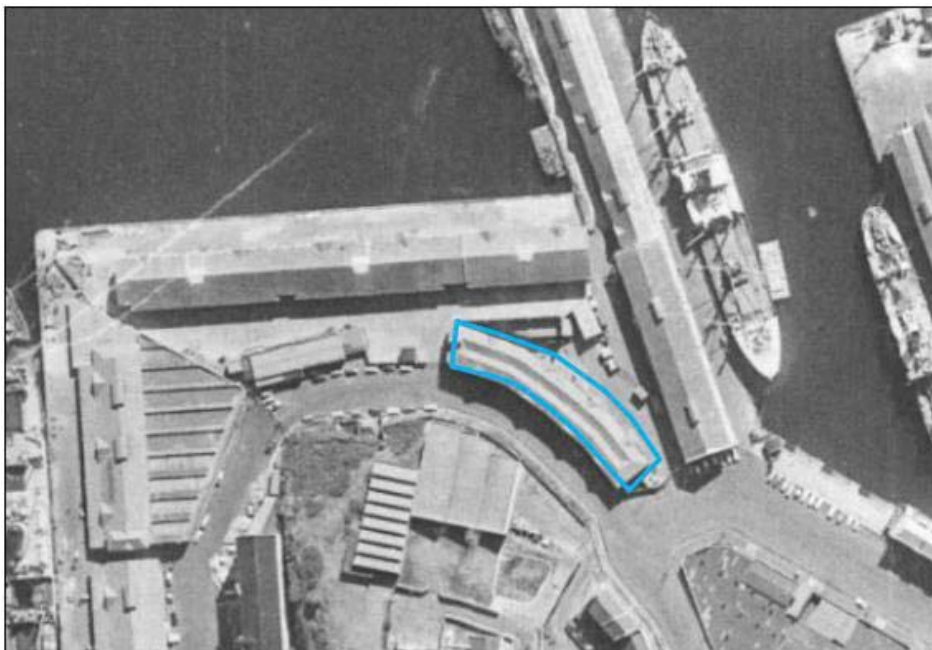


Figure 6-2 1965 aerial view of the site – former location of the Moore's Wharf building (Source: NSW Government Spatial Services in Heritage 21, 2024)



Figure 6-3 The site during reconstruction in circa 1980 (Source: R.J. Lampert & M.C. Truscott in Heritage 21, 2024)

6.1.1.2 Heritage listings in the Vicinity of the Site

There are a number of heritage listings in the vicinity of the site which are detailed below and shown in Figure 6-4:

Schedule 5 of the LEP:

- Sandstone wall and stairs including iron palisade fence (1877)
- Terrace group, Dalgety Terrace (7-13A Dalgety Rod) including interiors (1878)
- Terrace group (15-35A Dalgety Road) including interiors" (1879)
- Retaining Wall (1933)
- Millers Point Conservation Area (C35)

State Heritage:

- Walsh Bay Wharves Precinct (SHR #0059)
- Millers Point and Dawes Point Village Precinct (SHR #01682)

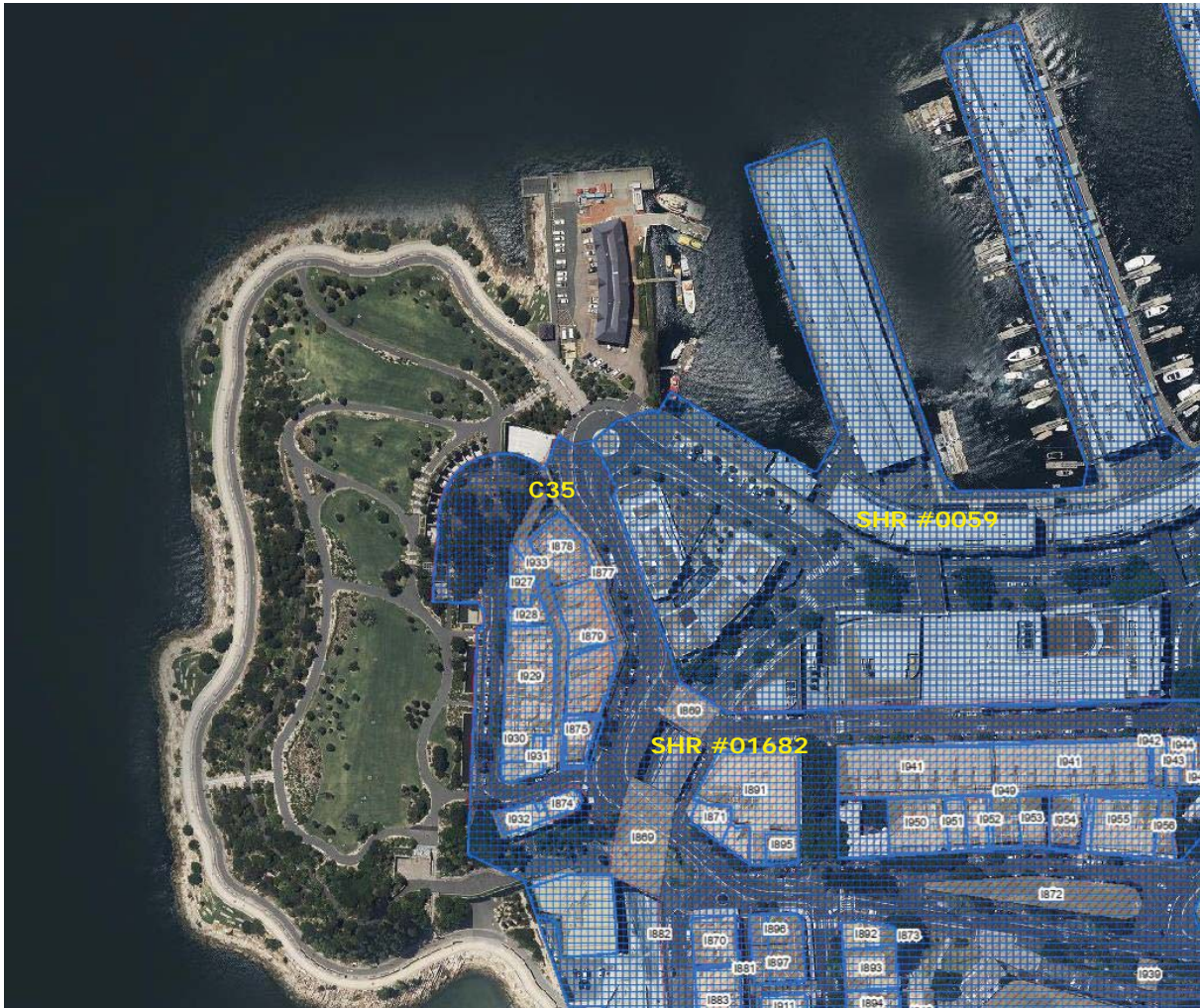


Figure 6-4 Heritage items and conservation areas in the vicinity of the site (Source: NSW Planning Portal, 2024)

It should be noted that within Heritage 21's assessment it was stated that the proposal is not located within the visual catchment of most of the listed heritage items. The potential impact towards heritage items had been limited to the Two Mooring Anchors (Item 5063342), the Walsh Bay Wharves Precinct (SHR #0059) and the Millers Point and Dawes Point Village Precinct (SHR #01682).

The in-depth discussion regarding these items can be found in Heritage 21's SoHI.

6.1.1.3 Historical Archaeological Potential

Historical archaeological potential is defined as the potential of a site to contain significant archaeological remains, including works or relics as identified in the *Heritage Act 1977*. The assessment of historical archaeological potential is based on the identification of former land uses and evaluating whether subsequent actions (either natural or human) may have impacted on archaeological evidence for these former land uses. Knowledge of previous archaeological investigations, understanding of the types of archaeological remains likely to be associated



with various land uses, and the results of site inspection are also taken into consideration when evaluating the potential of an area to contain archaeological remains.

A HAA, including a MADA will be undertaken prior to lift excavation works to assist in determining the potential for archaeological remains and relics to be present within the lift pit area. Any requirements arising out of the HAA (including MADA) will be undertaken as part of the project.

The construction contractor is to include additional mitigation measures (if any) from the HAA and MADA to their CEMP.

6.1.2 Potential Impacts

6.1.2.1 Built Heritage

A summary of the potential impacts from the SoHI is reproduced below:

"The proposed alterations and additions to the Moore's Wharf Building would include the introduction of an external lift to the western elevation of the building to facilitate dignified access for all building users, and a major internal refurbishment which would involve an improved layout to the Ground and First floors. These works would enhance the capability of the operations function by facilitating improved access and a new internal layout. The marine operations base has established a 24-hour active and high functioning environment, which demands reliable access and a fit-for-purpose layout. The proposed alterations and additions to the Moore's Wharf building have been designed to meet these requirements, whilst also giving the utmost consideration to the significance and heritage values of the building.

In the opinion of Heritage 21, the proposed alterations and additions to the Moore's Wharf Building would have a minimal impact to the significance of the building, the adjacent heritage item or conservation areas in the vicinity. The proposal would not detract from the original form, character, scale or presentation of this building, which is considered to be of state significance.

In order to ensure maximum conservation of the Moore's Wharf Building, mitigation measures should be introduced including, but not limited to, the ongoing use of a heritage consultant during project delivery, the use of heritage tradespeople, temporary protection measures, stop works procedures in the event of unexpected finds or damages, a heritage induction to the site, and consultation with Heritage NSW."

6.1.2.2 Archaeology

Based on the site history and the significance assessment, the relocated Moore's Wharf building, and its immediate surrounds are situated on reclaimed land, which is unlikely to contain sub-surface archaeological deposits due to past land disturbance within the small excavation footprint. The Two Mooring Anchors and other remaining industrial relics on the site include the hoist beams on the gable frontages and the hoisting system to the east elevation, which would not be impacted by the proposal according to the SoHI.



Nevertheless, and in accordance with comments received from Heritage NSW, a HAA, including a MADA will be undertaken prior to lift excavation works to assist in determining the potential for archaeological remains and relics to be present within the lift pit area. Any requirements arising out of the HAA (including MADA) will be undertaken as part of the project

The construction contractor is to include additional mitigation measures (if any) from the HAA and MADA into their CEMP.

6.2 Visual Amenity

A qualitative visual impact assessment has been prepared by Worley Consulting to document the potential construction and operational phase visual impacts of the proposal.

6.2.1 Existing Environment

The site is currently owned and managed by Port Authority and it currently serves as a base for marine operations. Located on the historic Walsh Bay waterfront in Sydney, the building integrates into the maritime character of Millers Point. The site lies near the reconstructed Barangaroo Reserve and overlooks a prominent section of Sydney Harbour. This area is characterised by a mix of historic and modern architectural elements, where the sandstone face of Moore's Wharf stands as a landmark heritage feature. Constructed from quarried sandstone in the early Victorian style, the three-story Moore's Wharf building represents a visual statement with masonry and traditional truss roofline. Its natural materials and muted colors blend with the surrounding landscape, enhancing the site's connection to the waterfront.

6.2.2 Potential Impacts

6.2.2.1 Construction

Temporary and minor visual impacts would be associated with the construction phase. Visual impacts of the site compound, ancillary/storage facilities would be minimised through the use of construction site fencing or hoarding that would shield tools and equipment in use behind the hoarding. Increased site traffic and construction activities would lead to a temporary reduction in visual amenity. Impacts would reduce as viewing distance and screening vegetation increase. Furthermore, these visual impacts would be of a temporary nature, located within a restricted access facility and would reduce for all viewpoints once works finish and the construction areas made good.

6.2.2.2 Operation

A qualitative visual impact assessment of the proposal on the surrounding areas has been conducted. The assessment has identified and evaluated the existing visual environment, key views and view types before progressing to an assessment of quantitative and qualitative criteria using best practice methodology.

The operational impacts of the proposal are rated using the landscape character and visual impact grading matrix from EIA-N04 (Figure 6-5).



		Magnitude			
		High	Moderate	Low	Negligible
Sensitivity	High	High	High-Moderate	Moderate	Negligible
	Moderate	High-Moderate	Moderate	Moderate-low	Negligible
	Low	Moderate	Moderate-low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible
		Negligible	Negligible	Negligible	Negligible

Figure 6-5 Landscape character and visual impact rating matrix (Source: Transport for NSW, 2023)

The visual catchment of the proposal is defined by existing buildings, topography and surrounding vegetation and the harbour. The visual envelope map with the eight selected viewpoints is presented in Figure 6-6 and Figure 6-7. The lift structure would also be visible to the public and vessels when on the harbour.



Figure 6-6 Location of the six nearby viewpoints with the visual envelope represented by the light blue shaded areas (Base map source: Nearmap, 2024)

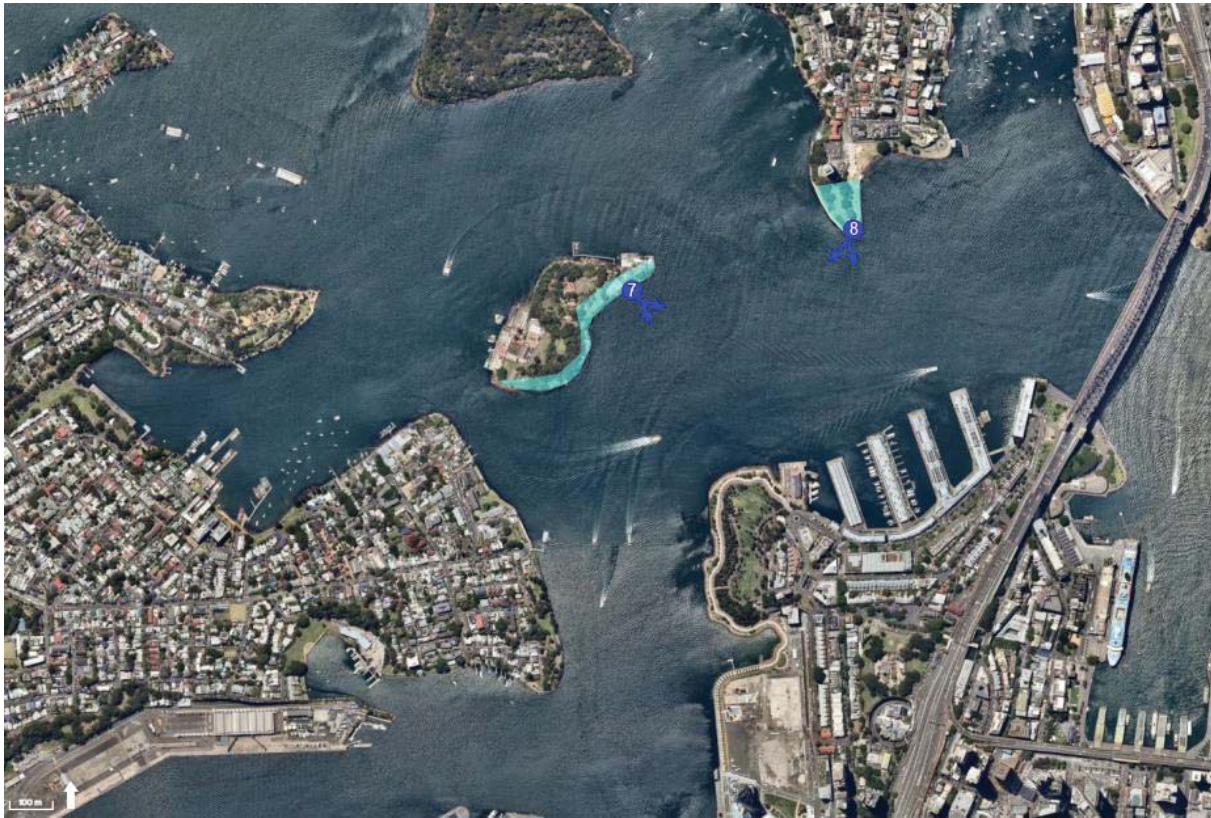


Figure 6-7 Location of the two distant viewpoints with the visual envelope represented by the light blue shaded areas (Base map source: Nearmap, 2024)

Table 6-2 presents the summary of the visual impact analysis for the viewpoints. It is noted images from Google Maps have been utilised for viewpoints 7 and 8 due to their location. The highest visual impact was identified for the public pathway within Barangaroo Reserve (north), near the entry to the Barangaroo Harbour Pool – Marrinawi Cove, due to its proximity to the proposal (i.e. direct view to the new external lift and connecting structure). In addition, as the Barangaroo Reserve is public open recreation space this increases the visual receiver sensitivity and therefore increases the overall rating impact rating to High. Users of the harbour would also have intermittent direct views of the when passing by the site.

The visual and heritage impacts of the external lift design has been mitigated as far possible based on the options analysis as discussed in Section 2.3. The impacts are considered acceptable as the original form, character, scale or presentation of the building have been respected and the new structure is not intrusive to its context and setting.



Table 6-2 Summary of visual impacts for the proposal

Viewpoint Location	Existing View	Receptor Sensitivity	Magnitude					Impact Rating
			Distance	Quantum of View	Period of View	Scale of Change	Overall Magnitude Rating	
<p>1. Pier 8/9, Walsh Bay</p> 	<p>Direct and clear view across to the Moore's Wharf Building (east elevation) and berthing infrastructure over the water.</p>	High	Low	Negligible	Negligible	Negligible	Negligible	Negligible
<p>2. 1 Towns Place, Millers Point</p> 	<p>Partial view of Moore's Wharf Building (south and east elevations) is available at street-level.</p>	Moderate	Low	Low	Low	Low	Low	Moderate-Low




Viewpoint Location	Existing View	Receptor Sensitivity	Magnitude					Impact Rating
			Distance	Quantum of View	Period of View	Scale of Change	Overall Magnitude Rating	
<p>3. 11 Dalgety Road, Millers Point</p> 	<p>Partial view of Moore's Wharf Building (south elevation) is available at street-level.</p>	<p>Moderate</p>	<p>Low</p>	<p>Low</p>	<p>Low</p>	<p>Low</p>	<p>Moderate-Low</p>	
<p>4. Public Pathway, Barangaroo Reserve (north)</p> 	<p>Largely direct and clear view across to the Moore's Wharf Building (west and south elevations). The Two Moorings Anchors are visible behind the fencing.</p>	<p>High</p>	<p>High</p>	<p>High</p>	<p>High</p>	<p>High</p>	<p>High</p>	



Viewpoint Location	Existing View	Receptor Sensitivity	Magnitude					Impact Rating
			Distance	Quantum of View	Period of View	Scale of Change	Overall Magnitude Rating	
<p>5. Walumil Lawns, Barangaroo Reserve (north)</p> 	<p>Partial view of Moore's Wharf Building (west elevation) is available with vegetation providing screening.</p>	Moderate	Low	Low	Low	Low	Moderate-Low	
<p>6. Public Pathway, Barangaroo Reserve (north)</p> 	<p>Partial view of Moore's Wharf Building (west elevation) is available with vegetation providing screening.</p>	Moderate	Low	Low	Low	Low	Moderate-Low	



Viewpoint Location	Existing View	Receptor Sensitivity	Magnitude					Impact Rating
			Distance	Quantum of View	Period of View	Scale of Change	Overall Magnitude Rating	
<p>7. Goat Island</p> 	<p>Direct and clear view across the harbour to the Moore's Wharf Building (west elevation).</p>	<p>Moderate</p>	<p>Low</p>	<p>Low</p>	<p>Low</p>	<p>Low</p>	<p>Moderate-Low</p>	
<p>8. Blues Point Reserve</p> 	<p>Partial view of Moore's Wharf Building (east and north elevation) is available across the harbour.</p>	<p>Low</p>	<p>Low</p>	<p>Negligible</p>	<p>Negligible</p>	<p>Negligible</p>	<p>Negligible</p>	



6.3 Noise and Vibration

The noise and vibration section of the REF is based on consideration of the NSW Interim Construction Noise Guideline (ICNG) (Department of Environment and Climate Change, 2009) and the Construction Noise and Vibration Guideline (CNVG) (Roads and Maritime Services, 2016) and includes a summary of results from use of the TfNSW Construction Noise Estimator.

6.3.1 Existing Environment and Criteria

6.3.1.1 Sensitive Receivers

The site is surrounded by a mix of commercial and residential properties located to the south at Millers Point/Walsh Bay/Barangaroo, by Barangaroo Reserve to the west and by Sydney Harbour to the north and east. A representative selection of the potentially closest impacted receivers is shown in Table 6-3. The distances are the closest distances measured from the middle of the Moore’s Wharf Building to the edge of the sensitive receiver sites which are shown in Figure 6-8 which provides the representatives distances used for the Construction Noise Estimator.

The site is located on a waterfront and is already affected by a number of intermittent marine noise sources, in addition to nearby commercial, road and air traffic noise sources.

Table 6-3 Potentially impacted closest receivers

Potentially impacted sensitive receivers	Type of receiver	Approximate distance from development
4 Towns Place, Barangaroo	Commercial	0 m
Marrinawi Cove	Active Recreation	38 m
Walumil Lawns (Barangaroo Reserve north)	Passive Recreation	67 m
Pier 8/9, Walsh Bay	Commercial	109 m
6 Towns Place, Barangaroo	Residential	130 m
1 Towns Place, Barangaroo	Mixed residential and commercial	131 m



Figure 6-8 Location of closest potentially impacted receivers (Source: Nearmap, 2024)

6.3.1.2 Background Noise Monitoring

Day time noise measurements were undertaken by Acoustic Logic in 2010 around the sensitive receiver groups near Barangaroo Reserve, including at Pier 8 and 9, Towns Place and Dalgety Road, to benchmark the prevailing noise environment. Noise monitoring was undertaken at locations representing the most sensitive receiver groups between 21 May 2010 and 25 May 2010.

Hence, the daytime background noise level at these locations obtained from the measurements are summarised in Table 6-4. A number of 15-minute noise recordings were made at each location between 7am to 5pm on weekdays. The typical lowest levels are presented and used to establish noise goals where there was a significant variation in the measured background noise levels.

Table 6-4 Measured daytime background noise levels (Acoustic Logic, 2010)

Location	Day Background Noise Level dB(A) L ₉₀
Commercial receivers on Hickson Road (in vicinity of site near Barangaroo Reserve)	53
Commercial receivers on Dalgety Road	52
Commercial and residential receivers on Towns Place	53
Commercial receivers on Pier 8/9	52



More recently, a noise and vibration assessment was conducted by Arup (2017), for the development of the Walsh Bay Arts and Cultural Precinct (SSDA 8671).

Short-term and long-term measurement locations undertaken by Arup (2017) that are most representative of the nearby sensitive receivers and coincide generally with the results of the Acoustic Logic (2010) report, being located in the same precinct with similar noise sources, include: Meas. 5 (on the kerb of Hickson Road outside Pier 6/7) and Meas. 6 (on the wharf at Pier 6).

Arup (2017) undertook long-term noise monitoring from Tuesday 8 August to Wednesday 23 August 2017 and Friday 1 September to Wednesday 6 September 2017. The background noise levels adopted for the proposal (Meas. 5) are shown in Table 6-5 below.

Table 6-5 Rating background noise levels at Meas. 5 and Meas. 6 (Arup, 2017)

Location	Background Noise Level dB(A) L ₉₀			
	Day	Evening	Early Night	Late Night
Meas. 5	54	50	48	45
Meas. 6	49	47	44	42

The background noise levels in Table 6-5 are consistent with the typical measured background daytime background levels presented in Table 6-4 and the Acoustic Logic (2010) report.

6.3.1.3 Construction Noise Management Levels

The ICNG and the Draft Construction Noise Guideline (NSW EPA, 2020) provide a framework to consider the impacts of construction noise on residential receivers and other types of receivers including commercial and recreational receivers. Noise Management Levels (NML) provide a noise criterion for construction.

Table 6-6 identifies the NMLs for residential receivers generated from the Construction Noise Estimator for the proposal based on the Meas. 5 background levels from Arup (2017) and the ICNG recommended NMLs including out of hour work (OOHW). As indicated, the existing noise background levels on the kerb of Hickson Road outside Pier 6/7 (Meas. 5) are most representative of the nearby sensitive receivers to the proposal.

Table 6-6 NMLs for Residential receivers

Location/Receiver	NMLs L _{AEQ(15min)} (dBA)			
	Day	Day (OOHW)	Evening (OOHW)	Night (OOHW)
Meas. 5	64	59	55	50

Note: Day is defined as Monday to Friday (7am-6pm) and Saturdays (8am-1pm). Day (OOHW) is defined as Saturdays (7am-8am and 1pm-6pm) and Sundays/Public Holidays (8am-6pm). Evening is defined as Monday to Friday, Saturdays and Sunday/Public Holidays (6pm-10pm). Night is defined as Monday to Friday (10pm-7am), Saturdays (10pm-8am) and Sunday/Public Holidays (6pm-7am).



For commercial receivers (offices, retail outlets), the NMLs are the same for standard and outside standard hours which is 70 $L_{Aeq(15min)}$ (dBA). For recreation receivers, the NMLs are 65 $L_{Aeq(15min)}$ (dBA) and 60 $L_{Aeq(15min)}$ (dBA) for active and passive recreation, respectively.

Appendix E of the CNVG identifies that the sleep disturbance distance for demolition, piling and related works (referred to in Construction Noise Estimator as the “Bridge works” construction scenario) is L_{Amax} 65 dB(A) external at 200 m for open window.

6.3.1.4 Construction Vibration Criteria

Construction vibration is assessed in terms of human discomfort, disruption to sensitive equipment, and structural damage. The CNVG provides a guide for minimum working distances for typical items of vibration intensive plant and this information is reproduced in Table 6-7. The minimum distances are quoted for both:

- Cosmetic damage based on *British Standard 7385-2-1993 Evaluation and measurement for vibration in buildings part 2*.
- Human comfort based on the publication *Assessing Vibration: A Technical Guideline* (Department of Environment and Conservation [DEC], 2006)

Table 6-7 Recommended minimum working distances for vibration intensive plant from sensitive receiver

Plant Item	Rating/Description	Minimum working distance	
		Cosmetic damage (BS 7385)	Human Response (DEC, 2006)
Vibrator Roller	< 50 kN (Typically 1-2 tonnes)	5 m	15 m to 20 m
	< 100 kN (Typically 2-4 tonnes)	6 m	20 m
	< 200 kN (typically 2-4 tonnes)	12 m	40 m
	< 300 kN (Typically 7-13 tonnes)	15 m	100 m
	> 300 kN (Typically 13-18 tonnes)	20 m	100 m
	> 300 kN (> 18 tonnes)	25 m	100 m
Small Hydraulic Hammer	(300kg – 5 to 12t excavator)	2 m	7 m
Medium Hydraulic Hammer	900kg – 12 to 18t excavator)	7 m	23 m
Large Hydraulic Hammer	(1600kg – 18 to 34t excavator)	22 m	73 m
Vibratory Pile Driver	Sheet Piles	2 m to 20 m	20 m
Pile Boring	<800mm	2 m (nominal)	4 m
Jackhammer	Handheld	1 m (nominal)	2 m



6.3.2 Potential Impacts

6.3.2.1 Construction Noise

The Construction Noise Estimator was used to determine the predicted noise levels for standard and outside standard work hours. The “Bridge works” scenario from the Construction Noise Estimator was selected to best represent the potential worst case impacts (exceedance of background levels by construction noise). It is noted that the adopted scenario is a worst case and unlikely scenario, when all the equipment comprising the scenario operate simultaneously.

The closest representative distances as indicated in Table 6-3 were adopted for each sensitive receiver. Direct line of sight to receivers was adopted for the measurements. Construction traffic along the roads surrounding the site would be expected to be minor and within the ICNG NMLs. The magnitudes of noise exceedance are shown in Table 6-8, with red indicating a predicted noise level that exceeds the “Highly Noise Affected” (>75dB(A) criteria).

Table 6-8 Description of Magnitude of Exceedances

Description	Exceedance above criteria dB(A)	Predicted noise level, dB(A)	Colour Scheme
Noticeable	0-10 dB(A)	-	Light Blue
Clearly audible	10-20 dB(A)	-	Light Green
Moderately intrusive	20-30 dB(A)	-	Dark Green
Highly intrusive	>30 dB(A)	-	Yellow
Highly noise affected	-	> 75 dB(A)	Red

The noise levels predicted using the Construction Noise Estimator for standard work hours for the proposed works are shown in

Table 6-9. Noise estimator output sheets are included in Appendix E.

Table 6-9 Predicted noise levels during standard work hours

Sensitive receiver	Receiver type	NML (dB(A))	Predicted noise level L_{Aeq} (15 min) (dB(A))	Level Above NML dB(A)
1 Towns Place	Residential	64	66	2
1 Towns Place	Commercial	70	66	-
4 Towns Place	Commercial	70	93	23
6 Towns Place	Residential	55	66	11
Marrinawi Cove	Active Recreation	65	76	11
Pier 8/9	Commercial	70	68	-
Walumil Lawns	Passive Recreation	60	72	12



The potentially most affected sensitive receiver is 4 Towns Place, Barangaroo due to its proximity, where occupants could experience noise levels exceeding the “Highly noise affected” criteria of more than 75 dB(A) predicted noise level. This commercial receiver is the Moore’s Wharf Building that would remain operational whilst construction is in progress. This would be mainly from potential noise impacts from the construction of the new external lift and connecting structure to the existing building.

Occupants of 6 Towns Place and users of the Marrinawi Cove and Walumil Lawns could experience noise levels exceeding the “Clearly audible” criteria. This would be mainly from potential noise impacts from the construction of the new external lift and connecting structure to the existing building.

The noise levels predicted using the Construction Noise Estimator for outside standard work hours for the proposed works are shown in Table 6-10. Noise estimator output sheets are included in Appendix E.

Table 6-10 Predicted noise levels outside standard work hours (6pm – 7am)

Sensitive receiver	Receiver type	NML (dB(A))	Period	Predicted noise level L_{Aeq} (15 min) (dB(A))	Level Above NML dB(A)
1 Towns Place	Residential	59	Day (OOHW)	66	7
		55	Evening (OOHW)	66	11
		50	Night (OOHW)	66	16
1 Towns Place	Commercial	70	All	66	-
4 Towns Place	Commercial	70	All	93	23
6 Towns Place	Residential	59	Day (OOHW)	66	7
		55	Evening (OOHW)	66	11
		50	Night (OOHW)	66	16
Marrinawi Cove	Active Recreation	65	All	76	11
Pier 8/9	Commercial	70	All	68	-
Walumil Lawns	Passive Recreation	60	All	72	12

The results are similar for outside standard hours with the most affected receiver being the Moore’s Wharf Building itself. It is noted that the recreation areas would be largely unoccupied after sunset times.

Overall, it is considered that noise impacts would be short-term and can be managed through the implementation of all reasonable and feasible mitigation measures for all construction activities to ensure that adverse noise impacts to occupants of the site and nearby sensitive receivers are minimised, as far as possible.



6.3.2.2 Construction Vibration

A detailed assessment has not been undertaken at this stage of design, as the actual vibration levels would be dependent upon site and strata characteristics and specific construction equipment used. A preliminary assessment is provided below.

Demolition works, lift excavation and piling and internal refurbishment works would have the potential to exceed cosmetic damage and human comfort criteria to the Moore's Wharf Building. A detailed vibration assessment would be required prior to construction based on the final construction methodology and selected plant and equipment.

Construction activities that cause vibration are not expected to occur within the minimum safe working distances for cosmetic damage and human comfort levels for nearby external structures or receivers and therefore no vibration impacts are expected. No further consideration of vibration management would be required for other nearby external structures.

6.3.2.3 Operation

The proposal would not generate any additional noise or vibration emissions than those currently occurring from the operational site.

6.4 Soils, Contamination and Waste

A Geotechnical and Soil Contamination Investigation was completed by D&N Geotechnical. A summary of this report is included below and a copy in Appendix F. A qualitative consideration of waste impacts has been included by Worley Consulting.

6.4.1 Existing Environment

Soils at the site are likely to comprise alluvial deposits (comprising sands, sandy clays and clayey sands) of variable depths overlying weathered sandstone. The immediate land-based landscape has been significantly disturbed by human activity along the waterfront. The NSW Geoscience 'MinView' geological mapping viewer indicates that the site is underlain by human-made fill with Hawkesbury Sandstone outcropping immediately to the south of the site. The observed ground conditions comprised land reclamation fill to a depth of 6.8 m, over approximately 2 m of Estuarine silts and sands, with then sandstone bedrock at a depth of approximately 8.9 m below current ground surface levels.

For analytes with detected analyte concentrations, Relative Percentage Difference (RPDs) were within acceptable ranges with the following exceptions:

- Concentrations of the metals Lead, Mercury and Zinc in the primary (parent) sample BH01_0.5-0.7 were 340 mg/kg, 2.4 mg/kg and 480 mg/kg respectively, whilst the concentrations of the same metals in the intra-laboratory duplicate sample QC01 were consistently lower (240 mg/kg, 0.8 mg/kg and 270 mg/kg respectively).
- The concentration of the organochlorine pesticide DDT in primary (parent) sample BH01_0.5-0.7 (0.11 mg/kg) was lower than the concentration of the same COPC in the intra-laboratory duplicate sample QC01 (1.2 mg/kg).



- Concentrations of PAHs, benzo(a)anthracene, Benzo(b+j)fluoranthene, Fluoranthene and Pyrene (6.9 mg/kg, 4.2 mg/kg, 13 mg/kg and 14 mg/kg respectively) were consistently recorded higher in the intra-laboratory duplicate sample QC01 than the primary (parent) sample (3.1 mg/kg, 1.3 mg/kg, 6.8 mg/kg and 6.3 mg/kg respectively). The corresponding Total PAH1 and benzo(a)pyrene Toxicity Equivalent Quotient (TEQ2) also displayed RPD greater than the generally accepted limits (refer Table C1 footer).

A search of the NSW EPA online contaminated land register identified no listed contaminated sites on or in the vicinity of the site.

A review of the acid sulfate soil risk mapping in the SEED portal indicates that Sydney Harbour including the site has a high probability of occurrence of acid sulfate soils.

Potential exists for the presence of potential asbestos containing materials and other hazardous materials within the internal and external areas of the Moore's Wharf Building. Any hazardous materials uncovered would be identified, removed and disposed of in a controlled manner.

The site is expected to generate waste streams from marine base operations including:

- General waste.
- Paper recycling.
- Co-mingled recycling
- E-waste and potential organic waste.
- Excavated land-based spoil.

There is the potential for litter to enter Sydney Harbour from general use of the site and adjoining foreshore area.

6.4.2 Potential Impacts

6.4.2.1 Construction

The engineering design for lift pit excavation and footings is to be developed in line with the recommendations of the Geotechnical and Soil Contamination Investigation. The groundwater is expected to be saline at the site. On this basis it is expected that additional protection measures for inground steel and concrete structures would be required, particularly below groundwater levels.

It is noted that there is potential for floods to affect the operation of the lift, however, due to the proximity of the site to the waterfront, it is expected that the lift pit would have to be a tanked structure, unless it can be demonstrated that harbour King Tide and/or flood levels would be lower than the base of the permanent structure.



The current land use is considered consistent with the "Commercial/industrial, includes premises such as shops, offices, factories and industrial sites" as described in Schedule B1 (Investigation Levels for Soil and Groundwater) of the ASC NEPM (1999, amended 2013).

Sensitive receptors would include:

- Construction workers undertaking excavation and construction activities during the proposed redevelopment.
- Intrusive maintenance workers conducting incidental maintenance activities during the operational period.
- Onsite staff; and
- Current and future itinerant visitors during the operational period.

Noting the limited area to be affected by the proposed construction is attached to the existing building structure and the surrounding area is either paved or landscaped, risks to ecological receptors were not assessed.

The NSW Waste Classification Guidelines (2014) provides a framework for assessing and classifying wastes. For the purpose of classifying fill material, the guidance provided in Part 1 of the Waste Classification Guidelines is applicable. A preliminary (indicative) waste classification for excavated Soils was undertaken. Asbestos was not detected in the samples analysed therefore excavated soils are not expected to require pre-classification as special waste (asbestos waste). No total or leached analytical result exceeded the Specific Contaminant Concentration (SCC) or Toxicity Characteristic Leaching Procedure (TCLP) thresholds for general solid waste therefore the excavated soils are considered likely to be suitable for off-site disposal, to a licensed receiving facility, as General Solid Waste (non-putrescible). An updated waste classification will be required to be undertaken by the contractor for all soil and soil impacted material that will require offsite disposal.

The small scale of the proposed works in relation to disturbing soils is low. Based on these volumes of excavation and earthworks proposed, the risk of acid sulfate soils being oxidised is considered negligible.

6.4.2.2 Operation

Operational impacts regarding soil and contamination are not expected to change from the current uses of the site. Operational waste reduction is also proposed in terms of specified waste streams, volumes and the quantity of the bins to efficiently manage general waste, recycling (glass, metal, plastic), recycling (paper, cardboard), kitchen/organics and E-waste.



6.5 Other Impacts

Other potential environmental impacts are discussed in Table 6-11.

Table 6-11 Other Impacts

Environmental Factor	Existing Environment	Potential Impacts
Air quality and greenhouse gas emissions	The nearest air quality monitoring station is located in Rozelle and forms part of the Sydney East monitoring network. A review of the air quality data for this station indicates that on average the air quality is categorised as good across the monitored air pollutants and meteorological variables.	The proposal has the potential for minor short-term air quality impacts during construction such as: <ul style="list-style-type: none"> • Minor generation of dust emissions from land-based construction • Minor generation of engine exhaust emissions and fugitive refueling emissions from construction vehicles.
Traffic and transport	<p>Access to the site is via Towns Place access road, providing access to staff and service vehicles car parking. Access is controlled by security gates and security personnel. Pedestrian and bicycle access is available throughout the Walsh Bay Wharves Precinct and surrounds. The site is also well serviced by nearby public transport options, including busses and ferry and metro services available at Barangaroo.</p> <p>Near to the southern end of the site is the Towns Place Wharf, which is currently closed but typically operates as a TfNSW Charter Wharf. It is noted the wharf is bookable as two wharves namely Towns Place Wharf East and West and the overall length of the wharf is about 46m.</p>	<p>The proposal is anticipated to generate a low number of contractor and delivery vehicles to undertake the construction works, which are not anticipated to impact the existing road network performance. Contractors are to utilise on-site parking or public transport where possible. Nearby offsite parking is available in paid parking facilities or paid kerb-side parking.</p> <p>Traffic and pedestrian management would be required on site as the site would remain in operation by Port Authority staff and visitors as well as contractors.</p>
Water quality	Water quality within the harbour in the vicinity of the site is largely influenced by point source water pollution such as stormwater drainage outlets and diffuse water pollution such as urban runoff that does not enter stormwater drains.	It is not expected that there would be water quality impacts to the adjoining harbour as a result of this proposal due to its location and small scale. This is further reduced by proper waste management and not working in extreme conditions like storm events or high wind conditions.
Socio-economic	The proposed area and its surrounding cater to commercial, tourism and residential development. The building holds an important socio-economic role for management of the Sydney Harbour port as a hub for international trade and maritime logistics within New South Wales.	<p>There may be minor and temporary impacts to visitors in the area due to the construction process, however, this is not expected and would be temporary.</p> <p>The proposal would have positive socio-economic impacts during operation through improved building layout and accessibility.</p>
Cumulative impacts	The proposed area and its surroundings have already seen major developments over the years. Most large-scale development is situated away from the site.	Due to the small scale of the proposed work, it is not expected that there would be any major cumulative impacts.



Environmental Factor	Existing Environment	Potential Impacts
		There are no known approved projects in the immediate vicinity of the proposed works. It is possible, that during construction the noise and vibration levels of construction would be higher than mentioned in this REF, however this would be due to surrounding developments.



7. Summary of Mitigation Measures

The proposed mitigation measures to be implemented for the proposal are summarised in Table 7-1.

Table 7-1 Summary of mitigation measures

No.	Impact	Environmental Safeguards	Responsibility	Timing
1	Design	The height of the lift over run is to be reduced as far as possible to minimise heritage and visual impacts.	Port Authority / Contractor	Detailed design and pre-construction of lift
2	Sustainability	Sustainability initiatives as described in the ESD Matrix (Appendix D) will be implemented to ensure the sustainability goals are being met for the project.	Port Authority/ Contractor	Detailed design, Construction and Operation
3	Crown building work certification	Port Authority to obtain a 'For Construction' design certified for BCA compliance, i.e. a 'Crown Certificate'. Port Authority shall be responsible for the BCA compliance inspections and final certification.	Port Authority	Pre-construction / Construction
4	Construction environmental management	<p>A Construction Environmental Management Plan (CEMP) is to be prepared to Port Authority's satisfaction prior to works commencing to describe how the works will be managed through the construction phase in order to minimise and manage potential environmental impacts.</p> <p>The CEMP to be implemented will include:</p> <ul style="list-style-type: none"> • A description of all activities to be undertaken on the site during the works, including an indication of stages and hold-points, where relevant. • Statutory and other obligations required to be fulfilled / met during the works, including all approvals, consultations and agreements required from authorities and other stakeholders. • An environmental risk assessment in order to identify potentially high risk construction activities. • Environmental management and mitigation practices and procedures to be implemented during each stage of the works. • Details of how the environmental performance of the works will be monitored, and what actions will be taken to address identified adverse environmental impacts. • Environmental incident management and reporting procedures and protocols. 	Contractor	Pre-construction / Construction



No.	Impact	Environmental Safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> A description of the roles and responsibilities for all relevant employees involved in the works. Details of environmental training and awareness including site inductions. Complaints handling procedure(s) during works and site preparation. <p>The CEMP will be a working document, subject to ongoing review and update as necessary to respond to changes to any information contained in the CEMP or its sub-plans and to take account of events or circumstances which will or may affect the works.</p>		
5	Construction environmental management	On-site staff, local residents and businesses surrounding the site will be notified at least 10 working days prior to the commencement of external construction activities. The contractor will provide the information needed to support any notification and consultation requirements.	Contractor / Port Authority	Pre-construction
6	Construction environmental management	<p>All personnel working on site will receive a detailed heritage induction and training to ensure awareness of environment protection and impact mitigation requirements to be implemented during the activity. This will include up-front site induction and regular "toolbox" style briefings.</p> <p>Further, all staff and contractors working at the site will need to complete Port Authority's online RapidGlobal inductions prior to commencing any work or activity at Moore's Wharf, including: i. Contractor – WHS, Environment and Security Induction and iii. Moore's Wharf Site induction.</p> <p>The heritage induction is to include briefings of onsite works staff in recognition of maritime heritage items (if any) and appropriate reporting, and management strategies.</p>	Contractor	Pre-construction / Construction
7	Photographic archival recording	To maintain a record of changes to the heritage item, prior to any alteration of the site, an archival photographic record is to be prepared in accordance with the relevant requirements of the NSW Heritage Office (2006) guidelines for the Photographic Recording of Heritage Items Using Film or Digital Capture. It is recommended that a copy of the archival photographic record be digitally stored by Port Authority.	Port Authority / Contractor	Pre-construction
8	Heritage induction	The Contractor, including all construction workers, must be briefed by the project's Heritage Specialist on the heritage significance of the site, and any site-specific heritage matters/issues and approval documents prior to works commencing.	Port Authority / Contractor	Pre-construction



No.	Impact	Environmental Safeguards	Responsibility	Timing
9	Construction noise and vibration	<p>Demolition works, lift excavation and piling and internal refurbishment works have the potential to exceed cosmetic damage and human comfort criteria to the Moore's Wharf Building.</p> <p>The Contractor is to prepare a Construction Noise Management and Vibration Plan to Port Authority's satisfaction that identifies all potential noise and vibration generation activities, outlines measures for reducing the source noise levels and vibration impacts of construction equipment by construction planning and equipment selection where practicable and monitoring requirements against relevant criteria.</p> <p>All construction works will be generally undertaken between Monday to Friday 7am to 6pm; Saturdays 8am to 1pm; no works on Sundays or Public Holidays.</p> <p>For any required out of hours work, the Contractor is required to prepare an application, including the justification of the proposed out of hours works and consideration of noise and vibration impacts and mitigations, for approval by Port Authority. In order to reduce construction noise to a minimum, where possible prioritise low noise emission construction equipment.</p> <p>Construction machinery shall be kept in good working order to reduce noise emissions as far as practicable.</p>	Contractor	Pre-construction / Construction
10	Construction traffic and access	A site-specific Construction Traffic Management Plan (CTMP) is to be prepared to Port Authority's satisfaction and implemented in accordance with Safe Work Australia Guidelines General Guide for Workplace Traffic Management and the Guide for Construction Work, to the satisfaction of Port Authority.	Contractor	Pre-construction / Construction
11	Hazardous materials	Any hazardous materials uncovered would be identified, removed and disposed of in a controlled manner.	Contractor	Pre-construction / Construction
12	Historical Archaeological Assessment (HAA)	<p>A HAA, including a Maritime Archaeological Desktop Assessment (MADA) will be undertaken prior to lift excavation works to assist in determining the potential for archaeological remains and relics to be present within the lift pit area.</p> <p>a) The HAA is to be prepared by a suitably qualified and experienced historical archaeologist in accordance with the guidelines Archaeological Assessment (1996) and Assessing Significance for Historical Archaeological Sites and Relics (2009).</p>	Contractor	Pre-construction of lift



No.	Impact	Environmental Safeguards	Responsibility	Timing
		<p>b) The HAA is to identify what relics, if any, are likely to be present (known as archaeological potential), assess their significance and consider the impacts from the proposal on this potential archaeological resource.</p> <p>c) Where harm is likely to occur, the significance of the relics is to be considered in determining an appropriate mitigation strategy.</p> <p>d) If harm cannot be avoided in whole or part, a s140 permit is to be completed. As part of the permit application, an appropriate Research Design and Excavation Methodology, with a nominated Excavation Director, is to be prepared to guide any proposed excavations or salvage program.</p> <p>e) A s.140 application may be required if any ground disturbance in areas including the lift footprint, replacement of concrete floor slab and masonry on the ground floor is likely to harm relics.</p> <p>The construction contractor is to include additional mitigation measures (if any) from the HAA into their Construction Environmental Management Plan (CEMP).</p>		
13	MADA	<p>A Maritime Archaeological Desktop Assessment (MADA) is to be undertaken to assess the potential for maritime heritage items in the proposal area. The MADA is to investigate:</p> <p>a) The past use of the area and possible maritime archaeological heritage items which are known to exist within the proposal area, including Underwater Cultural Heritage (UCH) such as: historic shipwrecks, historic maritime infrastructure and submerged Aboriginal Cultural Heritage objects, and whether these sites are likely to have been buried by landfill reclamation.</p> <p>b) Statutory databases are to be consulted and summarised in this regard (including both Commonwealth and State Maritime/ UCH Databases – dependent on jurisdiction).</p> <p>c) The MADA is to similarly address the conditions outlined in the HAA (see Mitigation No. 2).</p> <p>The construction contractor is to include additional mitigation measures (if any) from the MADA into their CEMP.</p>	Port Authority / Contractor	Pre-construction of lift



No.	Impact	Environmental Safeguards	Responsibility	Timing
14	Maritime Statement of Heritage Significance (MSOHI) & Maritime Archaeological Research Design and Excavation Methodology (MARDEM)	<p>If potential maritime heritage items are identified within the proposal area, then the following studies are to be undertaken (by a suitably qualified and experienced maritime archaeologist as defined in the Australasian Institute for Maritime Archaeology Code of Ethics s2.e):</p> <ul style="list-style-type: none"> a) A MSOHI and MARDEM to assess the nature, extent and significance of any UCH or maritime heritage items /sites/ relics/ artefacts that may exist within the proposal area. <ul style="list-style-type: none"> i. The MSOHI is to consider both the direct and indirect impacts of the proposed works and any ancillary works over short- and long-term periods on any maritime/ UCH heritage item(s) both in the proposal area and adjacent regions. ii. The MSOHI is to be guided by the principles of Commonwealth Guidelines for Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (https://www.dcceew.gov.au/parksh/heritage/publications/assessing-managing-impacts-underwatercultural-heritage). iii. Maritime archaeological testing may be required and an appropriate MARDEM is to be prepared to guide any proposed excavations. Where harm may possibly occur, the significance of the relics is to be considered in determining an appropriate mitigation strategy, to be undertaken in consultation with Heritage NSW. b) A specific Maritime Unexpected Finds Protocol (MUFP), which in addition to standard historical UFP items, is to include: <ul style="list-style-type: none"> i. briefings of onsite works staff in recognition of maritime heritage items and appropriate reporting, and management strategies. ii. consideration of short- and long-term management, conservation, storage, restoration and interpretation of any significant 	Port Authority / Contractor	Pre-construction of lift



No.	Impact	Environmental Safeguards	Responsibility	Timing
		<p>maritime heritage items, along with how these aspects will be funded.</p> <p>iii. possibility for redesign is to be considered if significant maritime heritage items are discovered during works.</p> <p>The construction contractor is to include the above additional mitigation measures (MSOHI, MARDEM, MUFP) into their CEMP.</p>		
15	Heritage consultant	<p>The project's Heritage Specialist is to provide direction on any design issues which impact upon heritage fabric.</p> <p>Further, the Heritage Specialist is to be employed to periodically monitor the work during design and construction and provide advice on-site regarding heritage issues. This is particularly pertinent during demolition activities and the introduction of new services, when more original fabric will likely be exposed.</p> <p>The Contractor is to develop hold points to provide opportunities for the Heritage Specialist to inspect the works and to help avoid unintended impacts to the heritage fabric.</p>	Contractor	Construction
16	Heritage tradespeople	<p>Any works involving original fabric, including sandstone masonry and structural timber elements, are to be carried out by suitably qualified heritage tradespeople who have adequate experience working on historic structures.</p>	Contractor	Construction
17	Temporary protection measures	<p>Temporary protection measures are to be introduced to the sandstone masonry façade that could be impacted by vehicular movements. This will involve the south and west elevations. There will be no penetrations made to the sandstone and no temporary fencing will be affixed to the sandstone.</p> <p>The CEMP is to specify where protection will be placed around the building.</p>	Contractor	Construction
18	Damage to significant fabric	<p>In the instance of unexpected damage to significant fabric, works are to cease to allow for inspection by the Heritage Specialist. The Heritage Specialist is to provide advice on the repair methodology for any damaged fabric.</p>	Contractor	Construction
19	Connections to sandstone masonry	<p>Where possible, existing penetrations to heritage fabric are to be reused. Creating new penetrations, for example for plumbing and electrical services, should be avoided.</p> <p>Where structurally possible, penetrations for new building elements are to be installed into the mortar joints only. The architect is</p>	Contractor	Construction



No.	Impact	Environmental Safeguards	Responsibility	Timing
		to provide detailed plans of proposed fix points to help avoid unnecessary impacts.		
20	Unexpected archaeological finds	<p>If unexpected archaeological finds are discovered during any excavation activities, all work in the area shall cease forthwith and the Heritage Council of NSW is to be notified immediately.</p> <p>A s146 notification to the Heritage Council of NSW is to be lodged through the Heritage Management System (HMS). Additional assessment and approval may be required prior to works continuing in the affected area(s) based on the nature of the discovery. Advice would be provided in response to the lodged s146 notification.</p>	Contractor / Port Authority	Construction
21	Waste management	<p>All waste to be managed using the principles of avoid, reuse and recycle, in accordance with the waste hierarchy, and classified in accordance with NSW EPA Waste Classification Guidelines (EPA, 2014).</p> <p>A waste classification is required for all soil and soil impacted material that will require offsite disposal, including:</p> <ul style="list-style-type: none"> Assessment of material for waste classification prepared by a suitably qualified environmental consultant and comply with the NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste (2009). Building and demolition waste can be disposed offsite as pre-classified waste in accordance with NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste (2009). All building and demolition waste that is stockpiled with soil material will be required to be divided and classified separately. All other excavated material intended to be reused is to be managed in accordance with the <i>Protection of the Environment Operations Act 1997</i> (NSW) (POEO Act). <p>Excavated material and all waste will be disposed of to an appropriately licenced waste facility or to a development lawfully able to accept the material.</p>	Contractor	Construction
22	Soil and dust management	<p>Controls to manage soil erosion and dust generation will be implemented in accordance with the <i>Guidelines for Erosion and Sediment Control on Building Sites 2024</i> (Department of Planning, Housing and Infrastructure) and outlined in the CEMP. This includes excavation and spoil management.</p>	Contractor	Construction
23	Sediment & water quality	<p>If groundwater is encountered during excavation activities and dewatering is required, this will be undertaken so that the</p>	Contractor	Construction



No.	Impact	Environmental Safeguards	Responsibility	Timing
		<p>groundwater is captured and removed from site by a licensed contractor.</p> <p>Appropriate spill kits will be kept onsite, and all site personnel appropriately trained in the use of available spill response equipment.</p> <p>In the event of a pollution incident causing or threatening material harm to the environment, this must be notified to each of the following 'relevant authorities' as per Section 4.2.4 of this REF.</p>		
24	Construction air quality	<p>Air quality measures will be implemented as part of the CEMP. These will include, but not be limited to:</p> <ul style="list-style-type: none"> • Identify potential sources of air pollution. • Measures to manage work during strong winds or other adverse weather conditions. • Plant and machinery would be regularly checked and maintained in a proper and efficient condition. Plant and machinery would be switched-off when not in use, and not left idling. • Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation. • Stockpiles or areas that may generate dust are to be managed to suppress dust emissions. 	Contractor	Construction
25	Interpretation strategy	<p>Introduce additional interpretative media such as interpretative plaque at the entrance of the site to communicate the history and values of the site, the building users and wider public.</p>	Port Authority	Operation
26	Grading of significance	<p>The grading of significance (as established through the detailed heritage significance work already undertaken) will be incorporated into a future maintenance plan for Moore's Wharf, in accordance with the Heritage Asset Management Strategy (HAMS) for Port Authority.</p>	Port Authority	Operation



8. Conclusion

This REF has been prepared in accordance with Section 5.5 of the EP&A Act, Section 171 and 171A of the EP&A Regulation and other relevant legislation, taking into account to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the proposal.

The proposal involves a major internal refurbishment of the three-storey Moore's Wharf Building to accommodate the requirements of the maritime base operations for the Port Authority. The proposal also includes the installation of a new lift to meet current accessibility, emergency access and building regulation requirements. The proposal would achieve the identified objectives in Section 2.2, to improve efficiency of the marine operation base and provide better accessibility to the building for workers and visitors.

Based on the environmental assessment carried out in Section 6 of this REF, the impacts of the proposal are considered to be minor. The potential impacts can be reasonably mitigated and managed through adoption of best practices and adherence to accepted industry guidelines and standards, as outlined in Section 7.

This REF has considered and assessed these impacts in accordance with Sections 171 and 171A of the EP&A Regulation and the requirements of the EPBC Act. Based on the assessment contained in this REF, it is considered that the proposal is not likely to have a significant impact upon the environment or any threatened species, populations or communities or their habitats. Accordingly, an Environmental Impact Statement (EIS) and/or a Biodiversity development assessment report (BDAR) are not required, nor is the approval of the Minister for Planning and Public Spaces under Division 5.2 of the EP&A Act.



9. References

Acoustic Logic Consultancy (2010), Project 71723.00 – Barangaroo Headland Park Main Works Noise and Vibration Assessment.

Arup (2017), Walsh Bay Arts and Cultural Precinct SSDA - Noise and Vibration Impact Assessment.

Artefact (2016), Sydney Metro Chatswood to Sydenham: Technical Paper 5 Aboriginal Heritage – Archaeological Assessment.

Department of Environment & Climate Change (2009), Interim Construction Noise Guideline.

Department of Planning and Environment (2022), Guidelines for Division 5.1 assessments.

D&N Geotechnical (2024), Moores Wharf Building Refurbishment - New Lift: Geotechnical and Soil Contamination Investigation.

Heritage 21 (2024), Statement of Heritage Impact, Proposed Alterations and Additions at Moore's Wharf Building.

Lampert, R. J. and Truscott, M. C. (1984), The Archaeological Investigation of the Bond Store, Moore's Wharf 1980. A Draft Report for the Maritime Services Board and the Heritage Council of N.S.W.

NSW Environment Protection Authority (2014), Waste Classification Guidelines.

NSW Environmental Protection Authority (2017), Noise Policy for Industry.

NSW Environmental Protection Authority (2020), Draft Construction Noise Guideline.

NSW Government (2024), Guidelines for Erosion and Sediment Control on Building Sites.

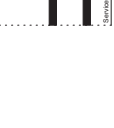
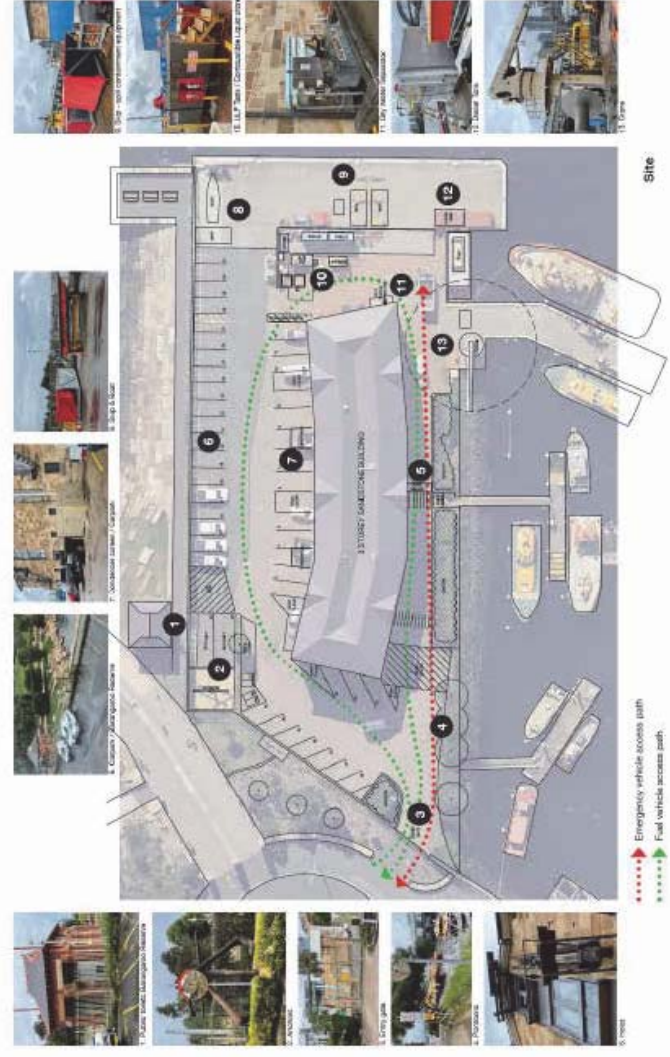
Roads and Maritime Services (2016), Construction Noise and Vibration Guideline.

Transport for NSW (2023), Guideline for landscape character and visual impact assessment: Environmental impact assessment practice note EIA-N04.



Appendix A. Proposal Drawings

Revision	Description	Date
A	FOR REF	31.07.2024
B	FOR TENDER	27.08.2024
C	ISSUE FOR TENDER	27.08.2024



FOR TENDER

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ASTON CONSULTING
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 Sydney NSW 2000

Services Engineer #1
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 Sydney NSW 2000

Services Engineer
TTW
 Level 19/100 Pitt Street
 Sydney NSW 2000

Contractor
GRAHAM CERT GROUP
 Consultant Details
 Level 19/100 Pitt Street
 Sydney NSW 2000

Contract
Port Authority
 Level 19/100 Pitt Street
 Sydney NSW 2000

Contractor
GROUP USA
 Group USA Pty Ltd ABN 78 002 133 771
 Level 7, 201 Pitt Street East Sydney NSW
 www.groupusa.com
 T +61 2 9261 1144 F +61 2 9332 3468
 www.portauthority.com.au
 www.moorewharf.com.au
 Project Title

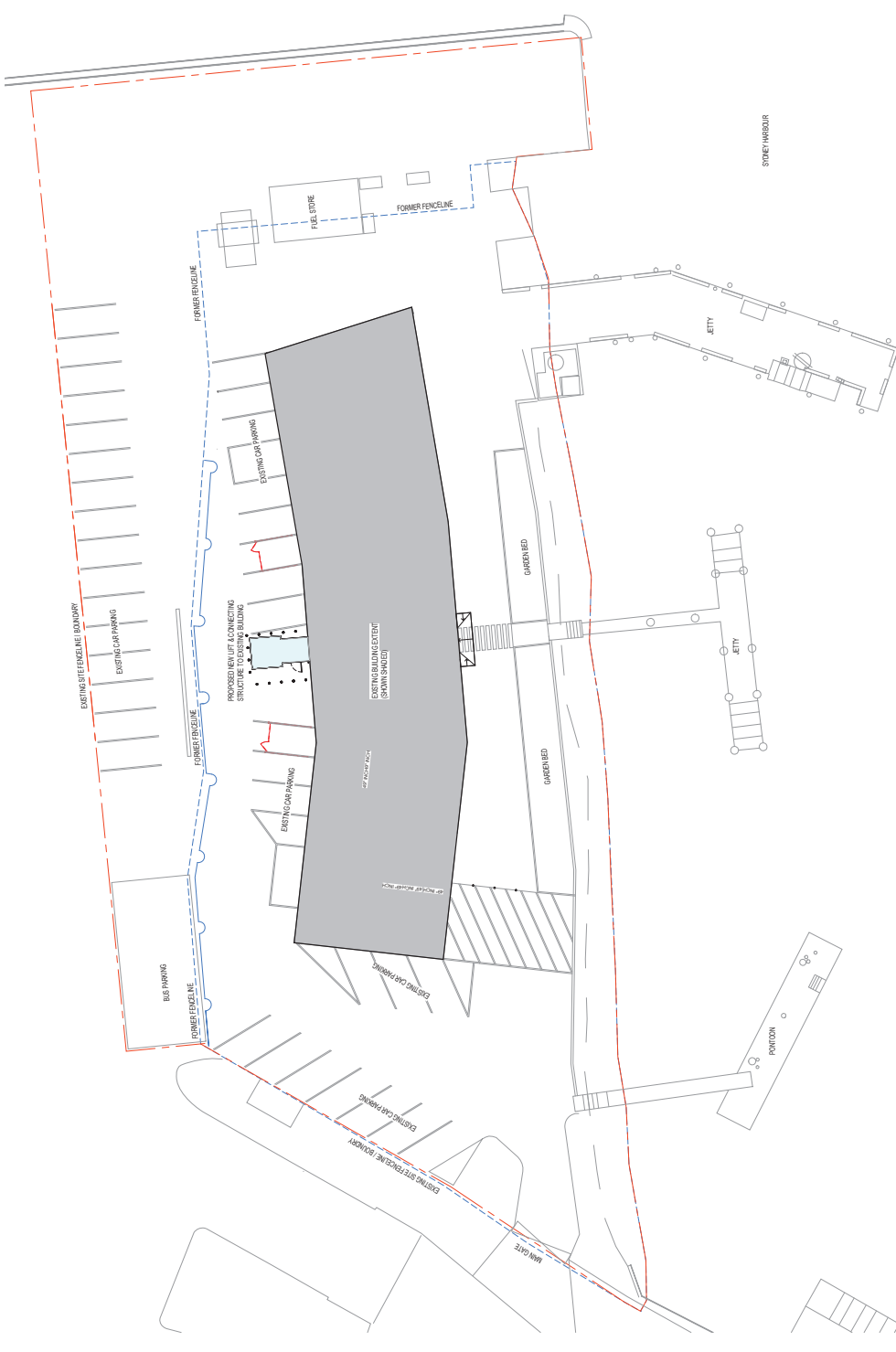
MOORES WHARF

EXISTING SITE ANALYSIS PLAN

Scale	Date
Drawing Created (Date)	11/09/23
Checked (Date)	EE
Prepared and checked by	GD
Drawn by	GD
Checked	GD
Project No.	23000000
Drawings No.	01

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Issue Description:	Date:
A FOR REF	31/07/2024
B FOR REVIEW	01/08/2024
C ISSUE FOR TENDER	27/08/2024



1 PROPOSED SITE PLAN
1:200



FOR TENDER

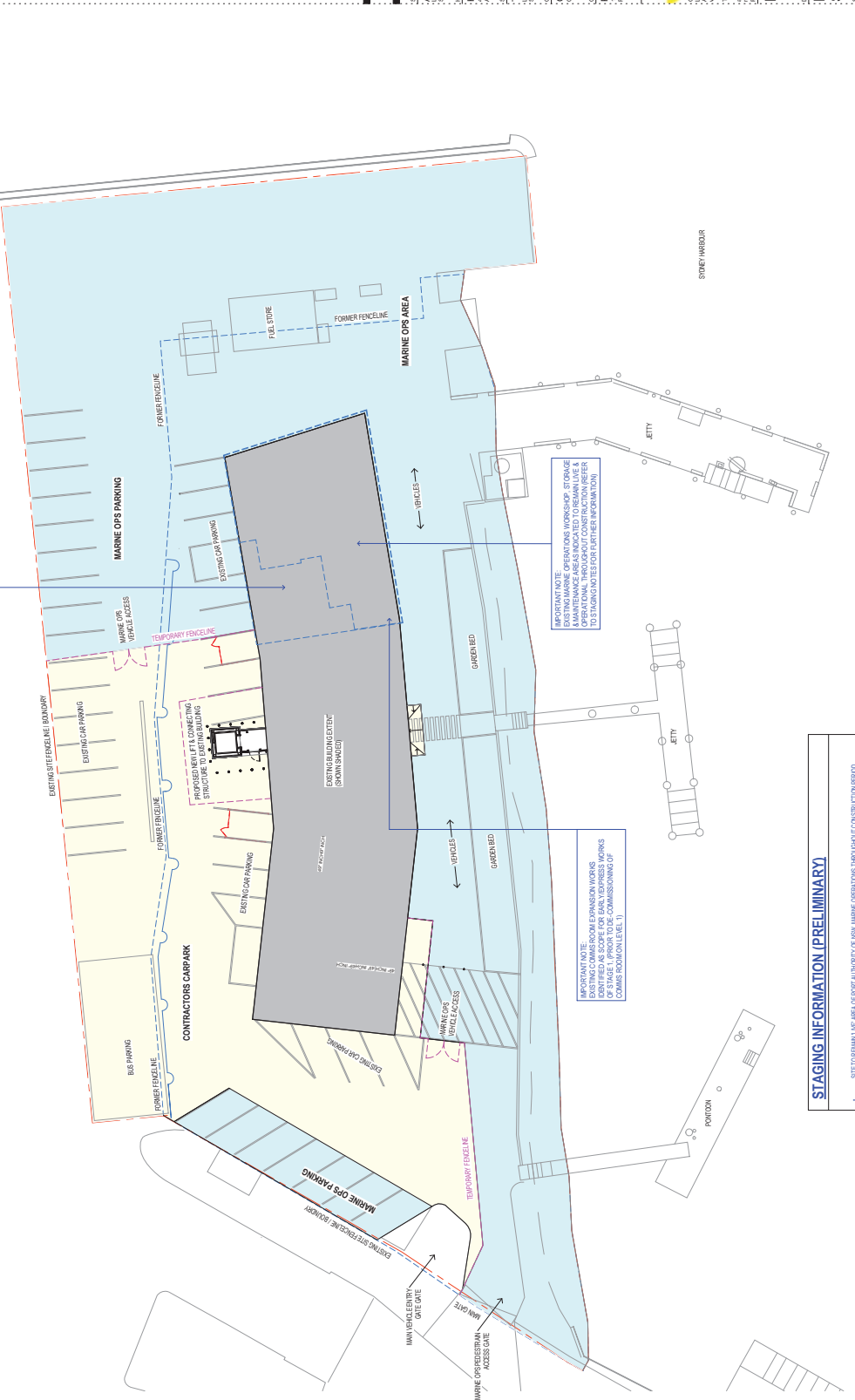
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ASTON CONSULTING
Level 19/1910-19102
27/07/1910-19102
- Services Engineer
H21
Level 19/1910-19102
27/07/1910-19102
- Services Engineer
TTW
Level 19/1910-19102
27/07/1910-19102
- Services Engineer
GRAHAM CERT GROUP
Level 19/1910-19102
27/07/1910-19102
- Services Engineer
Port Authority
Level 19/1910-19102
27/07/1910-19102
- Services Engineer
GROUP USA
Level 19/1910-19102
27/07/1910-19102

PROPOSED SITE PLAN

Scale:	1:200
Drawing Created (Date):	11/08/2024
Drawing Created By:	EE
Project and checked by:	GD
Version:	01
Author:	GD
Project No:	AAAS-23D-17
Sheet:	C

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IMPORTANT NOTE FOR STAGE 3 OR 3A WORKS (REFER STAGING INFORMATION NOTES)
 PORT AUTHORITY NEED TO MAINTAIN EXISTING MARINE OPERATIONS UNIMPACTED PERIOD DURING CONSTRUCTION. WITH ACCESS TO THIS AREA FROM SOUTH SIDE OF THE GROUND FLOOR EXTERNAL ENTRY. REFER TO STAGING NOTES FOR GROUND FLOOR OPERATIONS.



IMPORTANT NOTE: OPERATIONS, WORKSHOP STORAGE & MAINTENANCE AREAS INDICATED TO REMAIN LIVE & OPERATIONAL THROUGHOUT CONSTRUCTION (REFER TO STAGING INFORMATION NOTES FOR FURTHER INFORMATION)

IMPORTANT NOTE: EXISTING COMMON ROOM/EXPANSION WORKS TO BE MAINTAINED THROUGHOUT CONSTRUCTION OF COMMON ROOM (LEVEL 1)

STAGING INFORMATION (PRELIMINARY)

- SITE TO REMAIN LIVE AREA OF PORT AUTHORITY OF ISH MARINE OPERATIONS THROUGHOUT CONSTRUCTION PERIOD. MAINTAIN OPERATIONAL MARINE OPERATIONS THROUGHOUT CONSTRUCTION PERIOD.
- MAINTAIN EXISTING COMMON ROOM/EXPANSION WORKS TO BE MAINTAINED THROUGHOUT CONSTRUCTION OF COMMON ROOM (LEVEL 1).
- STAGE 3 (MAINLY) TO INCLUDE GROUND FLOOR WORKS EXCEPT FOR MARINE OPERATIONS WORKSHOPS, STORAGE & MAINTENANCE AREA.
- STAGE 3B (MAINLY) TO INCLUDE GROUND FLOOR WORKS EXCEPT FOR COMMON ROOM (TO BE OPERATIONAL FROM TO BE COMMISSIONED) OF LEVEL 1 COMMON ROOM AND LEVEL 1 DEMOLITION.
- ALL STAGING INFORMATION CONSIDERED PRELIMINARY AND A CONTRACTOR TO PROVIDE PROPOSED STAGING METHODOLOGY PROPOSAL AS PART OF TENDER SUBMISSION.
- STAGE 3 WORKS TO INCLUDE DEMOLITION AND CONSTRUCTION OF LEVEL 1 SHOWER/LOCKER/MENTALITY AREAS. (THIS AREA TO REMAIN FUNCTIONAL FOR USE BY PORT AUTHORITY OF ISH MARINE OPERATIONS FOR MAINTENANCE) THROUGHOUT CONSTRUCTION WITH ACCESS VIA NORTHWEST FIRE STATION ENTRY.

1 PROPOSED SITE STAGING DIAGRAM
 1:200

FOR TENDER

ASTON CONSULTING
 Services Engineer
 Level 19/1313 Pacific
 Sydney NSW 2022

H21
 H21 CONSULTING
 Level 19/1313 Pacific
 Sydney NSW 2022

TTW
 TTW
 Level 19/1313 Pacific
 Sydney NSW 2022

GRAHAM CERT GROUP
 Consultant Details
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 Sydney NSW 2022

PORT AUTHORITY
 Port Authority
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 Project Title

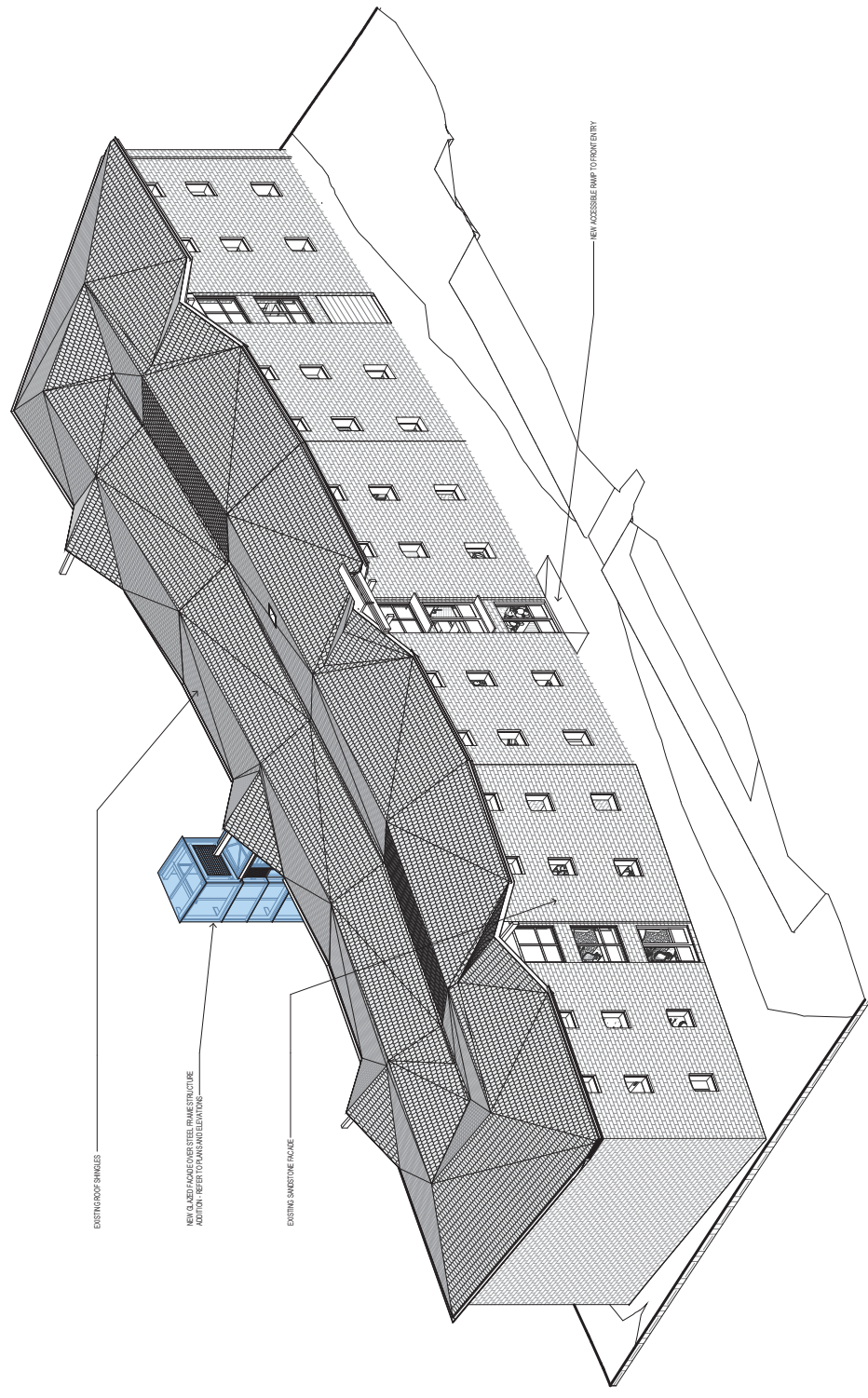
MOORE'S WHARF

Drawing Title: **PROPOSED SITE STAGING DIAGRAM**
 Status: **As Issued**
 Drawing Control (Issue): **11/09/23**
 Drawing Created By: **EE**
 Project and Checked by: **GD**
 Version: **1.0**
 Discipline: **GD**
 Project: **A231513**
 Sheet: **A**

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Revision	Description	Date
A	FOR REF	31.07.2024
B	FOR PRELIMINARY REVIEW	09.08.2024
C	FOR PRELIMINARY REVIEW	09.08.2024
D	ISSUE FOR TENDER	27.09.2024



FOR TENDER

Technical Engineer:
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Technical Engineer:
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 Alexandria NSW 2015

Structural Engineer:
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 3 Rymer NSW 2000

Contractor:
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 Consultant Details

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 www.portauthority.nsw.gov.au
 Project Title:

MOORES WHARF

Contractor: **TBC**

AXONOMETRIC EAST VIEW

Scale	Date
Contractor Contact (Date)	11/09/23
Contractor Contact (By)	EE
Project and Checked By	GD
Checked	JG
Project No.	AA231513 I-0103
Sheet	D

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Rev	Description	Date
A	FOR REF	31.07.2024
B	FOR PERMIT REVIEW	10.08.2024
C	FOR PERMIT REVIEW	10.08.2024
D	ISSUE FOR TENDER	27.09.2024

FOR TENDER

ASTON CONSULTING
Level 19, 1515 West
Clyde Street, Perth
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HERITAGE 21
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Melbourne VIC 3000

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Consultant Details

Post Authority
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Melbourne VIC 3000

GROUP USA
Group USA Pty Ltd
14/251 Macquarie St
Melbourne VIC 3000

MOORES WHARF

AXONOMETRIC WEST VIEW

Scale: 1:1000

Drawn by: [Name]

Checked by: [Name]

Project No: [Number]

Sheet No: [Number]

Project Name: [Name]

Client: [Name]

Date: [Date]

Author: [Name]

Project: [Name]

Scale: [Scale]

Drawn by: [Name]

Checked by: [Name]

Project No: [Number]

Sheet No: [Number]

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Client: [Name]

Date: [Date]

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Author: [Name]

Project: [Name]

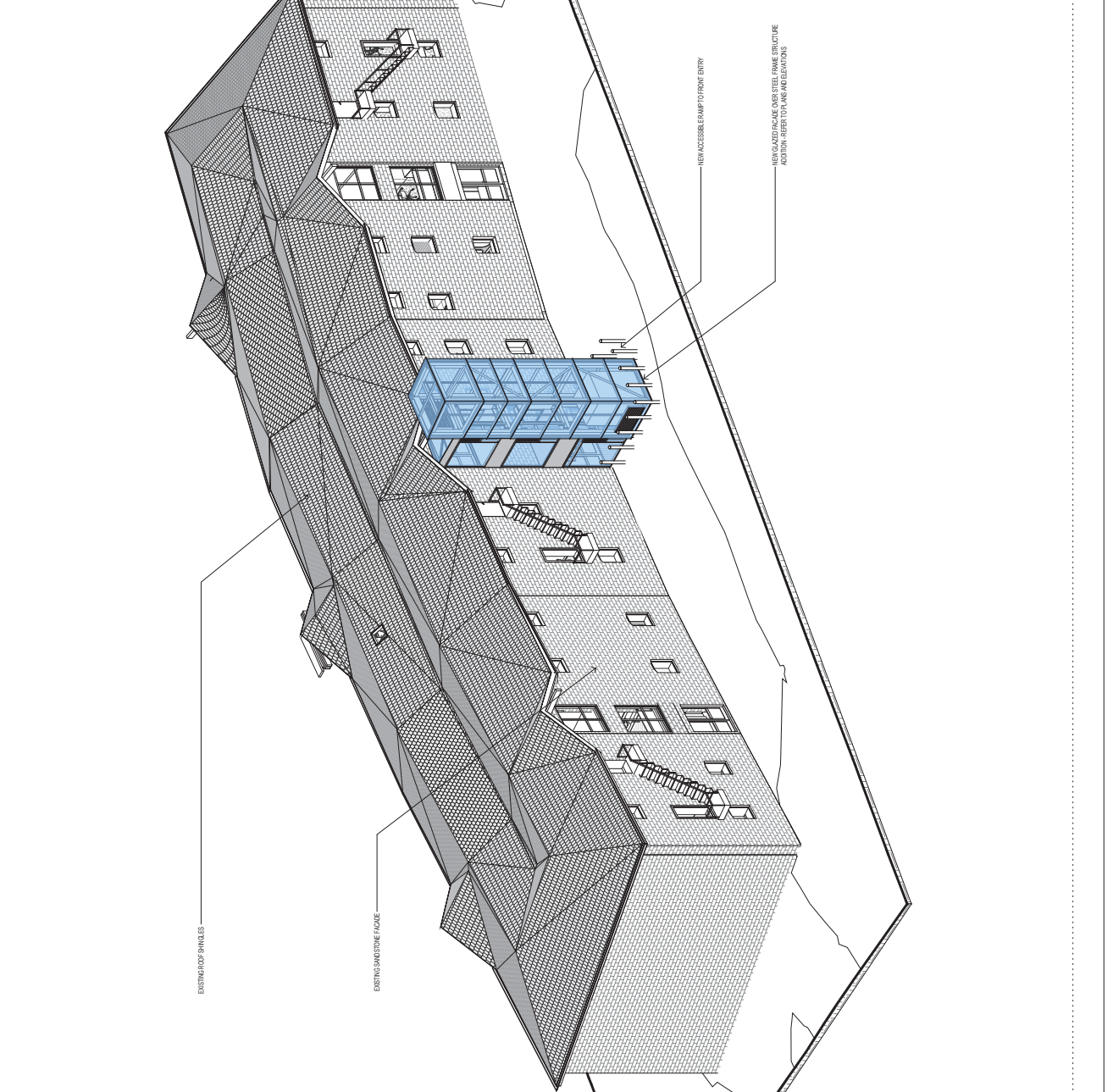
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Checked by: [Name]

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EXISTING ROOF SHINGLES

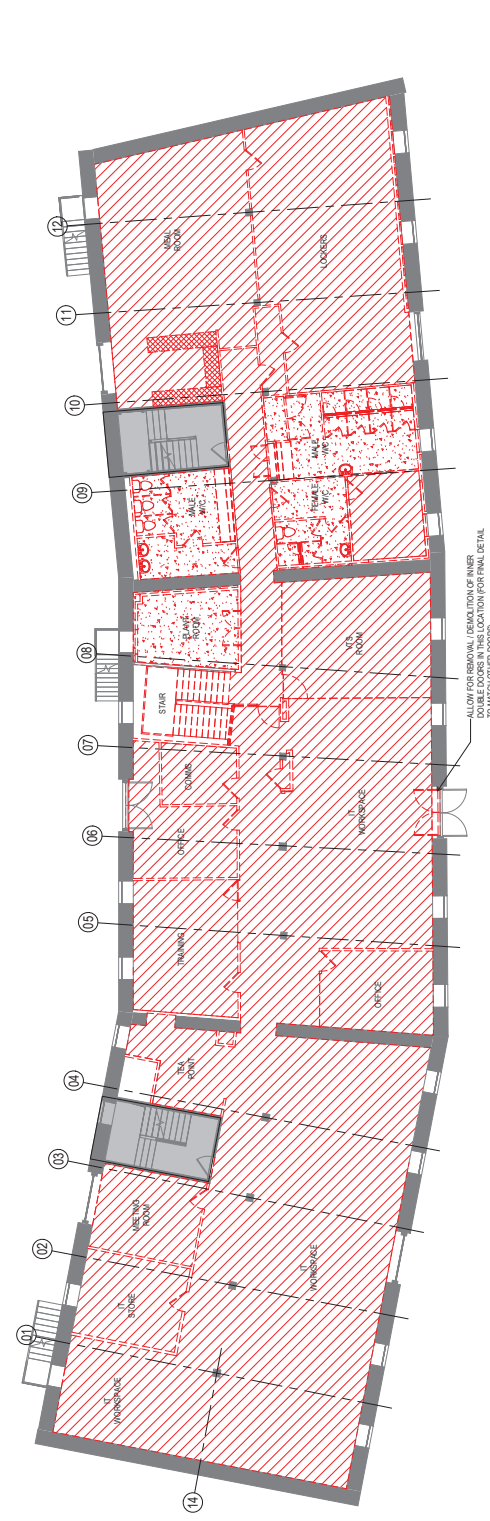
EXISTING SANDSTONE FACADE

NEW ACCESSIBLE RAMP TO FRONT ENTRY

NEW GLAZED FACADE OVER STEEL FRAME STRUCTURE
ADDITION: REFER TO PLANS AND ELEVATIONS

27/09/2024 11:23:49 AM
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Date: 31/07/2024
 FOR REF: 13/10/2024
 ISSUE FOR TENDER: 27/08/2024



1 DEMOLITION PLAN - LEVEL 01
 1:100



FOR TENDER

ASTON CONSULTING
 Level 13/10/2024
 Sydney NSW 2000

H2i
 Level 21/10/2024
 42/221 Macquarie St
 Alexandria NSW 2015

TTW
 Level 10/10/2024
 3 Rymer NSW 2000

GRAHAM CERT GROUP
 Consultant Details

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 14-18 Rymer St
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 E groupusa@groupusa.com
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MOORES WHARF

Demolition Plan
DEMOLITION PLAN - LEVEL 01

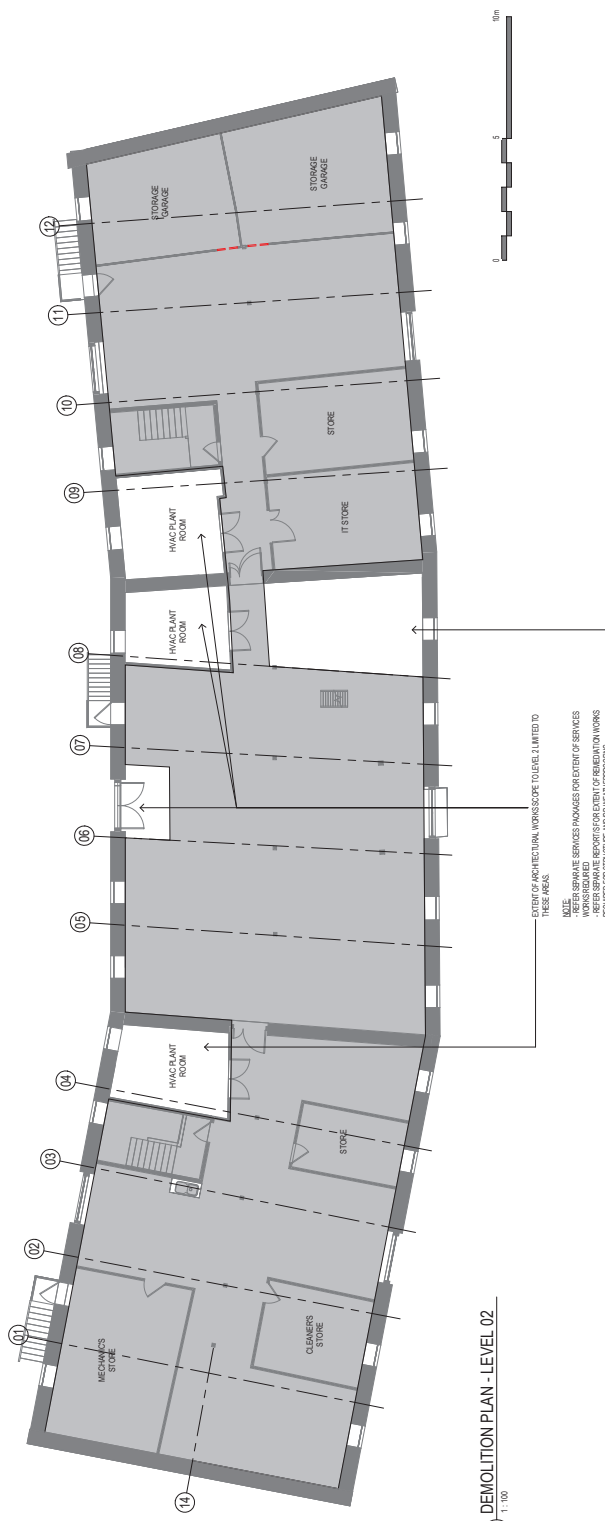
Scale: 1:100
 Drawing Created (Date): 23/05/2023
 Drawing Created By: GSA
 Project and checked by: GSA
 Checked: GSA
 Approved: GSA

Project No: A231513 I-1001
 Issue: C

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DEMOLITION PLAN NOTES	DEMOLITION PLAN LEGEND	ANNOTATIONS
<ul style="list-style-type: none"> THIS DRAWING IS TO BE A GUIDE ONLY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, SCHEDULES AND SPECIFICATIONS IN ADDITION TO ALL OTHER RELEVANT CONSULTANT DOCUMENTS. CONTRACTOR TO CONTACT THE PROJECT MANAGER PRIOR TO SUBMISSION OF TENDER. ANY DISCREPANCIES OR INCONSISTENCIES BETWEEN THIS DRAWING AND ANY OTHER RELEVANT DOCUMENTS ARE TO BE REFERRED TO THE PROJECT MANAGER PRIOR TO SUBMISSION OF TENDER. LOCATE AND PROTECT ALL EXISTING UTILITIES AND REFER TO THE DEMOLITION WORK COORDINATOR FOR A UTILITY LOCATIONS SURVEY. FORMS ARE REQUIRED. CONTRACTOR TO ALSO PREPARE PATCH REPAIR ANY EXISTING AREAS TO MATCH ORIGINAL FINISHES. ALL EXISTING FINISHES TO BE REMOVED UNLESS NOTED OTHERWISE. ALL EXISTING FINISHES TO BE REMOVED UNLESS NOTED OTHERWISE. CONTRACTOR TO VERIFY ALL DIMENSIONS AND FINISHES PRIOR TO COMMENCEMENT OF WORK. ALL DIMENSIONS TO BE IN METRES. ALL DIMENSIONS TO BE PRINTED AND SHOWN IN COLOUR ON THE NOMINATED SHEET SIZE. <p>NOTE: REFER TO SERVICES DOCUMENTATION FOR SERVICES DEMOLITION SCOPE OF WORKS</p>	<ul style="list-style-type: none"> INDICATES AREA NOT IN SCOPE OF WORK INDICATES EXISTING PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT INDICATES EXISTING PARTITION TO BE DEMOLISHED INDICATES EXISTING GLAZED PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT INDICATES EXISTING GLAZED PARTITION TO BE DEMOLISHED INDICATES EXISTING DOOR TO REMAIN. PROTECT FOR DURATION OF THE PROJECT INDICATES EXISTING DOOR TO BE DEMOLISHED INDICATES EXISTING JOINTERY TO REMAIN. PROTECT FOR DURATION OF THE PROJECT INDICATES EXISTING JOINTERY TO BE DEMOLISHED INDICATES EXISTING SANDSTONE FLOORING TO BE DEMOLISHED INDICATES EXISTING CONCRETE SLORED TO BE DEMOLISHED INDICATES EXISTING CARPET OR VINYL FLOORING TO BE DEMOLISHED 	<ul style="list-style-type: none"> 0 - INDICATES DEMOLITION OF EXISTING ANNOTATED ITEM EX - INDICATES EXISTING ITEM TO REMAIN. PROTECT FOR DURATION OF PROJECT R - INDICATES ITEM TO BE REUSED AND RELOCATED. CONTRACTOR TO CAREFULLY REMOVE AND PROTECT ANNOTATED ITEM FOR FUTURE USE.

Revision	
No.	Description
A	FOR REF
B	FOR TENDER
C	ISSUE FOR TENDER
Date	31.07.2024
	27.08.2024



1 DEMOLITION PLAN - LEVEL 02
1:100

FOR TENDER

Structural Engineer:
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Sydney NSW 2000

MECHANICAL ENGINEER:
H21
Level 19/10 Pitt Street
Sydney NSW 2000

Structural Engineer:
TTW
Level 19/10 Pitt Street
Sydney NSW 2000

Contractor:
GRAHAM CERT GROUP
Consultant Details

Client:
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Sydney NSW 2000

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Project Title: Moore's Wharf

DEMOLITION PLAN - LEVEL 02

Scale: 1:100

Drawing Created (Date): 23/05/2023

Created By: GSA

Checked By: GSA

Approved By: GSA

Project No: A231513 1-1002

Sheet No: C

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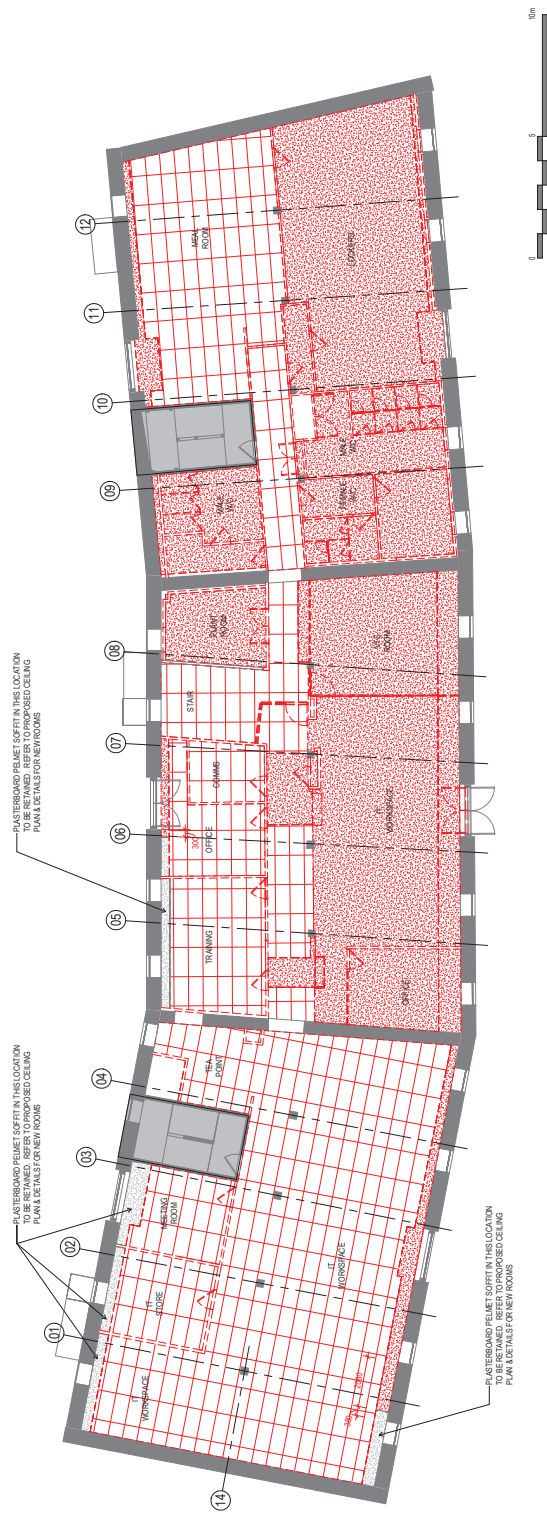
DEMOLITION PLAN LEGEND	ANNOTATIONS
INDICATES AREA NOT IN SCOPE OF WORK	D INDICATES DEMOLITION OF EXISTING ANNOTATED ITEM
INDICATES EXISTING PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT	EX INDICATES EXISTING ITEM TO REMAIN. PROTECT FOR DURATION OF PROJECT
INDICATES EXISTING PARTITION TO BE DEMOLISHED	R INDICATES ITEM TO BE REUSED AND RELOCATED. CONTRACTOR TO CAREFULLY REMOVE AND PROTECT ANNOTATED ITEM FOR FUTURE USE.
INDICATES EXISTING GLAZED PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT	
INDICATES EXISTING GLAZED PARTITION TO BE DEMOLISHED	
INDICATES EXISTING DOOR TO REMAIN. PROTECT FOR DURATION OF THE PROJECT	
INDICATES EXISTING DOOR TO BE DEMOLISHED	
INDICATES EXISTING JOINTRY TO REMAIN. PROTECT FOR DURATION OF THE PROJECT	
INDICATES EXISTING JOINTRY TO BE DEMOLISHED	
INDICATES EXISTING SANDSTONE FLOORING TO BE DEMOLISHED	
INDICATES EXISTING CONCRETE FLOORING TO BE DEMOLISHED	
INDICATES EXISTING CARPET OR VINYL FLOORING TO BE DEMOLISHED	

DEMOLITION PLAN NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS, SPECIFICATIONS AND SCHEDULES AND SPECIFICATIONS IN ADDITION TO ALL OTHER RELEVANT CONSULTANT DOCUMENTS
- CONTRACTOR TO CONTACT THE PROJECT SUPERVISOR OF TENDER
- ANY DISCREPANCIES OR AMBIGUOUS INFORMATION OR INCONSISTENCIES BETWEEN INFORMATION PROVIDED IN THIS DRAWING AND ANY OTHER INFORMATION TO BE REFERRED TO THE INTERIOR DESIGN CONSULTANT FOR CLARIFICATION PRIOR TO WORK PROCEEDING
- LOCATE AND PROTECT ALL EXISTING ELEMENTS PRIOR TO ANY DEMOLITION WORK COMMENCING
- FORMS ARE REQUIRED. CONTRACTOR TO ALSO PREPARE PATCH REPAIR ANY OTHER AREAS TO MATCH EXISTING FINISHES
- ALL DEMOLITION WORK IS TO BE COMPLETED PRIOR TO THE COMMENCEMENT OF ANY OTHER WORK
- NEW FLOOR FINISHES PRIOR TO NEW CONSTRUCTION AS REQUIRED
- ALL DIMENSIONS SHOWN ARE IN METRES
- ALL DRAWINGS TO BE PRINTED AND REVISIONS IN COLOUR ON THE INDICATED SHEET SIZE

NOTE. REFER TO SERVICES DOCUMENTATION FOR SERVICES DEMOLITION SCOPE OF WORKS

Revision	Description	Date
A	FOR REF	31/07/2024
B	ISSUE FOR TENDER	29/08/2024
C	ISSUE FOR TENDER	29/08/2024



1 DEMOLITION REFLECTED CEILING PLAN - LEVEL 01
1:100

FOR TENDER

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Services Engineer
TTW
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GRAHAM CERT GROUP
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 Project Title: **MOORES WHARF**

Contractor Title: **DEMOLITION RCP LEVEL 1**

Scale: 1:100
 Drawing Created (Date): 23/05/2023
 Drawing Created By: GSA
 Project and Checked by: GSA
 Checked: GSA
 Approved: GSA

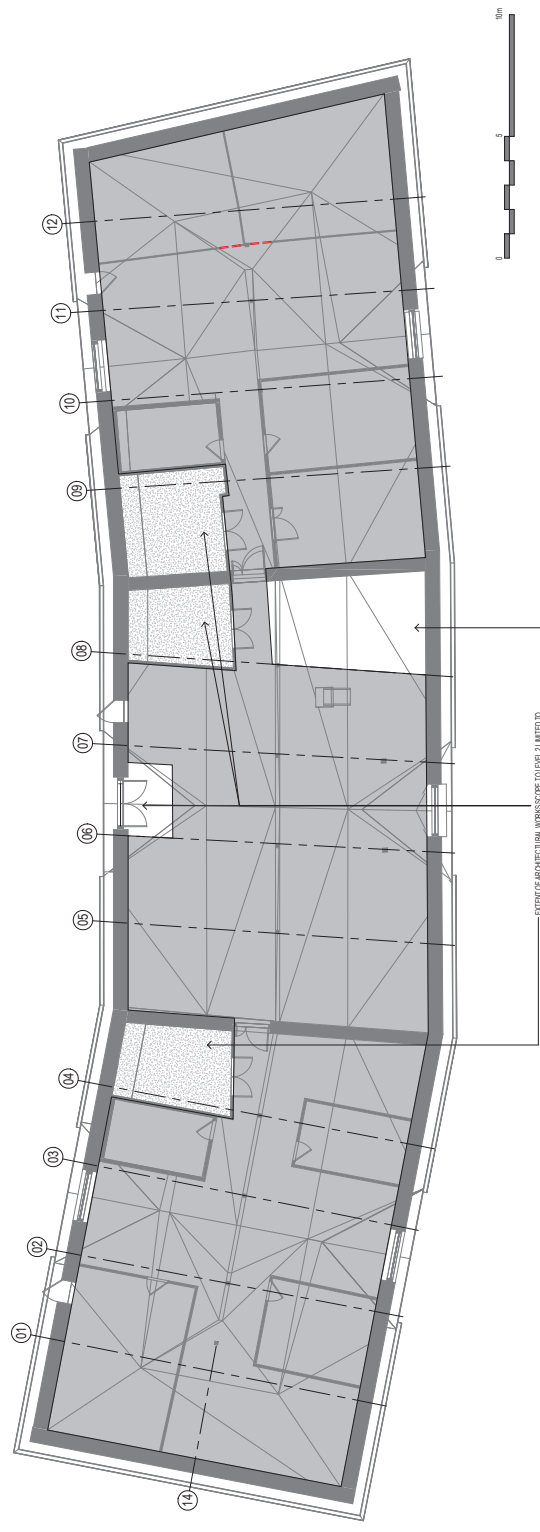
Project No: **A231513 1-101**
 Sheet: **C**

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DEMOLITION PLAN NOTES	DEMOLITION PLAN LEGEND	ANNOTATIONS
<ul style="list-style-type: none"> THIS DRAWING IS TO BE USED IN CONJUNCTION WITH ALL INTERIOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN ADDITION TO ALL OTHER RELEVANT CONSULTANT DOCUMENTS. CONTRACTOR TO CONTACT THE PROJECT SUPERVISOR FOR ANY CLARIFICATION. ANY WORKS ON THIS DRAWING ARE TO BE PERFORMED IN ACCORDANCE WITH THE INTERIOR DESIGN AND FINISH SCHEDULE AND TO BE PERFORMED TO THE REQUIREMENTS OF THE PROJECT SUPERVISOR. LOCATE AND PROTECT ALL EXISTING ELEMENTS PRIOR TO ANY DEMOLITION WORK. COLOR FORMS ARE TO BE USED TO PROTECT AND PRESERVE PATCH REPAIR ANY AREAS TO BE REMOVED UNLESS OTHERWISE STATED. ALL DEMOLITION WORK IS TO BE IN ACCORDANCE WITH THE DEMOLITION CODE OF PRACTICE AND ALL DEMOLITION WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE DEMOLITION CODE OF PRACTICE. ALL DIMENSIONS TO BE PRINTED AND READ IN ACCORDANCE WITH THE DRAWING SHEET SIZE. 	<ul style="list-style-type: none"> INDICATES AREA NOT IN SCOPE OF WORK INDICATES EXISTING PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT INDICATES EXISTING PARTITION TO BE DEMOLISHED INDICATES EXISTING GLAZED PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT INDICATES EXISTING GLAZED PARTITION TO BE DEMOLISHED INDICATES EXISTING DOOR TO REMAIN. PROTECT FOR DURATION OF THE PROJECT INDICATES EXISTING DOOR TO BE DEMOLISHED INDICATES EXISTING CEILING TILE TO REMAIN. PROTECT FOR DURATION OF THE PROJECT INDICATES EXISTING CEILING TILE TO BE DEMOLISHED INDICATES EXISTING PLASTERBOARD CEILING TO REMAIN. PROTECT FOR DURATION OF PROJECT INDICATES EXISTING PLASTERBOARD CEILING TO BE DEMOLISHED 	<ul style="list-style-type: none"> INDICATES EXISTING FULL HEIGHT CORNER TO REMAIN. PROTECT FOR DURATION OF PROJECT INDICATES EXISTING FULL HEIGHT CORNER TO BE DEMOLISHED <p>ANNOTATIONS</p> <ul style="list-style-type: none"> D INDICATES DEMOLITION OF EXISTING ANNOTATED ITEM EX INDICATES EXISTING ITEM TO REMAIN. PROTECT FOR DURATION OF PROJECT R INDICATES ITEM TO BE RELEASED AND BE LOCATED. CONTRACTOR TO CAREFULLY REMOVE AND PROTECT ANNOTATED ITEM FOR FUTURE USE

NOTE: REFER TO SERVICES DOCUMENTATION FOR SERVICES DEMOLITION SCOPE OF WORKS

Revision	Description	Date
A	FOR REF	31.07.2024
B	FOR TENDER	27.08.2024
C	ISSUE FOR TENDER	27.08.2024



1 DEMOLITION REFLECTED CEILING PLAN - LEVEL 02
1:100

NOTE:
- REFER SERVICE PACKAGES FOR EXTENT OF SERVICES
- REFER SERVICE REPORTS FOR EXTENT OF REDEMPTION WORKS
- REFER SERVICE REPORTS FOR STRUCTURE AND/OR WEATHERPROOFING

EXTENT OF STRUCTURAL WORKSCOPE TO LEVEL 01 LIMITED TO THESE AREAS

DEMOLITION PLAN NOTES	DEMOLITION PLAN LEGEND
<ul style="list-style-type: none"> THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL INTERIOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN ADDITION TO ALL OTHER RELEVANT CONSULTANT DOCUMENTS. CONTRACTOR TO CONTACT THE PROJECT MANAGER PRIOR TO SUBMISSION OF TENDER. ANY DISCREPANCIES OR AMBIGUOUS INFORMATION OR INCONSISTENCIES BETWEEN INFORMATION PROVIDED IN THIS DRAWING AND ANY OTHER RELEVANT DOCUMENTS TO BE REFERRED TO THE INTERIOR DESIGN OR ARCHITECTURE PORTFOLIO FOR CLARIFICATION. LOCATE AND PROTECT ALL EXISTING ELEMENTS AND ADJUST TO WHERE DEMOLITION WORKS OCCUR. FORMS AS REQUIRED. CONTRACTOR TO ALSO PRESERVE PATCH REPAIR ANY OTHER AREAS TO BE DEMOLISHED. ALL DEMOLITION WORKS TO BE COMPLETED WITHIN THE SPECIFIED TIME FRAME UNLESS NOTED OTHERWISE. ALL DEMOLITION WORKS TO BE COMPLETED WITHIN THE SPECIFIED TIME FRAME UNLESS NOTED OTHERWISE. ALL DIMENSIONS TO BE PRINTED AND READ IN COLOUR ON THE INDICATED SHEET SIZE. 	<ul style="list-style-type: none"> INDICATES EXISTING FULL HEIGHT ZONER TO REMAIN. PROTECT FOR DURATION OF PROJECT. INDICATES EXISTING FULL HEIGHT ZONER TO BE DEMOLISHED. INDICATES EXISTING PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT. INDICATES EXISTING PARTITION TO BE DEMOLISHED. INDICATES EXISTING GLAZED PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT. INDICATES EXISTING GLAZED PARTITION TO BE DEMOLISHED. INDICATES EXISTING DOOR TO REMAIN. PROTECT FOR DURATION OF THE PROJECT. INDICATES EXISTING DOOR TO BE DEMOLISHED. INDICATES EXISTING CEILING TILE TO REMAIN. PROTECT FOR DURATION OF THE PROJECT. INDICATES EXISTING CEILING TILE TO BE DEMOLISHED. INDICATES EXISTING FLOORBOARD CEILING TO REMAIN. PROTECT FOR DURATION OF PROJECT. INDICATES EXISTING FLOORBOARD CEILING TO BE DEMOLISHED.
<p>DEMOLITION PLAN LEGEND</p> <p>INDICATES EXISTING FULL HEIGHT ZONER TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING FULL HEIGHT ZONER TO BE DEMOLISHED.</p> <p>INDICATES EXISTING PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING PARTITION TO BE DEMOLISHED.</p> <p>INDICATES EXISTING GLAZED PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING GLAZED PARTITION TO BE DEMOLISHED.</p> <p>INDICATES EXISTING DOOR TO REMAIN. PROTECT FOR DURATION OF THE PROJECT.</p> <p>INDICATES EXISTING DOOR TO BE DEMOLISHED.</p> <p>INDICATES EXISTING CEILING TILE TO REMAIN. PROTECT FOR DURATION OF THE PROJECT.</p> <p>INDICATES EXISTING CEILING TILE TO BE DEMOLISHED.</p> <p>INDICATES EXISTING FLOORBOARD CEILING TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING FLOORBOARD CEILING TO BE DEMOLISHED.</p>	<p>DEMOLITION PLAN LEGEND</p> <p>INDICATES EXISTING FULL HEIGHT ZONER TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING FULL HEIGHT ZONER TO BE DEMOLISHED.</p> <p>INDICATES EXISTING PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING PARTITION TO BE DEMOLISHED.</p> <p>INDICATES EXISTING GLAZED PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING GLAZED PARTITION TO BE DEMOLISHED.</p> <p>INDICATES EXISTING DOOR TO REMAIN. PROTECT FOR DURATION OF THE PROJECT.</p> <p>INDICATES EXISTING DOOR TO BE DEMOLISHED.</p> <p>INDICATES EXISTING CEILING TILE TO REMAIN. PROTECT FOR DURATION OF THE PROJECT.</p> <p>INDICATES EXISTING CEILING TILE TO BE DEMOLISHED.</p> <p>INDICATES EXISTING FLOORBOARD CEILING TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING FLOORBOARD CEILING TO BE DEMOLISHED.</p>
<p>DEMOLITION PLAN LEGEND</p> <p>INDICATES EXISTING FULL HEIGHT ZONER TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING FULL HEIGHT ZONER TO BE DEMOLISHED.</p> <p>INDICATES EXISTING PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING PARTITION TO BE DEMOLISHED.</p> <p>INDICATES EXISTING GLAZED PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING GLAZED PARTITION TO BE DEMOLISHED.</p> <p>INDICATES EXISTING DOOR TO REMAIN. PROTECT FOR DURATION OF THE PROJECT.</p> <p>INDICATES EXISTING DOOR TO BE DEMOLISHED.</p> <p>INDICATES EXISTING CEILING TILE TO REMAIN. PROTECT FOR DURATION OF THE PROJECT.</p> <p>INDICATES EXISTING CEILING TILE TO BE DEMOLISHED.</p> <p>INDICATES EXISTING FLOORBOARD CEILING TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING FLOORBOARD CEILING TO BE DEMOLISHED.</p>	<p>DEMOLITION PLAN LEGEND</p> <p>INDICATES EXISTING FULL HEIGHT ZONER TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING FULL HEIGHT ZONER TO BE DEMOLISHED.</p> <p>INDICATES EXISTING PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING PARTITION TO BE DEMOLISHED.</p> <p>INDICATES EXISTING GLAZED PARTITION TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING GLAZED PARTITION TO BE DEMOLISHED.</p> <p>INDICATES EXISTING DOOR TO REMAIN. PROTECT FOR DURATION OF THE PROJECT.</p> <p>INDICATES EXISTING DOOR TO BE DEMOLISHED.</p> <p>INDICATES EXISTING CEILING TILE TO REMAIN. PROTECT FOR DURATION OF THE PROJECT.</p> <p>INDICATES EXISTING CEILING TILE TO BE DEMOLISHED.</p> <p>INDICATES EXISTING FLOORBOARD CEILING TO REMAIN. PROTECT FOR DURATION OF PROJECT.</p> <p>INDICATES EXISTING FLOORBOARD CEILING TO BE DEMOLISHED.</p>

Service Engineer	ASTON CONSULTING Level 19/10/02/03 27000/02/03/04
Project Engineer	H21 Level 19/10/02/03 27000/02/03/04
Structural Engineer	TTW Level 19/10/02/03 27000/02/03/04
Contractor	GRAHAM CERT GROUP Consultant Details
Client	Port Authority 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

FOR TENDER

ASTON CONSULTING
Level 19/10/02/03
27000/02/03/04

H21
Level 19/10/02/03
27000/02/03/04

TTW
Level 19/10/02/03
27000/02/03/04

GRAHAM CERT GROUP
Consultant Details

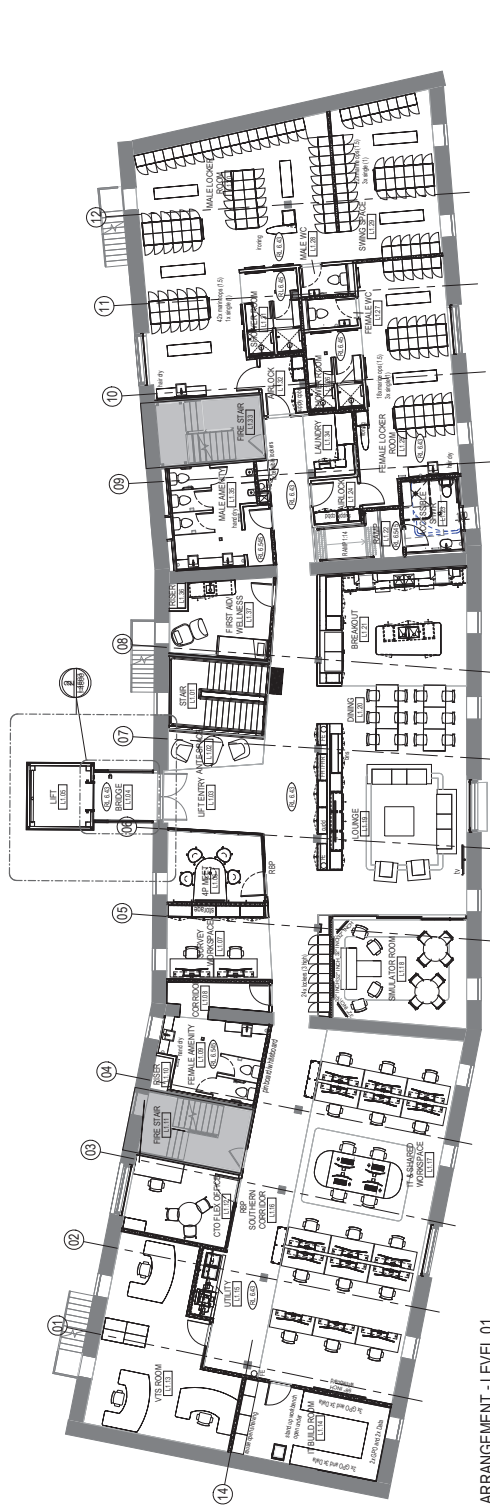
Port Authority
14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

GROUP USA
Level 19/10/02/03
27000/02/03/04

Demolition Title	DEMOLITION RCP LEVEL 02
Scale	1:100
Drawing Control Status	23052023
Checked by	USA
Drawn by	USA
Reviewed by	USA
Approved by	USA
Project No.	A231513 1-1102
Sheet No.	C

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Task	Description	Date
A	FOR COORDINATION	05.07.2024
B	FOR REVIEW	11.07.2024
C	FOR COORDINATION	20.07.2024
D	FOR COORDINATION	20.08.2024
E	FOR COORDINATION	10.09.2024
F	FOR COORDINATION	10.09.2024
G	ISSUE FOR TENDER	27.09.2024



1 GENERAL ARRANGEMENT - LEVEL 01
1:100

FOR TENDER

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ASTON CONSULTING
 Level 17/150 Pitt Street
 Sydney NSW 2000

Services Engineer
H21
 Level 17/150 Pitt Street
 Sydney NSW 2000

Structural Engineer
TTW
 Level 17/150 Pitt Street
 Sydney NSW 2000

Contractor
GRAHAM CERT GROUP
 Consultant Details

Client
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 Sydney NSW 2000

Client
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 Level 14/150 Pitt Street
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 T +61 2 925 1144 F +61 2 9252 3488
 Project Title: Moore's Wharf
 Project No: 20240000000000000000

MOORE'S WHARF

GENERAL ARRANGEMENT PLAN - LEVEL 1

Scale	1:100
Drawing Control No.	ZP052023
Drawn by	GSA
Checked by	GSA
Approved by	GSA
Discipline	GSA
Project No.	20240000000000000000
Revision	None

A231513 1-2001

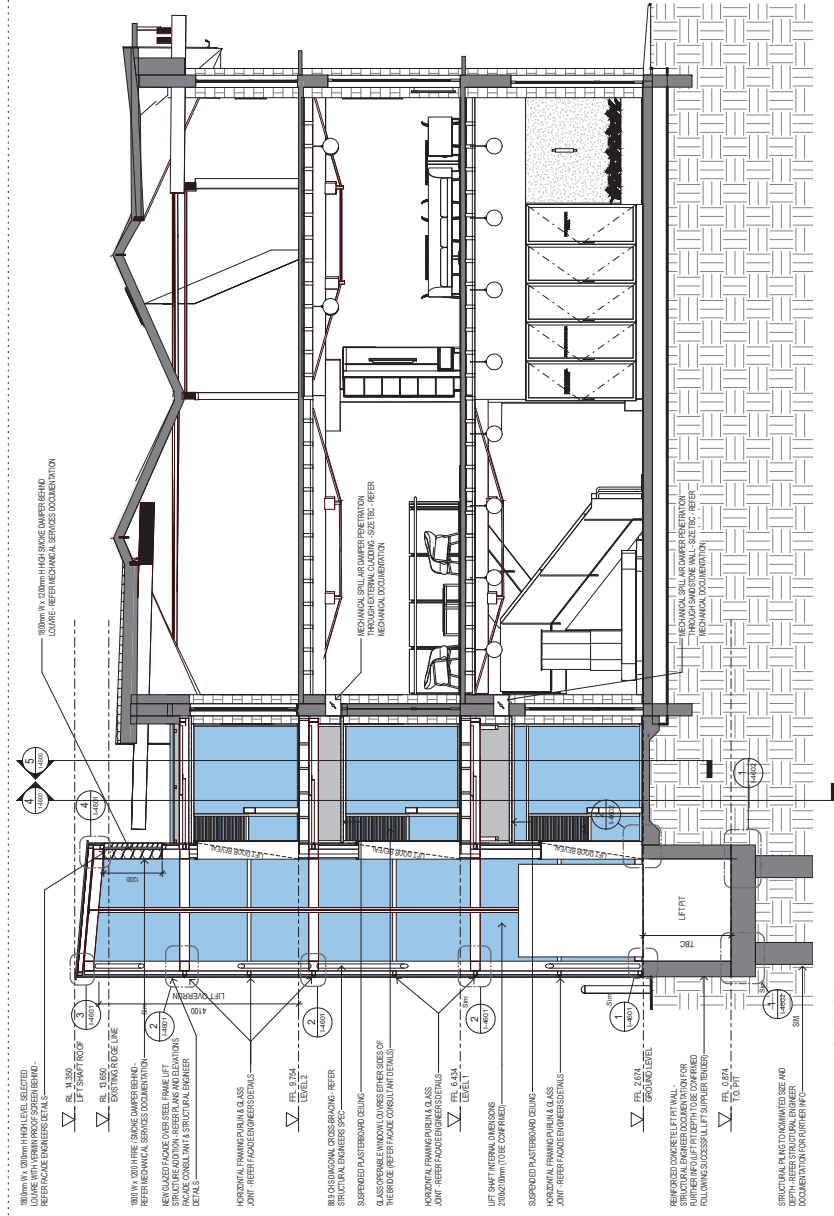
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GENERAL ARRANGEMENT NOTES

- THIS DRAWING IS TO BE USED IN CONJUNCTION WITH ALL INTERIOR FINISHES, SCHEDULES AND SPECIFICATIONS. IN ADDITION TO ALL OTHER RELEVANT CONSULTANT DOCUMENTS.
- ALL DIMENSIONS SHOWN ARE IN MILLIMETRES.
- ALL DIMENSIONS TO BE PRINTED AND SHOWN IN FULL ON THE DRAWING SHEET SIZE.
- ALL DIMENSIONS TO BE CHECKED ON SITE PRIOR TO MANUFACTURE AND INSTALLATION OF ALL ITEMS. ANY DISCREPANCIES TO BE REPORTED TO CONSULTANT IMMEDIATELY.
- ALL DIMENSIONS TO BE CHECKED ON SITE PRIOR TO CONSTRUCTION AND COMPLETION.
- ALL DIMENSIONS TO BE CHECKED ON SITE PRIOR TO CONSTRUCTION AND COMPLETION.
- ALL DIMENSIONS TO BE CHECKED ON SITE PRIOR TO CONSTRUCTION AND COMPLETION.

GENERAL ARRANGEMENT PLAN LEGEND

- INDICATES AREA NOT IN SCOPE OF WORK
- INDICATES EXISTING PARTITION
- INDICATES NEW PARTITION
- INDICATES NEW GLAZED PARTITION
- INDICATES EXISTING DOOR
- INDICATES NEW DOOR
- INDICATES AV SCREEN. REFER TO ENGINEER PACKAGE FOR DETAILS
- INDICATES SECURITY SWIRE. CARD READER. REFER TO SECURITY CONSULTANT SPECIFICATIONS FOR DETAILS. REFER TO ELEVATIONS FOR DETAILS OF SECURITY SWIRE AND UNLIMITED BETWEEN 1.20M TO 1.80M FOR PASSENGER STANDARDS
- ROOM ROOMING PANEL DETAIL 0203 AV. TO BE APPLIED TO CLINGS IN APPROVED WAREHOUSE TO BE RELOCATED ALONG THROUGH PARTITION PANELS UP TO 4M.



1 EXTERNAL LIFT - SECTION
1:30



NORTH LIFT & BRIDGE 3D ELEVATION



WEST LIFT & BRIDGE 3D ELEVATION



SOUTH LIFT & BRIDGE 3D ELEVATION



30 VIEW

Task	Description	Date
A	FOR INFORMATION	21.05.2024
B	FOR INFORMATION	09.05.2024
C	FOR INFORMATION	09.05.2024
D	FOR INFORMATION	09.05.2024
E	FOR INFORMATION	09.05.2024

FOR TENDER

Services Engineer
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 Level 19/193 Pitt Street
 Sydney NSW 2000

MECHANICAL ENGINEER
H21
 Level 19/193 Pitt Street
 Sydney NSW 2000

Structural Engineer
TTW
 Level 19/193 Pitt Street
 Sydney NSW 2000

Contractor
GRAHAM CERT GROUP
 Consultant Details

Client
Port Authority
 Level 19/193 Pitt Street
 Sydney NSW 2000

Project Authority
PORT AUTHORITY

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 Group USA Pty Ltd
 ANU 71/002 113 771
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 www.facebook.com/groupusaaustralia
 www.instagram.com/groupusaaustralia
 www.linkedin.com/company/groupusaaustralia
 Project Title

MOORES WHARF

Drawing Title	Scale
LIFT SECTION	1:30
Drawings Created (Date)	04/03/24
Drawings Created By	GSA
Drawings Checked By	GSA
Verified	GSA
Approved	GSA
Project No.	AAA-420-17-5401
Project Name	MOORES WHARF

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Appendix B. Statement of Heritage Impact

STATEMENT OF HERITAGE IMPACT

Proposed Alterations and Additions at

Moore's Wharf Building

4 Towns Place, Millers Point



Job No. 10190

October 2024

Heritage 21

CULTURAL BUILT HERITAGE IN THE 21ST CENTURY

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Acknowledgement of Country

Heritage 21 wishes to acknowledge the Traditional Owners of Country throughout Australia and recognise their continuing connection to land, waters and community. We pay our respects to them and their cultures and to Elders both past and present.

EXECUTIVE SUMMARY

This Statement of Heritage Impact ("SOHI" or "report") has been prepared on behalf of Group GSA who have been engaged by the Port Authority of New South Wales (Port Authority of NSW) in the context of a Review of Environmental Factors (REF) application for proposed alterations and additions to the Moore's Wharf Building, located at 4 Towns Place, Millers Point ("the site").

The Moore's Wharf Building is a Victorian period warehouse (c.1836-1837, relocated from 1980) and follows the Colonial Georgian architectural style. It is able to provide evidence of the development of maritime infrastructure in NSW during the early Victorian period, and the role of the Miller's Point area for maritime trade activities. It is listed as an item of state significance on the Port Authority of NSW s.170 Heritage and Conservation Register. It is also located in the vicinity of heritage item Two Mooring Anchors (Item 5063342), and two state listed heritage precincts; Walsh Bay Wharves Precinct (SHR #0059) and Millers Point and Dawes Point Village Precinct (SHR #01682). Whilst the subject building is not located within the legal boundaries of the Millers Point and Dawes Point Village Precinct, it is considered to be contributory to the Millers Point area as a built form showcasing the development of post-colonial settlement in Sydney.

The proposed alterations and additions to the Moore's Wharf Building would include the introduction of an external lift to the western elevation of the building to facilitate dignified access for all building users, and a major internal refurbishment which would involve an improved layout to the Ground and First floors. These works would enhance the capability of the operations function by facilitating improved access and a new internal layout. The marine operations base has established a 24-hour active and high functioning environment, which demands reliable access and a fit-for-purpose layout. The proposed alterations and additions to the Moore's Wharf building have been designed to meet these requirements, whilst also giving the utmost consideration to the significance and heritage values of the building.

In the opinion of Heritage 21, the proposed alterations and additions to the Moore's Wharf Building would have a minimal impact to the significance of the building, the adjacent heritage item or conservation areas in the vicinity. The proposal would not detract from the original form, character, scale or presentation of this building, which is considered to be of state significance.

In order to ensure maximum conservation of the Moore's Wharf Building, mitigation measures should be introduced including, but not limited to, the ongoing use of a heritage consultant during project delivery, the use of heritage tradespeople, temporary protection measures, stop works procedures in the event of unexpected finds or damages, a heritage induction to the site, and consultation with Heritage NSW.

Name of the heritage item:

Moore's Wharf Building

Heritage Register item number and name:

4560018 – Port Authority of New South Wales Section 170 Heritage and Conservation Register

Address and location:

4 Towns Place, Millers Point NSW 2000

Prepared by:

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Prepared for:

Port Authority of New South Wales

Cover image: Subject building at 4 Towns Place, Millers Point facing north-east to the primary façade.
(Source: Heritage 21, 9 April 2024)

The following table forms part of the quality management control undertaken by Heritage 21 regarding the monitoring of its intellectual property as issued.

Issue	Description	Date	Written by	Reviewed by	Issued by
1	Working draft report (D1) issued for comment.	09.09.2024	EM	-	EM
2	Report issued (R1).	01.10.2024	EM	-	EM
3	Report issued (R12).	09.10.2024	EM	-	EM

1.0 INTRODUCTION

1.1 Background

This Statement of Heritage Impact (“SOHI” or “report”) has been prepared on behalf of Group GSA who have been engaged by the Port Authority of New South Wales (Port Authority of NSW) in the context of a Review of Environmental Factors (REF) application for proposed alterations and additions to the Moore’s Wharf Building, located at 4 Towns Place, Millers Point (“the site”).

The REF has been prepared pursuant to Section 2.89(1)(a) of Division 14 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) for development permitted without development consent – alterations of or additions to a public administration building. The subject site is a heritage item under the Port Authority of NSW Section 170 Heritage and Conservation Area. The purpose of the SOHI is to assess potential impacts of the proposal on the heritage significance of the subject site, adjacent heritage item and conservation areas located in the vicinity of the site.

Accordingly, this SOHI provides the necessary information for Port Authority of NSW to make an assessment of the proposal on heritage grounds. This assessment is carried out in Section 6.0 below.

1.2 Site Identification

The subject site is located at 4 Towns Place, Millers Point, which falls within the City of Sydney Local Government Area (LGA) and is legally defined as Lot 51 DP 1213772. As depicted in Figure 1 below, the site is located on the northern side of the roundabout positioned at the intersection of Towns Place and Dalgety Road. The site comprises a former Victorian period warehouse store converted into an office building and operations base.

The setting and topography of the site will be more fully described in Section 3.0 below.

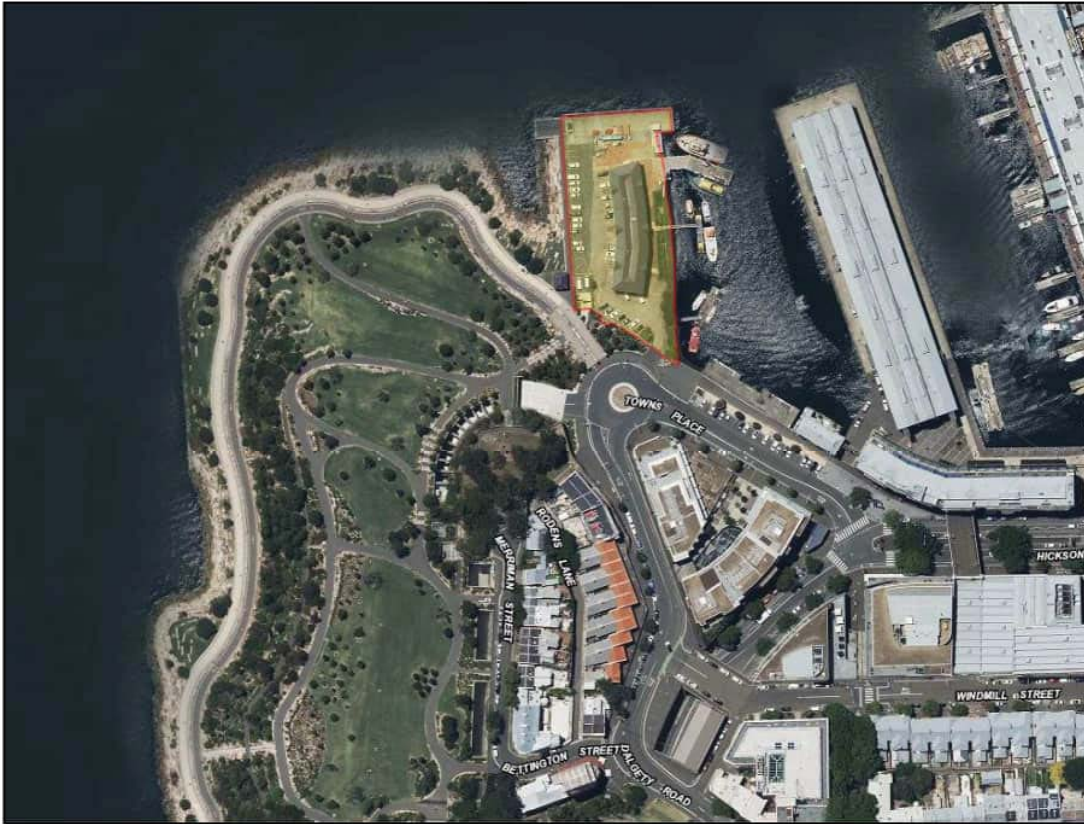


Figure 1. Contemporary aerial view of the site highlighted in yellow and surrounding urban environment (Source: NSW Spatial Services, "SIX Maps," accessed 6 February 2024, <http://maps.six.nsw.gov.au>).

The subject building was originally constructed in c.1836-1837 but was relocated in 1980 and reopened in 1981 due to redevelopment in the area. This report will refer to the subject site as the existing location of the building and will refer to the Moore's Wharf building, which is the subject of this impact assessment, as the subject building.



Figure 2. Map indicating the previous and current location of the subject site. The indicative previous location of the subject building is outlined in blue, and the current location of the subject site is outlined in red (Source: NSW Spatial Services, "SIX Maps," accessed 17 April 2024, <http://maps.six.nsw.gov.au>).

1.3 Proposal Justification and Need

The Moore's Wharf building is presently being adaptively reused as the marine operations base for the Port Authority of NSW; however, the current configuration of the building is no longer considered to be fit for purpose. The marine operations base has established a 24-hour active and high functioning environment, which demands reliable access and a fit-for-purpose layout. The proposed alterations and additions to the Moore's Wharf Building are to enhance the capability of the operations function by facilitating improved access and a new internal layout. The proposed alterations and additions to the Moore's Wharf building have been designed to meet these requirements, whilst also giving the utmost consideration to the significance and heritage values of the building.

The core of the proposal involves a major internal refurbishment of the three-storey Moore's Wharf building to accommodate the requirements of the maritime base operations for the Port Authority of NSW. The proposal also includes the installation of a new lift to meet current accessibility, emergency access and building regulation requirements.

Further details of the proposal and drawings of the proposed alterations are included in Section 5.2 and APPENDIX B - DRAWINGS, respectfully.

1.4 Heritage Context

1.4.1 Heritage Listings

The subject site **is unzoned** within the Sydney Local Environmental Plan 2012 (“SLEP”) and therefore **is not** listed as an item of environmental heritage under Schedule 5 of the SLEP 2012 and **is not** located within the boundaries of a Heritage Conservation Area. It **is not** listed on the NSW State Heritage Register, the National Heritage List, the Commonwealth Heritage List, the National Trust Register (NSW) or the former Register of the National Estate.¹ It **is** listed on the Port Authority of NSW Section 170 Heritage and Conservation Register as the “Moore’s Wharf Building”.

The details of the listings follow:

Statutory List – Legislative Requirements				
List	Item Name	Address	Significance	Item No.
Port Authority of NSW Section 170 Heritage and Conservation Register	Moore’s Wharf Building	4 Towns Place, Millers Point	State	4560018

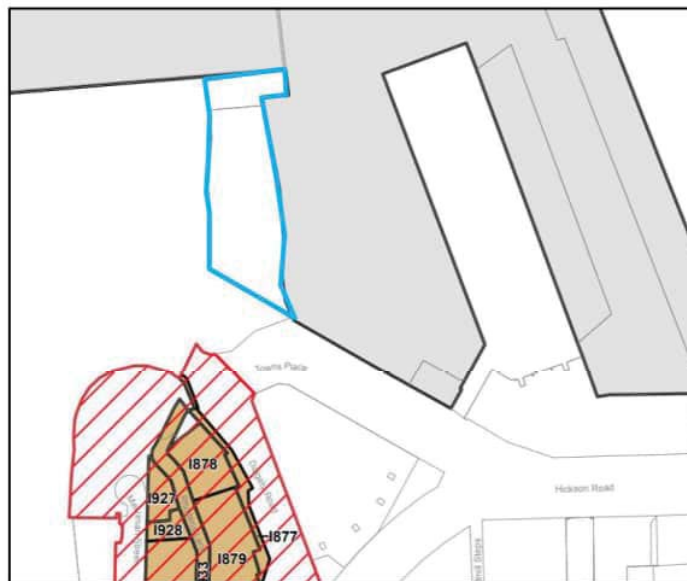


Figure 3. Detail from Heritage Map HER_013. The site is outlined in blue, heritage items shaded brown and Heritage Conservation Areas are hatched red (Source: NSW Planning Portal, *Sydney Local Environmental Plan 2012*, <https://www.planningportal.nsw.gov.au/publications/environmental-planning-instruments/sydney-local-environmental-plan-2012>, annotated by Heritage 21).

¹ The Register of the National Estate ceased as a statutory heritage list in 2007, but it continues to exist as an inventory of Australian heritage places.



Figure 4. Detail of heritage curtilage of Moore's Wharf Building Curtilage SHI 4560018. Port Authority land ownership is outlined in blue. (Source: NSW Port Authority)

1.4.2 Heritage Items in the Vicinity

As depicted in Figure 3 above, the subject site is situated in the vicinity of heritage items "Sandstone wall and stairs including iron palisade fence" (1877), "Terrace group "Dalgety Terrace" (7-13A Dalgety Road) including interiors" (1878), "Terrace group (15-35A Dalgety Road) including interiors" (1879) and "Retaining wall" (1933), listed under Schedule 5 of the SLEP 2012. The subject site is also situated in the vicinity of the Millers Point Conservation Area (C35).

Two Mooring Anchors, also listed under the Port Authority of NSW Section 170 Register, were relocated to the Moore's Wharf site in 2017 (Item 5063342).² They are currently located towards the southern end of the site. Heritage 21 has been informed by Port Authority of NSW that this item may be relocated to another area to facilitate other projects.

² Port Authority of NSW, *Rare anchors installed at Moore's Wharf*, 2017 News, <https://www.portauthoritynsw.com.au/news-and-publications/2017-news/rare-anchors-installed-at-moore-s-wharf/>, accessed 6 February 2024.



Figure 5. Latest SIX Maps aerial view of the site. (Source: NSW Spatial Services, "SIX Maps," accessed 6 February 2024, <http://maps.six.nsw.gov.au/>, annotated by Heritage 21)

The Walsh Bay Wharves Precinct, listed on the State Heritage Register (SHR #0059), is to the east of the subject site. The Millers Point & Dawes Point Village Precinct (SHR #01682) is to the south of the subject site. The heritage curtilage of these precincts is indicated in Figure 6 and Figure 7 below.

The proposed works would be in the visual catchment of the Two Mooring Anchors (Item 5063342), the Walsh Bay Wharves Precinct (SHR #0059) and the Millers Point and Dawes Point Village Precinct (SHR #01682).

The proposed development of the site is not located within the visual catchment of heritage items "Sandstone wall and stairs including iron palisade fence" (I877), "Terrace group "Dalgety Terrace" (7-13A Dalgety Road) including interiors" (I878), "Terrace group (15-35A Dalgety Road) including interiors" (I879), "Retaining wall" (I933) listed under Schedule 5 of the SLEP 2012 or the Millers Point Conservation Area (C35), nor are they considered sufficiently proximate to warrant discussion in the Heritage Impact Assessment contained in Section 6.0 of this SOHI.

As such, our discussion regarding the potential heritage impact of the proposal will be limited to the Two Mooring Anchors (Item 5063342), the Walsh Bay Wharves Precinct (SHR #0059) and the Millers Point and Dawes Point Village Precinct (SHR #01682).

Statement of Heritage Impact *Moore's Wharf Building* 4 Towns Place, Millers Point

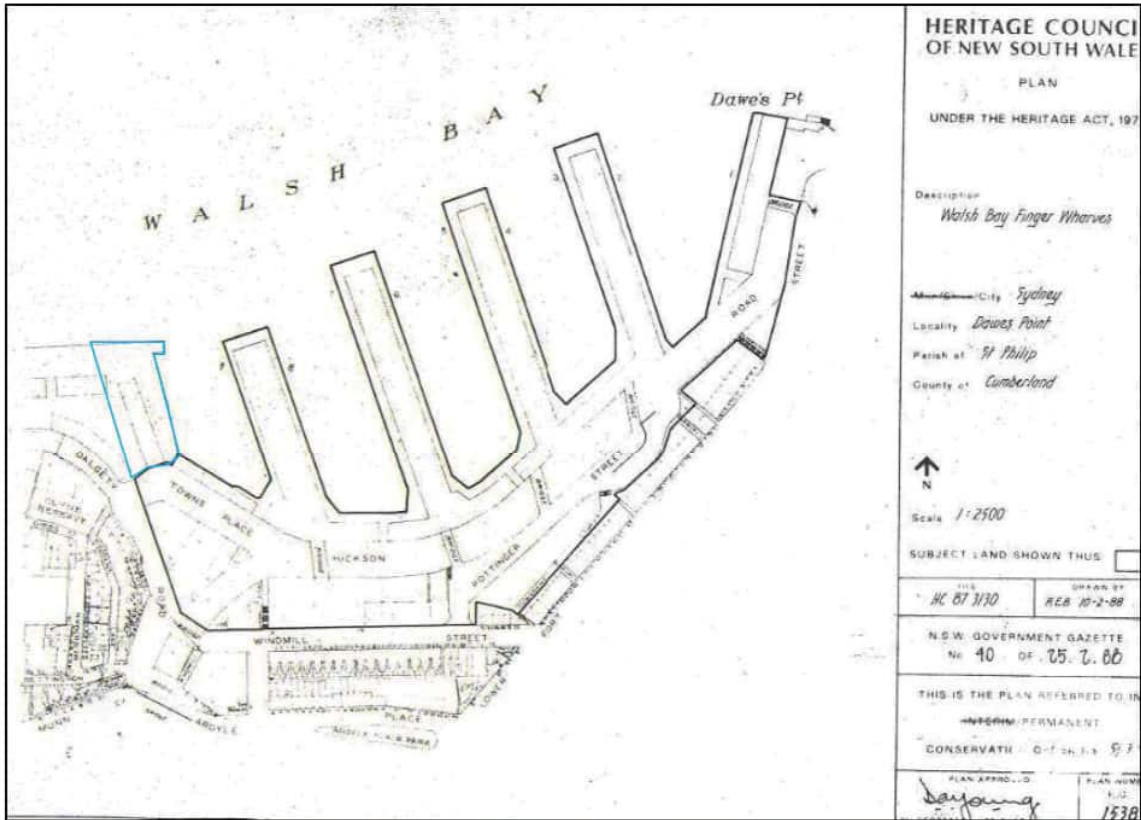


Figure 6. Detail of Plan Number 559 outlining the curtilage for Walsh Bay Wharves Precinct, SHR #00559. The location of the subject site is indicated in blue. (Source: NSW State Heritage Inventory, Item ID: 5045067)



Figure 7. State Heritage Register – SHR – 01682, Millers Point & Dawes Point Precinct. 1994. The location of the subject site is indicated in blue. (Source: NSW State Heritage Inventory, accessed 26 September 2024, Item ID: 5054725)

1.5 Purpose

The REF application has been prepared pursuant to Section 2.89(1)(a) of Division 14 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) for development permitted without development consent – alterations of or additions to a public administration building. The subject site is a heritage item under the Port Authority of NSW Section 170 Heritage and Conservation Area. Accordingly, this SOHI provides the necessary information for Port Authority of NSW to make an assessment of the proposal on heritage grounds.

This assessment is carried out in Section 6.0 below.

1.6 Methodology

The methodology used in this SOHI is consistent with *Guidelines for preparing a statement of heritage impact* (2023) and *Assessing heritage significance* (2023) published by the NSW Department of Planning and Environment and has been prepared in accordance with the principles contained in the 2013 edition of *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*.

This assessment is based on the available physical evidence, including site inspections conducted on the 18 December 2023 and 9 April 2024, and a detailed historical assessment of the site (all references are identified in Section 8.0 of this report). It also included a review of the heritage management framework and legislation (detailed in Section 6.1 of this report). The Heritage Impact Assessment has been provided in Section 6.2 of this report, with recommendations stemming from this assessment in Section 7.2.

1.7 Limitations

- This Statement of Heritage Impact (“SOHI”) is based upon an assessment of the heritage issues only and does not purport to have reviewed or in any way endorsed decisions or proposals of a planning or compliance nature. It is assumed that compliance with non-heritage aspects of Council's planning instruments, the BCA and any issues related to services, contamination, structural integrity, legal matters or any other non-heritage matter is assessed by others.
- This SOHI essentially relies on secondary sources. Primary research has not necessarily been included in this report, other than the general assessment of the physical evidence on site.
- It is beyond the scope of this report to address Aboriginal and Torres Strait Islander peoples' associations with the subject site.
- It is beyond the scope of this report to locate or assess potential or known archaeological sub-surface deposits on the subject site or elsewhere.
- It is beyond the scope of this report to assess items of movable heritage.

- Any specifics regarding views should be assessed by a view expert. Heritage 21 does not consider itself to be a view expert and any comments in this report are opinion based.
- Heritage 21 has only assessed aspects of the subject site that were visually apparent and not blocked or closed or to which access was not given or was barred, obstructed or unsafe on the day of the arranged inspection.

2.0 HISTORICAL CONTEXT

2.1 Local History

The following local history has been extracted from The Dictionary of Sydney entry for Millers Point, with footnotes replicated as they appear in the original entry:

Millers Point is a small suburb within the City of Sydney local government area. Today it is often thought to be a part of its neighbour, The Rocks, much to the chagrin of residents who insist on recognising its separate history and development. Very few people settled in the area before the 1830s. For decades it remained an isolated place, approached only by scrambling over The Rocks or around the shoreline from Point Maskelyne, later renamed Dawes Point, where William Dawes established an observatory and battery in the first years of European settlement. His house became a meeting place for many Aboriginal people who assisted him in recording the local language and customs. In the twenty-first century this promontory was officially given the dual name of Dawes Point and Tar-Ra, which was what the original inhabitants called it.

A flagstaff was erected on the high ground in 1788. Here too the first government windmill was built in 1797 and, following the insurrection of Irish political prisoners at Castle Hill in 1804, work began on a fort. For these reasons the hill was variously called the Flagstaff Hill, Windmill Hill or Fort Philip, until its current name of Observatory Hill was adopted with the construction of a new observatory in 1858.

Other windmills appeared, including three that were built after 1815 on the farthest point of land facing Cockle Bay. These were owned by the former convict John Leighton, known as Jack the Miller, and inspired the name Millers Point. The local people who had lived here for thousands of years called it Coodyee.

Sandstone outcrops provided building material for Sydney, and the little streets of Millers Point were gradually formed through quarrying away the edges of the Flagstaff Hill, leaving the high cliffs that today front Argyle Place and Kent Street.

A new government military hospital, built at the rear of the Flagstaff Hill in 1815, gave the area one of its first substantial buildings, but by the early 1820s there were still only about half a dozen houses in Millers Point. By then, however, space at Sydney Cove was at a premium, and wharves and warehouses began to be built alongside older boatbuilding yards west of Dawes Point. The deep waters of what is now called Walsh Bay became the home of the buoyant, if odorous, whaling and sealing industry in the 1830s, and long after these industries had died out, the area remained a centre for maritime trade with China and Pacific. This area generated tales of smuggling and shanghai-ing, and persistent urban myths of secret underground tunnels connecting pubs to the waterfront, for the surreptitious movement of unwilling sailors, overproof rum and whatever else needed to evade official detection.

By the 1840s the terrain was lightly populated, with workers' cottages near the wharves and fine houses of wharf owners and merchants adorning the elevated streets. But with access to town still difficult, Millers Point remained isolated from and, socially, a cut above, its neighbour, The Rocks. This distinction was reduced, and access improved, once the high rocks were hewn through with the creation of the Argyle Cut in 1846.

Sydney's maritime precinct

By the booming gold rush period of the 1850s, Millers Point was established as the most intensely maritime area of Sydney. With the exception of the Australian Gas Light Company's works on the Darling Harbour edge of Millers Point, established in 1843, practically all employers in the area were connected to the wharves, or to the small local infrastructure of shops, hotels, doss houses and boarding houses that supported them. Family formation was low and the workforce was male-dominated, casual, highly mobile and itinerant. Here the language of the streets was not only coarser, it was spoken in more tongues, and at more hours of the day and night, than anywhere else in Sydney. On any given day, many of the people on the streets owed their allegiances to other cities in other parts of the world.

The fortunes of the wharves, and hence the people, of Millers Point were tied to the rhythms of the trade cycle. Early wharfage and ships catered to a general trade, seizing on whatever product would turn a profit. When wool overtook marine products as Sydney's primary export, many of the wool ships also docked here, while the wharves around in Darling Harbour handled coastal traders. Here the tidal mudflats were steadily reclaimed so that the deep indentations that originally formed a narrow neck of the point slowly disappeared beneath a jumble of privately owned wharves.

During the long economic boom from the 1860s until the depression of the 1890s, Millers Point prospered. The exuberant wool trade supported specialised firms and ships. The legendary clippers that raced to catch the first of the wool sales in England returned with passengers and goods, and by 1861 there were six large bonded warehouses in Millers Point, as well as about 400 houses and a clutch of pubs. The temporary Holy Trinity Church was remodelled by Edmund Blacket and completed in 1878. This was the approved place of worship for the military establishment, while locals, if they went to church at all, were more likely to attend St Patrick's Catholic church on Church Hill. But as the waterfront and its associated buildings expanded, and even as some new housing was constructed, the number of houses began to shrink and residential amenities to decline.

Strikes and plague

The 1890s was a decade of turmoil for Millers Point. Conditions on the waterfront had always been harsh and unpredictable, but the great maritime strike of 1890, which ended with the smashing of the Wharf Labourers' Union and other associated workers' organisations, moved class warfare to a new and brutal plain. With the collapse of the wool trade and the long

depression that dragged on into the new century, work was sporadic. For some these events forged a new political maturity, while others' spirits were broken.

"The workers of the area and the union that bound them together [were] vilified in the Sydney press and a judgemental distance was staked out between waterfront areas like The Point and the rest of Sydney. The reputation of the area as 'rough' stems from this period."³

Official surveys and reports that had found little to complain about in Millers Point houses in the 1870s were by now highly critical. The wharves that had once been symbols of prosperity were derided for their insanitary conditions by the 1890s, and politicians were casting a critical eye over this privately owned infrastructure.

In January 1900 an outbreak of bubonic plague generated some heavy-handed treatment from the authorities. For a time the area was quarantined, houses were compulsorily disinfected and residents suspected of having come in contact with the disease were ferried across to the quarantine station at North Head in the dead of the night. Of greater long-term significance, the hysteria that surrounded the outbreak gave the government the excuse it needed to resume all the wharves and the streets behind them and to start a massive redevelopment project. The view that the private sector could not efficiently manage the infrastructure of the port drove some of the greatest public works ever undertaken in Sydney – the creation of modern wharves from Woolloomooloo to White Bay and the building of the Sydney Harbour Bridge. Because the bridge was not built for decades and the process of demolition was slow, it is easy to overlook this as a reason for the post-plague resumptions, but residents had always understood this intention. In January 1902, the Daily Telegraph published a map showing the proposed 130-foot-wide (39.6-metre-wide) replacement for Princes Street, to carry the 'proposed North Shore railway' and the 'contemplated bridge over the harbour'. Princes Street belonged to The Rocks, not Millers Point, but the eventual building of the bridge had greater impact on Millers Point.

Remaking Millers Point

The initial task of the new Sydney Harbour Trust (later the Maritime Services Board) was to rebuild the wharves, but after some attempts to establish other bodies to construct new housing, this task also went to the trust. By mid-1901 it was in possession of more than 800 properties, including 553 houses, between George Street in The Rocks and Kent Street in Millers Point and behind Darling Harbour. For the next decade this meant only a change in landlord for most people, as priority was given to waterside reconstruction and to bringing the tramlines from George Street into Millers Point. Millers Point became a huge building site, and up to 1,000 men would congregate at the corner of Argyle and Kent streets in the morning, hoping to be called up for a day's labouring. The first wharves to be rebuilt were replacements for the larger private owners, such as Dalgety's on the point, who leased them back on completion.

³ Shirley Fitzgerald and Christopher Keating, *Millers Point, The Urban Village*, Hale & Iremonger, Sydney, 1991, p. 61.

In 1909 the huge task of cutting down cliffs, reorganising the pattern of the roads and constructing large finger wharves began. The work was slowed by shortages of materials and labour during World War I but, when the scheme was finally completed in the 1920s, these cutting-edge public works had created a modern industrial landscape. Double-decked wharves were connected via road bridges that allowed entry and transfer directly to bond stores at two levels along newly created Hickson Road at Walsh Bay. Robert Hickson chaired the Sydney Harbour Trust from 1901 to 1912. Henry Walsh was the trust's chief engineer. Hickson Road continued around to Darling Harbour, where a link to Sussex Street was frustrated for years because the gas works stood in the way. Eventually these roads did join, but the planned railway along this road, connecting Walsh Bay with the goods yards in Ultimo, was never built.

Sydney's first public housing

By the 1920s whole streets had disappeared, new cliff faces had been created and hundreds of houses were replaced, though there were never as many as there had been in 1900. Quarrying to sea level along the Darling Harbour stretch of Hickson Road resulted in the creation of High Street, where the largest concentration of Sydney Harbour Trust residential buildings took shape from 1910, all with wonderful views across the harbour to Balmain. These houses, along with a kindergarten, a group of red brick shops in Argyle Street and the large red brick hotels such as the Palisade provided a coherent set of modern buildings which contrasted boldly with the retained older stock of sandstone cottages, pubs and painted terrace houses built in the nineteenth century.

The trust allocated housing to maintain its own workforce, not according to need. Thus twentieth-century Millers Point, despite its village atmosphere, became something akin to a company town, with the company being the state. As the primary interest of the trust was managing the Port of Sydney, it turned a blind eye to the residents' 'home improvements' and to the unofficial system of passing on housing to friends and relatives, as long as the rents were paid and the occupants provided labour for the wharves. And as everyone did work on the wharves, Millers Point became a very close-knit little community. The practice of informally inheriting housing continued until the end of the 1980s, when the work of the port had been wound down and the houses were passed to the Department of Housing. This had significant consequences for the social and residential mix of Millers Point.

The decline of the wharves

With the twentieth century came increased differentiation of tasks on the waterfront and divisions between the men who worked on the wharves and on the ships. Much of the drama of the emergence of an organised Waterside Workers Federation in 1902 was played out in places such as Millers Point. There was always something to disrupt the smooth running of the waterfront. As the century wore on, ships became larger and less frequent, resulting in uneven work availability. During the depressed 1930s they came even less often. It was all too common to see large numbers of men jockeying for limited numbers of jobs at designated pick-up points.

"They'd go to Millers Point pick up at 8 o'clock. There were hundreds of men down at Central Wharf ... The bloke would come out and he'd get on a box and say 'you, you, you and you'. They were bloody hard times. If they never got a job, they'd have to go to Pyrmont for the next pick up. They'd run, or run-walk. You couldn't run all the way. Then if they missed that one, they'd walk over to Woolloomooloo. Things were destitute."⁴

Domestic life was tied to the uneven rhythms of the working day, and as shifts might extend to 24 hours, or even stretch into days, social activities centred on the home, the local pubs and the church. Men who had wives to supply home comforts, and children to carry hot meals to the wharves, were more likely to cope than men who did not. And while many of the surnames in Millers Point signified wide-ranging maritime origins, the women were strongly tied into the local society. There is some evidence that traditional social customs, often with Irish origins, lasted longer in Millers Point than in many other places in Sydney.⁵ The construction of the Sydney Harbour Bridge, completed in 1932, strengthened the symbolic and physical barrier between Millers Point and The Rocks, while the preference for suburban living that the bridge to the north shore represented made a place like Millers Point very passé.

After the 1920s very little change occurred in the built fabric of Millers Point for many decades. The city electoral roll for 1947 recorded a population of 'occupiers', with no 'owners living elsewhere'. Even the couple of individuals with non-maritime occupations – the rector at the Garrison Church and the government astronomer, in residence on Observatory Hill – did not own their houses. With a population of around 1,500 adults, almost two-thirds of them male, the local branch of the Labor Party had over 200 members, and the only candidate at election time who could nudge down the Labor vote was one who was further to the left. In the state election of 1953, when the electorate voted 68 per cent for the Labor candidate, the Millers Point booth returned a tally of 90 per cent. At the next election in 1956, the Labor vote sank to 64 per cent, with 26 per cent going to other left-wing candidates.

But by the 1960s, things were changing. Radio call-ups for work and private car ownership loosened the nexus between living and work for wharfies. The population was aging, with attendance rising at the Harry Jensen Activity Centre next to the old Abraham Mott Hall (formerly the Coal Lumpers' Hall) in Argyle Place, and enrolment down at Fort Street Primary School, from 272 in 1955 to 48 by 1975. At this date Fort Street Girls High School, the remaining part of the city's oldest secondary school, moved to rejoin its male counterpart, which had moved to Petersham in 1916. The site on Observatory Hill, originally the old Military Hospital, then the Fort Street Model School from 1849, became the headquarters of the National Trust of Australia (NSW).

⁴ James Gaby, *The Restless Waterfront*, Antipodean, Sydney, 1974, p 28.

⁵ Shirley Fitzgerald and Christopher Keating, *Millers Point, The Urban Village*, Hale & Iremonger, Sydney, 1991, pp 93–96, 102–03.

Heritage and high culture

By the 1970s the National Trust was joining forces with radical trade unionists and community groups to halt government-driven high-rise development in The Rocks, and a new practice of officially referring to Millers Point as 'West Rocks' was pounced on by locals anxious to distance themselves from this development push. By the time community pressure and economic slowdown had taken the steam out of the plans of the Sydney Cove Redevelopment Authority and the heritage values of the area were being widely recognised, not much redevelopment had occurred in Millers Point. But there had been some, and initially heritage significance was defined to include only nineteenth-century structures. The early twentieth-century finger wharves in Darling Harbour were converted into roll-on-roll-off container terminals in the 1960s. At the Point, the 1903 Dalgety's wharf was removed, houses were pulled down and a large Harbour Control Tower was built in Merriman Street in 1974.

Nevertheless, much of the trust's infrastructure remained intact, and was gradually recognised as highly significant in its own right. The decision to move major port activities to Botany Bay from the mid-1970s left Millers Point with excess wharfage, but also with a lot of people willing to champion its unique heritage position as a relatively untouched nineteenth- and early twentieth-century port enclave. Numerous reports began to extol the value not just of individual buildings, but of the whole area. But the heritage perspective was a minority one, and many politicians viewed the disused wharves and sheds as financial millstones around the neck of cash-strapped governments.

From the mid-1970s wharves 4/5 were used as a cultural complex by various performance companies, but much of the building stock was deteriorating. The following decades were characterised by temporary uses, legal battles and public protests over the future of Millers Point. Here and there, bits of this public land were sold to the private sector. The handover of administration of the houses to the Department of Housing in the 1980s challenged the old social ways. Finally, in 1999, the state government passed enabling legislation to redevelop much of the area.⁶

Against sharp public protest, one of the Walsh Bay finger wharves was demolished and rebuilt as private residential space. The apron of the wharves was developed with restaurants and exhibition spaces. New houses were built, and a state-of-the-art drama and dance venue on Hickson Road provided the Sydney Theatre Company with a permanent home. Below Ferry Lane, an area that had remained unbuilt on since the early twentieth century, was developed into a park, with signs telling the history of the area. It has retained the colloquial name long attached to it, the Paddock.

⁶ Walsh Bay (Special Provisions) Act, 1999 (New South Wales).

What's in a name?

In recent years Millers Point, a place long shunned by most Sydneysiders, has become attractive to wealthy investors. Pressure on the public housing is intense, and the amount of the historic fabric of Millers Point that should be retained is constantly under debate.

With gentrification came the desire for names that were disconnected from the less respectable past. In 1993 the eastern section of Millers Point, including some of the Walsh Bay wharves, was formally listed by the New South Wales Geographical Names Board as a separate suburb named Dawes Point. This arbitrary division of an area that had always been tightly connected geographically and in all of its economic and social activities did not reflect local understandings of what constituted Millers Point.

Plans for a massive redevelopment of the Darling Harbour wharves and the Hickson Road area below High Street will transform this part of Millers Point. The official renaming of this yet-to-emerge place as Barangaroo is just the most recent indication of a desire on the part of the developers to obliterate the time-honoured name of Millers Point.

The name Barangaroo commemorates the wife of Bennelong. Her people lived on the north shore, not around Darling Harbour, and the Aboriginal name for this stretch of water is Gomora.⁷

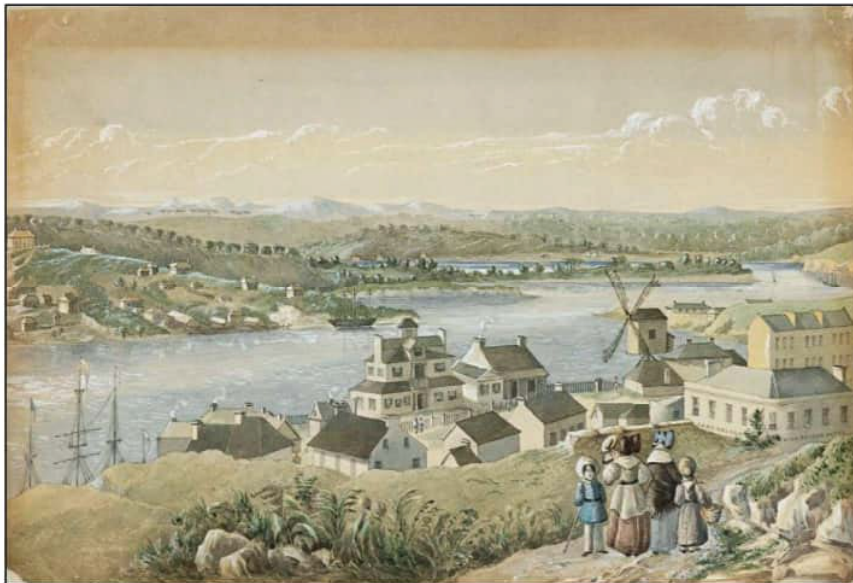


Figure 8. Millers Point ca. 1845 (Source: Joseph Fowles, State Library of NSW, Call No. SV1/1840s/1)

⁷ Shirley Fitzgerald, "Millers Point," *The Dictionary of Sydney*, 2008, accessed 27 September 2024, https://dictionaryofsydney.org/entry/millers_point.

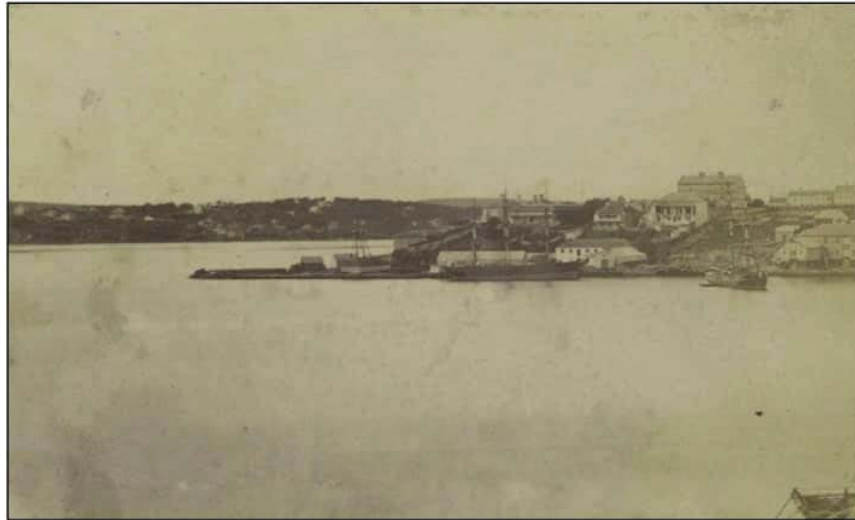


Figure 9. View of Millers Point, ca. 1864-9 (Source: William Cosmo Trevor, State Library of NSW, File identifier BpdRxXEO7vPQm)

2.2 Site Specific History

A detailed history of the site is located within the Significance Assessment for the subject site prepared by Heritage 21 in June 2024.⁸ An extract of the site specific history of the Moore's Wharf Building has been attached to this report within APPENDIX A – DETAILED HISTORY.

The following Historical Notes are extracted from the Port Authority of NSW Heritage Inventory for the Moore's Wharf Building:

In 1807, James Meehan surveyed and prepared a map of Sydney, and settlement began to extend towards Millers Point. By 1830, land comprising the original subject site was granted to William Long and James Wright. Long was a spirit merchant and Wright being a wealthy brewer. Together, under their merchant and shipping firm of Wright & Long, they had purchased much of the north side of Dawes Point by 1831 (Holcombe 2014). The Moore's Wharf Store was built of local sandstone (quarried on - site) in 1836 -37 by William Long and James Wright; however, their estate was sold shortly thereafter in public auction on 20 November 1837 after their partnership dissolved, and the estate was declared bankrupt (Holcomb 2008). It was sold to Captain Joseph Moore and his son Henry who, in the early 1840's, added a fourth segment at the western end of the store to accommodate their expanding business. Joseph and Henry had established a lucrative Sydney merchant and ship-owning partnership, and they owned and operated a large fleet of South Sea whalers, as well as a merchant house trading in tea, sugar and other commodities..During the 19th century the store was the scene of many first occasions. In 1851 the clipper "Phoenician loaded the first shipment of Australian gold to England from Moore's wharf. The colony's first rail locomotive was unloaded there in 1855.(MSB Brochure

⁸ Heritage 21, *Significance Assessment – Moores Wharf Building*, June 2024, p. 21.

1981) For over 60 years Moore's Wharf was one of the busiest on the point and it was not until the early 1900's that Moore's Road was renamed Dalgety Road. (S Fitzgerald & C Keating 1991).

By the 1850s, Henry was the local Director for the London Chartered Bank of Australia and agent for the London and Oriental Steam Transit Insurance Company. In 1852, Henry became the agent for the Peninsular and Oriental (P&O) Steam Navigation Company and remained in this position until 1880, with slight intervals. In the same year, the first P&O screw steamship to arrive from England, the "Chusan" berthed there with the first mails brought out under contract. In 1866, Henry was appointed to the Upper House of the New South Wales Legislative Council and later retired in Strickland House, also known as Carrara, where he was highly regarded in the local community as a prominent social and political figure.

By 1900, the bubonic plague had reached Sydney and infiltrated much of The Rocks, Millers Point and Darling Harbour. Disinfection of these areas began in March, with much of the focus placed on the wharves and ports of Sydney. A land resumption scheme under the Darling Harbour Wharves Resumption Act 1900 and the Sydney Harbour Trust was established in 1901. This led to the resumption of the city's port into the ownership of the New South Wales Government. From 1936, the wharf came under the coordination of the Maritime Services Board of NSW.

In 1978 redevelopment plans at Darling Harbour necessitated plans to relocate the building. The Maritime Service's Board let a contract for \$680,000 to take down the building stone by stone, and reconstruct it 50 yards north-east across the dock facing Walsh Bay, supervised by architects Fox and Associates. It was relocated from 1980 and reopened in 1981. The Moore's Wharf building currently houses a marine operations base for Port Authority of NSW as well as office space.⁹

⁹ Port Authority of NSW Heritage Inventory, *State Heritage Inventory*, SHI Number: 4560018, 19 June 2024.

3.0 PHYSICAL EVIDENCE

The images in this section were taken from site visits on the 18 December 2023 and 9 April 2024, unless specified otherwise.

3.1 The Setting

The site is located at 4 Towns Place, Millers Point. Millers Point is an inner-city suburb of Sydney located on the north-western edge of the Sydney Central Business District.

The subject site is located adjacent to Barangaroo Reserve to the west. The Walsh Bay Wharves Precinct, listed on the State Heritage Register (SHR #0059), is to the east of the subject site. The Millers Point & Dawes Point Village Precinct (SHR #01682) is to the south of the subject site. The subject site faces Sydney Harbour to the North and has direct view lines to key landmarks in the harbour, including Me-Mel (Goat Island) (north-west), Blues Point (direct north) and the Sydney Harbour Bridge (north-east).



Figure 10. External view from the subject site, facing north-east towards the Sydney Harbour Bridge.



Figure 11. External view from the subject site, facing west towards Barangaroo Reserve.



Figure 12. External view from the Second Floor of the subject building, facing east towards the Walsh Bay Wharves precinct.



Figure 13. External view from the Second Floor of the subject building, facing west towards the Barangaroo reserve, with Goat Island in the background.



Figure 14. External view from inside the subject site, facing north.



Figure 15. External view from Town Place, facing north-west towards the subject site. (Source: Google Maps)

3.2 Physical Description

3.2.1 External

The subject building is a Victorian period warehouse (c.1836-1837, relocated in 1980) and follows the Colonial Georgian architectural style. It is comprised of three rectangular bays. The building as a whole is orientated to the east towards the water; however, it presents its primary façade towards the west which facilitates the primary entrance. It exhibits a locally quarried sandstone masonry envelope which acts as the structural skin of the building. The sandstone can be identified as a type of Hawkesbury Sandstone, colloquially known as “Yellow Block” as the oxidation process results in a characteristic golden hue. The sandstone masonry units feature a light chisel pick on the surface and the mortar appears to generally be lime-based. At the base courses, there is evidence of an introduced damp proof course which appears to be lead and ineffective.

Each individual rectangular bay features a well-hipped roof and presents a central gable frontage to both the eastern and western façades. The entire roof form is covered in slate tiling, with likely galvanized steel or lead for the ridges and valleys. There are timber eaves, barge boards and soffit board panels. The rainwater system features copper half-round gutters, rainwater heads and circular downpipes. From each central gable front (there are six in total), there is a protruding timber beam, which was a functional item for hoisting heavy objects vertically up the face of the building. At each gable frontage, there is a large vertical opening which features a line of timber doors with glazed panels.

The fenestration to the building follows a continuous and symmetrical pattern across all three bays. Each window features a sandstone sill and lintel. The Second Floor features smaller, square shaped windows whilst the Ground and First Floor feature vertically proportioned windows. The windows are timber framed casement windows. Introduced steel security grilles have been set into the stone lintel and sill over the windows.

To the western façade, there are three sets of timber fire stairs. To the eastern façade, there is a centrally located hoisting system.

The subject building is located on a large hard standing with vehicular parking adjacent. There is an aluminium picket fence which surrounds the general site and prevents public access.



Figure 16. External view of the eastern elevation of the subject building, facing north-west.



Figure 17. External view of the western elevation of the subject building, facing north-east.



Figure 18. External view to details on the western elevation.



Figure 19. External view to the southern and western elevations, facing north.

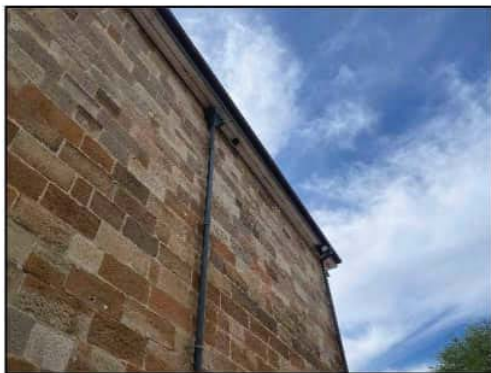


Figure 20. External view to the sandstone masonry with a lightly picked finish on the southern elevation, featuring a copper downpipe.



Figure 21. External view to the hoisting system on the eastern elevation.

3.2.2 Internal

The interiors of the building are largely dated to the last decades, considering the major refurbishment in c.1980 following the relocation of the building. This was required to convert the subject building into offices and, as a result, there is no physical evidence of the original floor plan. As such, the furnishings of the building are generally contemporary in nature and plasterboard partitions, suspended panel ceilings, carpeted flooring, modern bathroom/kitchen fittings, fluorescent light fittings and services can be readily observed throughout. The floor plan has been altered since 1980, although not dramatically. Changes include the reconfiguration of internal partitions and the change in location of some internal staircases.

The structural skin of the sandstone masonry remains exposed internally, including the internal party walls between the individual bays. The mortar internally appears to be highly cementitious and has been poorly applied. The historical evidence suggests that structural elements, besides the sandstone masonry, were relocated. This aligns with the physical evidence on site which suggests

that there are some original timber beams and storey posts throughout the building. There is a mixture of connection types on these elements – including square and hexagonal steel bolts – which indicate different periods. The roof frame is a simple truss system, and the timber rafters and tie beams generally appear to be recent additions to the building.



Figure 22. Internal view of original storey post on Ground Floor of subject building, facing south.



Figure 23. Internal view of original sandstone masonry on Ground Floor of subject building, facing south.



Figure 24. Internal view of original sandstone masonry.



Figure 25. Internal view to significant timber beam.



Figure 26. Internal view to a timber storey post on the First Floor, which is experiencing splitting.



Figure 27. Internal view to timber staircase.



Figure 28. Internal view to the details of a timber door on the Second Floor.



Figure 29. Internal view to the timber roof structure and framing.



Figure 30. Internal view to the timber roof structure and framing.



Figure 31. Internal view to the timber roof structure and framing, featuring different bolts (one square head; one hexagonal head).

3.3 Condition and Integrity

The subject building was relocated from its original location in c.1980 to enable large-scale redevelopment of the area. As such, the original heritage curtilage of the building has been lost in its entirety. The immediate setting has also been highly altered, with the exception of the Walsh Bay Wharves which remain extant, although these were constructed half a century after the subject building. The subject building, however, is located within the vicinity of the original site and generally retains its waterside aspect, which was a key aspect of its function as a wharf store building.

The building has been rebuilt meticulously and generally retains its original presentation and key characteristics. This includes the sandstone masonry envelope, roof form including gable frontages, and fenestration pattern. The building represents its original form of only three bays. The fourth bay, an early addition from 1840, was not reconstructed. Where original fabric has been lost externally, the replacement material has been sympathetic and includes timber framed windows and doors, slate roof tiling and copper rainwater goods. There is also surviving evidence of original warehouse components and machinery including the timber hoist beams and the hoisting system to the eastern elevation.

The interior has been largely refurbished to accommodate offices as part of the adaptive reuse of the building. Despite this, there appears to be some evidence of original structural elements including timber storey posts, beams and lintels.

Generally, the building is in very good condition and has been well maintained.

4.0 HERITAGE SIGNIFICANCE

In order to assess the impact of the proposed works on the heritage significance of the subject site and heritage items in the vicinity of the site, it is necessary to first ascertain the heritage significance of these places. Accordingly, Statements of Significance for the subject site (refer to Section 4.1.1) and heritage items in the vicinity, including the Two Mooring Anchors, Walsh Bay Wharves Precinct and the Millers Point and Dawes Point Village Precinct (refer to Section 4.1.2, Section 4.1.3 and Section 4.1.4 respectively) are provided below. The significance of these places will form part of our considerations in the assessment of heritage impact, undertaken in Section 6.0 below.

4.1 Established Significance

4.1.1 Moore's Wharf Building (Item 4560018)

The following Statement of Significance has been extracted from the Port Authority of NSW Heritage Inventory for the Moore's Wharf Building:

The Moore's Wharf Building is a Victorian period warehouse (c.1836-1837, relocated from 1980) and exhibits the Colonial Georgian architectural style. It is able to provide evidence of the development of maritime infrastructure in NSW during the early Victorian period, and the role of the Miller's Point area for maritime trade activities. More specifically, the construction of the Moore's Wharf Building demonstrates the growth in commercial traffic and the overall increase in need for commercial storage, for goods shipped from overseas, for the Millers Point area, Sydney and wider New South Wales. The historical evidence suggests that Moore's Wharf was one of the oldest wharves within Sydney Harbour and was a highly popular and well-utilised wharf, for maritime activities during the 19th century. The use of the wharf for key trade activities indicates its wider relevance within the NSW context.

Due to the large-scale redevelopment of the area, the building was meticulously dismantled and reconstructed from 1980 to the north-east of its original location, albeit in the original waterside setting of the building. This is a rare and successful example of the accurate reconstruction of a historical masonry building during the second half of the 20th century.

The Moore's Wharf Building has strong associations with Mr Henry Moore, son of Joseph Moore, both of whom were early merchants. They purchased the subject building shortly after construction and the place was known as Moore's Wharf from 1840 onwards. Henry Moore was a prominent political figure during the 19th century. He was appointed to the Upper House of the NSW Legislative Council in 1866. From 1876-1888, Henry Moore resided at Strickland House and was a well-known social figure. Henry Moore is considered to be an important figure who contributed to the early history of NSW in the development of maritime trade, and he has a strong, and direct, association with the Moore's Wharf building.

The Moore's Wharf building has landmark features and has a commanding presence from Sydney Harbour, to the Millers Point area. It is aesthetically significant as a Victorian period

*building which follows a simple utilitarian style, which was common during the period for warehouse buildings of this type. There are some industrial relics remaining on the site, including the hoist beams on the gable frontages and the hoisting system to the eastern elevation which facilitate interpretation of the original function of the building.*¹⁰

4.1.2 Two Mooring Anchors (Item 5063342)

The following Statement of Significance has been extracted from the Port Authority of NSW Heritage Inventory for the Two Mooring Anchors:

*Anchor 'A' and anchor 'B' are good examples of relatively rare, specialised mooring anchors. They are representative of Admiralty pattern mooring anchors used in Sydney Harbour and elsewhere along the New South Wales coast in the nineteenth and twentieth centuries. Their significance is at a local level.*¹¹

4.1.3 Walsh Bay Wharves Precinct (SHR #0059)

The following Statement of Significance has been extracted from the NSW State Heritage Inventory for the Walsh Bay Wharves Precinct:

*The Walsh Bay area is of State cultural significance due to its unique combination of steep rocky terrain, early, mid, late-Victorian and Edwardian housing, surviving relatively intact Victorian bond stores, and the results of an early twentieth century urban redevelopment scheme of unique scale: the magnificent timber wharf and shore structures and associated rock cuttings, roads and bridges (Clive Lucas Stapleton & Partners 1999: 75). The Walsh Bay Wharves and associated buildings and works are a virtually intact port and stevedoring facility created by the Sydney Harbour Trust in response to the requirements of maritime trade at the time (1900s-1910s). The precinct documents the workings of a technologically advanced early twentieth century shipping port, developed specifically to accommodate new mechanised transportation technology. (Department of Urban Affairs and Planning 1989:5) The wharves have a strong distinctive character created by the logical use of heavy timber construction and the regular grid layout of piles, columns, beams and infill cladding. (Little, Clarke, Whittaker 1979) The precinct is unified in materials, form and scale and contains structures demonstrating maritime uses. It demonstrates the life of inner Sydney in the early twentieth century. The precinct demonstrates technical and creative excellence of the period 1820-1930. (Department of Urban Affairs and Planning 1989:5).*¹²

¹⁰ Port Authority of NSW Heritage Inventory, *State Heritage Inventory*, SHI Number: 4560018, dated 19 June 2024.

¹¹ Port Authority of NSW Heritage Inventory, *State Heritage Inventory*, SHI Number: 5063342, dated 25 January 2023.

¹² Heritage NSW, "Walsh Bay Wharves Precinct," *State Heritage Inventory*, Heritage Item ID: 5045067, accessed 27 August 2024, <https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5045067>.

4.1.4 Millers Point and Dawes Point Village Precinct (SHR #01682)

The following Statement of Significance has been extracted from the NSW State Heritage Inventory for the Millers Point and Dawes Point Village Precinct:

Millers Point & Dawes Point Village Precinct is of state significance for its ability to demonstrate, in its physical forms, historical layering, documentary and archaeological records and social composition, the development of colonial and post-colonial settlement in Sydney and New South Wales.

The natural rocky terrain, despite much alteration, remains the dominant physical element in this significant urban cultural landscape in which land and water, nature and culture are intimately connected historically, socially, visually and functionally.

The close connections between the local Cadigal people and the place remain evident in the extensive archaeological resources, the historical records and the geographical place names of the area, as well as the continuing esteem of Sydney's Aboriginal communities for the place.

Much (but not all) of the colonial-era development was removed in the mass resumptions and demolitions following the bubonic plague outbreak of 1900, but remains substantially represented in the diverse archaeology of the place, its associated historical records, the local place name patterns, some of the remaining merchants villas and terraces, and the walking-scale, low-rise, village-like character of the place with its central 'green' in Argyle Place, and its vistas and glimpses of the harbour along its streets and over rooftops, the sounds of boats, ships and wharf work, and the smells of the sea and harbour waters.

The post-colonial phase is well represented by the early 20th century public housing built for waterside workers and their families, the technologically innovative warehousing, the landmark Harbour Bridge approaches on the heights, the parklands marking the edges of the precinct, and the connections to working on the wharves and docklands still evident in the street patterns, the mixing of houses, shops and pubs, and social and family histories of the local residents.

Millers Point & Dawes Point Village Precinct has evolved in response to both the physical characteristics of its peninsular location, and to the broader historical patterns and processes that have shaped the development of New South Wales since the 1780s, including the British invasion of the continent; cross-cultural relations; convictism; the defence of Sydney; the spread of maritime industries such as fishing and boat building; transporting and storing goods for export and import; immigration and emigration; astronomical and scientific achievements; small scale manufacturing; wind and gas generated energy production; the growth of controlled and market economies; contested waterfront work practises; the growth of trade unionism; the development of the state's oldest local government authority the City of Sydney; the development of public health, town planning and heritage conservation as roles for colonial and state government; the provision of religious and spiritual guidance; as inspiration for creative and artistic endeavour; and the evolution and regeneration of locally-distinctive and self-sustaining communities.

*The whole place remains a living cultural landscape greatly valued by both its local residents and the people of New South Wales.*¹³

¹³ Heritage NSW, "Millers Point & Dawes Point Village Precinct," State Heritage Inventory, Heritage Item ID: 5054725, accessed 27 August 2024, <https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5054725>.

5.0 WORKS PROPOSED

5.1 Design development

The design has been developed in collaboration with Port Authority of NSW, Heritage 21 and the Architect Group GSA. To ensure the design met the relevant requirements, heritage constraint input was sought from Heritage 21 and operational requirements from Port Authority. Details of the design constraints are provided below, followed by a description of the proposal in Section 5.2.

5.1.1 Port Authority and regulatory design constraints

Operational and regulatory requirements provided by Port Authority included:

- Functional requirements for Tier 1 lift supplier and accommodation of air conditioning to address thermal heating;
- Maintaining operational areas during construction; and
- Building Code of Australia (BCA) requirements.

5.1.2 Heritage design constraints

Heritage 21 has been involved in the design process since project inception and has provided ongoing design advice throughout. The following high-level advice was provided on 20 February 2024 and has been considered by the design team in their finalised architectural design; the advice takes Heritage Management Frameworks (refer to Section 6.1) into account:

- The general form of the building must be conserved, including the building envelope and roof form.
- The general fenestration pattern should be retained, including the window proportionality.
- All fabric which is considered to be original and of high significance should be retained and conserved.
- External fabric to be conserved includes the sandstone ashlar masonry, sandstone windowsills and lintels.
- Internal fabric to be conserved includes all original timber joinery (columns, beams and lintels). If these are damaged, we would recommend, where possible, strengthening as opposed to the introduction of new. Alternatively, we would recommend the use of the splicing method for timber repairs to retain as much of the original fabric as possible.
- There is an opportunity to undertake conservation works to the sandstone masonry. This would generally include removing the pointing and repointing with a lime-based mortar to create a recessed joint line.
- There is scope to introduce a modest number of new openings to the building envelope – this could entail an additional window or new doorway to facilitate functional requirements.

However, this should follow the proportionality of existing openings and should not detract from the fenestration pattern.

- Considering there is very limited significant fabric, there is an opportunity to conduct an internal refurbishment of the building. There is also no evidence of the original layout and therefore a new layout can be introduced to facilitate renewed functional requirements.
- There is scope to replace sympathetic later addition fabric with sympathetic alternatives if there is a functional requirement to do so. This includes the external windows and doors; however, these should remain in timber and follow the original profiles.
- The structural roof frame appears to be a later addition fabric. We would recommend retaining this fabric; however, if there are damaged elements, they can be replaced like-for-like.
- The internal timber stairs can be replaced with a sympathetic alternative.
- The external timber fire stairs can be replaced with a sympathetic alternative.
- The concrete slab flooring is not original and can be removed (if it does not cause damage to the building envelope during this process). Carpets or timber flooring can be introduced over the concrete.

Additionally, the design has taken the recommended management measures from the Port Authority s170 Heritage Inventory for the Moore's Wharf Building into consideration.

Heritage 21 was also heavily involved in the design and location of the proposed new lift. This is discussed in depth within the Heritage Impact Assessment located in Section 6.2 of this report.

5.2 Proposal description

The proposal would include:

- Proposed new external lift (steel structure with glazing) and connecting structure to existing building located to the western elevation, with minor removal of sandstone masonry.
- Major internal refurbishment involving:
 - Demolition of the majority of partitions, glazed partitions, joinery and doors on the Ground Floor.
 - Demolition of all partitions, glazed partitions, joinery and doors on the First Floor.
 - Removal of ceiling tiles and plasterboard ceilings on the Ground and First Floor.
 - Introduction of new layout to the Ground and First Floor utilising lightweight partitions and glazed partitions.
 - New services and fittings in bathroom and kitchen areas.

The architectural drawings are located in APPENDIX B - DRAWINGS of this report. A figure of the proposed site staging diagram has also been included.

6.0 ASSESSMENT OF HERITAGE IMPACT

6.1 Heritage Management Framework

Below the heritage-related statutory and non-statutory constraints applicable to the subject site are outlined, including the objectives, controls and considerations which are relevant to the proposed development as described in Section 5.0 above. These constraints and requirements form the basis of this Heritage Impact Assessment.

6.1.1 Sydney Local Environmental Plan 2012

The statutory heritage conservation requirements contained in Section 5.10 of the *Sydney Local Environmental Plan 2012* ("SLEP") are not applicable to the proposal.

The Moore's Wharf Building is within the Sydney Local Government Area (LGA) and is on land zoned 'EHC' in the Sydney LEP 2012 (i.e. in the State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021 (Eastern Harbour City SEPP)). As the REF would be prepared pursuant to the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) for development permitted without consent, the LEP would not apply.

6.1.2 Sydney Development Control Plan 2012

While the SLEP 2012 doesn't apply to the subject site, this Heritage Impact Assessment considers the heritage-related sections of the Sydney Development Control Plan 2012 ("SDCP") that are pertinent to the subject site and proposed development in order to fully assess the proposal. These include:

Section 2 - Locality statements

2.8 Millers Point

Section 3 - General Provisions

3.9 Heritage

3.9.5 Heritage Items

3.10 Significant Architectural Building Types

3.10.1 Warehouses and industrial buildings older than 50 years

6.1.3 State Environmental Planning Policy (Transport and Infrastructure) 2021

This Heritage Impact Assessment also considers the heritage-related section of the SEPP (Transport and Infrastructure) 2021 as follows:

Chapter 2 Infrastructure

Part 2.2 General

Division 1

2.11 Consultation with councils – development with impacts on local heritage

As the item is listed on the s170 register of the Port Authority of NSW as an item of state significance, no consultation with City of Sydney Council would be required.

6.1.4 State Environmental Planning Policy (Precincts - Eastern Harbour City) 2021

The site is located within the Barangaroo area covered by the State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021. As such, the Heritage Impact Assessment also considers the heritage-related section of the SEPP (Precincts – Eastern Harbour City) 2021. Appendix 5 Section 21 includes the following planning principle:

Heritage conservation:

(1) A person must not, in respect of a building, work, relic, tree or place that is a heritage item—(a) demolish, dismantle, move or alter the building, work, relic, tree or place, or

(b) damage or remove the relic, or

(c) excavate land for the purpose of discovering, exposing or moving the relic, or

(d) damage or despoil the tree or place, or

(e) erect a building on, or subdivide, land on which the building, work or relic is situated or that comprises the place, or

(f) damage any tree, or land on which the building, work or relic is situated, or the land that comprises the place, or

(g) make structural changes to the interior of the building or work,

except with the consent of the consent authority.

(2) However, consent under this section is not required if the proponent of the development has notified the consent authority of the proposed development and the consent authority has advised the proponent in writing before any work is carried out that it is satisfied that the proposed development—(a) is of a minor nature, or is for the maintenance of the heritage item, and

(b) would not adversely affect the significance of the heritage item.

6.1.5 NSW Heritage Act 1977

Under Section 170 of the *NSW Heritage Act 1977*, all state government agencies must keep and administer a database of heritage assets called a Section 170 Heritage and Conservation Register. The relevant clauses for the site and proposal are outlined below.

Section 170A of the Heritage Act states that:

(2) - Each government instrumentality is responsible for ensuring that the items entered on its register under section 170 and items and land to which a listing on the State Heritage Register applies that are under its care, control or management are maintained with due diligence in accordance with State Owned Heritage Management Principles approved by the Minister on the advice of the Heritage Council and notified by the Minister to government instrumentalities from time to time.

(3) The Heritage Council can from time-to-time issue heritage asset management guidelines to government instrumentalities, being guidelines with respect to the conservation of the items entered on registers under section 170 and items and land to which a listing on the State Heritage Register applies that are under the care, control or management of the government instrumentality. The guidelines can relate to (but are not limited to) such matters as maintenance, repair, alteration, transfer of ownership and demolition. A government instrumentality must comply with the guidelines.

Port Authority, as a 'government instrumentality,' is responsible for ensuring compliance with Sections 170 and 170A of the Heritage Act and that the items entered on its Heritage and Conservation Register are maintained with due diligence in accordance with the 2005 State Agency Heritage Guide (SAHG) issued by the Heritage Office of NSW.

Clause 4.14 of the SAHG states that:

Proposals involving the alteration, disposal or demolition of the heritage assets of State heritage significance (not listed on the State Heritage Register) should be referred to the Heritage Council for comment. Note that the Heritage Council will provide comment to the State Agency within 40 days of receipt of the proposal.

Port Authority of NSW will refer the proposal to Heritage NSW, as delegate to the Heritage Council, for comment prior to the works commencing.

6.1.6 Port Authority of NSW s.170 Heritage Inventory

The following recommended management has been extracted from the Port Authority of NSW Heritage Inventory for the Moore's Wharf Building:

The overall form of the building should be conserved in full, with very little tolerance for change to the exteriors. All remaining intact exterior fabric should be retained.

Where external additions are proposed, they should be modest, and any impact to the vistas to and from the building, from the harbour or surrounding area should be minimised.

There is no scope for vertical additions to the building.

There is tolerance for change to the interiors to facilitate new layouts and refurbishments, provided the timber structural elements remain intact. There should be no change to the three bay configuration, or the internal party walls.

A Statement of Heritage Impact should be prepared for all works that has the potential to impact upon the heritage values of the place.¹⁴

As noted above, Port Authority will refer the proposal to Heritage NSW, as delegate to the Heritage Council, for comment prior to the works commencing.

6.1.7 NSW Department of Planning and Environment Guidelines

In its guidelines for the preparation of Statements of Heritage Impact, the NSW Department of Planning and Environment provides a list of considerations in the form of questions aimed at directing and triggering heritage impact assessments.¹⁵ These are divided into sections to match the different types of activities that may occur on a heritage item, item in a Heritage Conservation Area or item in the vicinity of heritage. Below are listed the considerations which are most relevant to the proposed development as outlined in Section 5.0 of this report.

Partial demolition of a heritage item (including internal elements)

- *Is the partial demolition essential for the heritage item to function?*
- *If partial demolition is proposed because of the condition of the fabric, can the fabric be repaired?*
- *Are important features and elements of the heritage item affected by the proposed partial demolition (e.g. fireplaces in buildings)?*
- *Will the proposed partial demolition have a detrimental effect or pose a risk to the heritage item and its significance? If yes, what measures are proposed to avoid/mitigate the impact?*
- *Identify and include advice about how significant elements, if removed by the proposal, will be salvaged and reused.*

Alterations and additions

- *Do the proposed works comply with Article 22 of The Burra Charter, specifically Practice note article 22 — new work (Australia ICOMOS 2013b)?*
- *Are the proposed alterations/additions sympathetic to the heritage item? In what way (e.g. form, proportion, scale, design, materials)?*
- *Will the proposed works impact on the significant fabric, design or layout, significant garden setting, landscape and trees or on the heritage item's setting or any significant views?*
- *How have the impact of the alterations/additions on the heritage item been minimised?*

¹⁴ Port Authority of NSW Heritage Inventory, *State Heritage Inventory*, SHI Number: 4560018, dated 19 June 2024.

¹⁵ Department of Planning and Environment, *Guidelines for preparing a statement of heritage impact* (Paramatta: Department of Planning and Environment, NSW Government, 2023), <https://www.environment.nsw.gov.au/research-and-publications/publications-search/statements-of-heritage-impact>.

- *Are the additions sited on any known or potentially significant archaeological relics? If yes, has specialist advice from archaeologists been sought? How will the impact be avoided or mitigated?*

Physical changes to fabric identified as significant

- *Has the fabric that will be impacted by the proposed works been assessed and graded according to its significance?*
- *Has specialist advice from a heritage professional, architect, archaeologist or engineer been sought?*

New services and service upgrades

- *Are any of the existing services of significance? In what way are they affected by the proposed works?*
- *How have the impacts of the installation of new services on heritage significance been minimised?*
- *Are any known or potential archaeological deposits affected by the proposed new services?*
- *Has specialist advice from a heritage consultant, architect, archaeologist or services engineer been sought?*

Interpretation

- *Will the proposed works contribute to a continued understanding of the heritage item's history and significance?*
- *Can interpretive features be integrated into the design?*

Works adjacent to a heritage item or within the heritage conservation area (listed on an LEP)

- *Will the proposed works affect the heritage significance of the adjacent heritage item or the heritage conservation area?*
- *Will the proposed works affect views to, and from, the heritage item? If yes, how will the impact be mitigated?*
- *Will the proposed works impact on the integrity or the streetscape of the heritage conservation area?*

6.2 Heritage Impact Assessment

The following is an assessment of the impact that the proposed development would have upon the subject site and the heritage item and conservation areas in the vicinity. This assessment is based upon the Historical Context (refer to Section 2.0), the Physical Evidence (refer to Section 3.0), Heritage Significance (refer to Section 4.0) the Proposal (refer to Section 5.0) and a review of the Heritage Management Framework (refer to Section 6.1).

6.2.1 Summary

The Moore's Wharf Building is a Victorian period warehouse (c.1836-1837, relocated in 1980) and follows the Colonial Georgian architectural style. It is able to provide evidence of the development of maritime infrastructure in NSW during the early Victorian period, and the role of the Miller's Point area for maritime trade activities. It is listed as an item of state significance on the Port Authority of NSW s.170 Heritage and Conservation Register. It is also located in the vicinity of heritage item Two Mooring Anchors (Item 5063342) and two state listed heritage precincts: Walsh Bay Wharves Precinct (SHR #0059) and Millers Point and Dawes Point Village Precinct (SHR #01682). Whilst the subject building is not located within the legal boundaries of the Millers Point and Dawes Point Village Precinct, it is considered to be contributory to the Millers Point area as a built form showcasing the development of post-colonial settlement in Sydney.

The Moore's Wharf building is presently being adaptively reused as the marine operations base for the Port Authority of NSW; however, the current configuration of the building is no longer considered to be fit for purpose. The proposed alterations and additions to the Moore's Wharf Building are to enhance the capability of the operations function by facilitating improved access and a new internal layout. The marine operations base has established a 24-hour active and high functioning environment, which demands reliable access and a fit-for-purpose layout. The proposed alterations and additions to the Moore's Wharf building have been designed to meet these requirements, whilst also giving the utmost consideration to the significance and heritage values of the building.

The design process allowed for the operational requirements of the building to be met, whilst ensuring the original fabric of the building and its prominent visual presentation are not compromised. The alterations and additions, delineated in Section 5.0 above, would include the introduction of an external lift to the western elevation of the building to facilitate dignified access for all building users, and a major internal refurbishment which would involve an improved layout to the Ground and First floors. In the opinion of Heritage 21, the proposed alterations and additions to the Moore's Wharf Building would have a minimal impact to the significance of the building. The works would not have a negative impact upon the heritage item or conservation works in the vicinity. The proposal would not detract from the original form, character, scale or presentation of this building, which is considered to be of state significance.

In our opinion, the proposed works would be in accordance with relevant Articles of the Burra Charter 2013. Of particular note, the proposal would take a "cautious approach of changing as much

as necessary but as little as possible," as per Article 3.1. The existing fabric would be respected, and its conservation has been the forefront of all design considerations. We also believe the proposal is in accordance with Article 22 regarding new work. All additions to the building would be readily recognisable as contemporary additions and representations of their current context. There has been no attempt to mimic the style or character of the building and create confusion in the readability of the item.

In response to the proposed staging of the construction works, the siting of the contractor parking and works area to the south-western portion of the site would ensure minimal visual obstruction to the subject building, when viewed from Sydney Harbour. This would be a temporary works area and would be entirely reversible ensuring no impact to the significance of the place. Heritage 21 would recommend that temporary protection measures are introduced to minimise any damage to the exposed building façades.

The scope items are assessed in detail below.

Proposed External Lift (western elevation)

The proposal would involve the introduction of a new external lift, located centrally to the western façade of the subject building. The siting of the lift underwent an iterative process to determine the most appropriate, functional and least invasive location. Due to the complexities of the site, the siting of the lift was difficult; thus, Heritage 21 has been actively involved in this process. The introduction of a new lift is not an exceptional proposal and there is an established precedent in this regard when it comes to modernising historic buildings. Typically, there will always be some associated impact with the inclusion of such a feature; however, the design process should always strive to minimise these impacts if and where possible.

The introduction of an internal lift was discounted early in the process due to constraints in the installation process. The structural design of the lift requires the introduction of new piles, which could not be practically instituted within the building. It is also noted that the Second Floor has a reduced floor to ceiling height in comparison to the other Floors. The overrun requirements of the lift could not be accommodated within the building and would ultimately require modification to the roof form to be effective. This was not considered to be acceptable from a heritage perspective.

As such, the design team, in conjunction with Heritage 21, opted for the proposal to include an external lift. Heritage 21 provided advice that the lift should be minimally invasive to original fabric, including the sandstone masonry envelope, any visual impact to the building should be minimised, and the design should employ distinctly contemporary features and materials. The southern elevation was considered to be the ideal location, from a visual impact perspective; however, it would require large-scale removal of sandstone masonry as there are no existing openings to this façade. Further, the reduced floor to ceiling height on the Second Floor would present difficulties in creating access. The lift would thus need to be sited to one of the gable fronts on the building, on either the west or east façade, which had the required height to accommodate access to the Second

Floor. Further, the gable fronts all exhibited ground to roof vertical openings and could accommodate a lift without the large scale removal of sandstone masonry.

The central gable to the western elevation, which is also adjacent to the carpark, was chosen as the most suitable location. This provides a dignified and non-discriminatory access point for all users of the building. Heritage 21 also observes that external lifts have been introduced to the adjacent Walsh Bay Wharves Precinct (SHR #0059). The proposed lift follows similar design principles of introducing a glazed lift which provides transparency and a reduced visual impact. The lift structure would be steel and distinctly contemporary. This juxtaposition between the old and new aligns with Article 22 of the Burra Charter regarding new work.

To further reduce the visual impact, efforts have been made to decrease the height of the lift. Ideally, the lift would be sited below the ridge line of the subject building; however, this was not achievable with the functional requirements of a lift procured from top tier lift fabrication companies. An overrun of 4100mm is the physical lift equipment requirement, including spatial to accommodate air conditioning that addresses thermal heating. Whilst this is not desirable from a visual impact perspective, Heritage 21 still believes that the visual impact would be acceptable given the transparent nature of the lift and that the lift only exceeds the roof height by approximately 700mm.

In terms of physical impact to the building, the lift would be set back from the building to prevent any alteration to the significant timber hoist beam. Despite efforts to retain all fabric considered to be of exceptional significance, there would be some minor removal of sandstone masonry. This would include the existing threshold and one of the masonry units on the Ground Floor. Unfortunately, it was not feasible to retain these elements due to access requirements and the need to create a cavity for services. If these elements are able to be extracted in sound condition, there may be scope for their onsite reuse as landscape and interpretative elements or as seating options. In theory, the lift is reversible in nature and its future removal could be easily achieved without further impact.

Internal Refurbishment

The core of the proposal involves a major internal refurbishment of the Moore's Wharf Building to accommodate the requirements of the maritime base operations for the Port Authority of NSW. When the building was relocated in 1980, it was reconfigured to office spaces and the original layout was ultimately lost. The furnishings of the building are generally contemporary in nature and plasterboard partitions, suspended panel ceilings, carpeted flooring, modern bathroom/kitchen fittings, fluorescent light fittings and services can be readily observed throughout. The floor plan has been altered since 1980, although not dramatically. Changes include the reconfiguration of internal partitions and the change in location of some internal staircases.

The structural skin of the sandstone masonry remains exposed internally, including the internal party walls between the individual bays. The historical evidence suggests that structural elements, besides the sandstone masonry, were relocated. This aligns with the physical evidence on site which

suggests that there are some original timber beams and storey posts throughout the building. Heritage 21 provided advice throughout the design process and indicated that all original features should be retained including the sandstone masonry, three bay configuration including the internal party walls, and all structural timber elements.

The proposal would involve a strip out of the existing material on the Ground and First Floor. This is limited to all light-weight fabric which has been installed in recent decades including ceiling panels, plasterboard ceilings, carpets, glass partitions, kitchen fittings, bathroom fittings, and services. None of this fabric is considered to comprise meaningful additions to the building and their removal would not have any impact to the values of the place.

The introduction of a new fit-out would require new partitions and services. Consideration has been made to minimise any penetrations or physical impact to the structural timber elements. Where possible, brackets would be installed around these elements for any new connections in order to prevent any physical penetration into the timber. Heritage 21 notes that there would be no physical impact to any of the timber beams or storey posts; however, there would be an unavoidable, albeit minor, impact to the timber floor joists at the partition head connection detail. This is more favourable than any connections to the beams, as the joists appear to be later additions to the building but the beams are almost certainly original.

There would also be some minor impact internally to the sandstone masonry walls. Further, there is a BCA requirement to install a barrier in front of the First Floor double glass doors to prevent a fall. If structurally possible for all new connections, Heritage 21 has recommended that this is installed in the mortar joints only. This may be feasible given the highly cementitious nature of the mortar and the thickness of the joints.

6.2.2 Impact Assessment Against the SDCP 2012 and listed heritage items

Section 2 – Locality Statements	
2.8 Millers Point	
Principles	Assessment
<p><i>(a) Retain, conserve and reinforce the historic character and heritage significance of the Millers Point Heritage Conservation Area and individual items on the State Heritage Register.</i></p> <p><i>(b) Development must be consistent with the locality statement and achieve the outcomes expressed in the supporting principles.</i></p> <p><i>(c) Development (including maintenance and repairs) is to have regard to any endorsed Conservation Management Plan for a site, or any other conservation management plan prepared to the satisfaction of the consent authority, and be consistent with the Millers Point Conservation Management Guidelines 2007, and the principles of</i></p>	<p>Compliant.</p> <p>The proposed alterations and additions would retain the original form, character, scale and integrity of the Moore’s Wharf Building. The works would be localised internally, with the exception of the external lift. The lift would be highly visible within the Millers Point area, most notably when facing east from the harbour or facing north from the Millers Point and Dawes Point Village Precinct. However, Heritage 21 is of the opinion that the lift achieves a high-quality design and would be procured from a top tier supplier, fabricated from the highest quality materials. Whilst it would be a</p>

<p><i>Burra Charter: The Australia ICOMOS Charter for places of Cultural Significance.</i></p> <p><i>(d) New development is to respect and maintain the existing heights and established character of the area.</i></p> <p><i>(e) Conserve unifying building details and the paint scheme for groups of terraces and streetscapes.</i></p> <p><i>(f) Conserve and repair early and original building fabric.</i></p> <p><i>(g) Cliff faces, retaining walls, stairs and early public domain elements are to be retained and conserved.</i></p> <p><i>(h) Development is to respond to and complement heritage items and contributory buildings within heritage conservation areas, including streetscapes and lanes.</i></p> <p><i>(i) Ensure new development respects the siting, scale, form, integrity, use of materials, character and significance of the area, heritage items and contributory buildings.</i></p> <p><i>(j) In the event of destruction of a building, replacement buildings must have a floor area that does not exceed that which it replaces and be sympathetic to the scale, setting and proportions of existing development, including adjacent heritage items, and use materials, finishes, textures and details appropriate to the building type and scale.</i></p> <p><i>(k) Maintain existing views and vistas and from the precinct, the water, the Harbour Bridge, Central Sydney, and Observatory Hill Park.</i></p>	<p>visible element, it would be a distinctly contemporary addition which complies with the principles of the Burra Charter. We also note that this lift addition would follow similar design principles to the lifts observed in the Walsh Bay Wharves Precinct. These lifts have been constructed of steel and glass. Therefore, the proposed lift would not be an anomaly in the immediate setting. In the opinion of Heritage 21, whilst the lift would be highly visible, it would not detract from the vista to and from Sydney Harbour and would be a complementary addition to the building.</p>
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Section 3 – General Provisions

3.9 Heritage

3.9.5 Heritage Items

Objectives	Assessment
<p><i>(a) Ensure that development in the vicinity of heritage items is designed and sited to protect the heritage significance of the item.</i></p>	<p>Compliant.</p> <p>The Moore's Wharf Building is in the vicinity of heritage item Two Mooring Anchors (Item 5063342), and two state listed heritage precincts: Walsh Bay Wharves Precinct (SHR #0059) and Millers Point and Dawes Point Village Precinct (SHR #01682). As noted above, the only visible feature of the proposal would be the external lift. Given the modest scale of this addition, it would not alter the relationship between the Moore's Wharf Buildings and this item and heritage precincts.</p>

3.10 Significant Architectural Building Types

3.10.1 Warehouses and Industrial Buildings older than 50 years	
Objectives	Assessment
(a) <i>Conserve warehouse and industrial buildings older than 50 years and ensure that alterations, additions and adaptive re-use maintain the legibility of the historic use.</i>	Compliant. The proposal retains and conserves the subject building, which is an early Victorian period warehouse building. The building is presently being adaptively reused as offices, which has been the case since its relocation in 1980. The proposal does not aim to change the current use of the building. There are elements to the building, including the hoist beams and hoisting system to the eastern elevation, which facilitate interpretation of the original use of the building. These would not be removed or altered under the proposal.
(b) <i>Encourage the conservation of existing warehouse buildings and fabric and ensure that alterations and additions are sympathetic in scale and style to the existing building.</i>	Compliant. The proposal would involve the introduction of an external lift to the western elevation of the building. In terms of scale, Heritage 21 had recommended that the height of the lift should not exceed the height of the building. Despite a vigorous design process, this was not achievable whilst also meeting all the functional requirements and employing a top tier supplier for fabrication. The lift requires a 4100mm overrun which exceeds the ridge height by approximately 700mm. However, the visual impact is reduced through the use of glazing which allows for transparency through to the façade. In terms of the style, the design has opted for a contemporary addition in terms of form and materials. This is sympathetic to the building as it does not create any confusion in the presentation of the building; the lift would be readily distinguishable as a new addition.

6.2.3 Recommended Management

Heritage 21 has provided the following assessment against the recommended management extracted from the Port Authority of NSW Heritage s.170 Inventory for the Moore's Wharf Building:

The overall form of the building should be conserved in full, with very little tolerance for change to the exteriors. All remaining intact exterior fabric should be retained.

Heritage 21 response: The proposal does not involve any major alteration to the exteriors of the subject building. The alterations are localised to the western elevation, the location of the lift. They would involve modification to the existing openings on the central gable front. These are

three timber framed doors which are non-original elements of the building. Whilst the location of the openings is original and significant, the doors themselves were likely introduced during 1980 when the building was relocated. Alterations to these doors is thus acceptable. Heritage 21 also notes that there are timber lintel beams above the door which have been painted. The vintage of these elements is unclear. Regardless, there would no physical impact to these timber structural elements.

There would be a minor impact to the sandstone masonry to facilitate access via the removal of the existing sandstone threshold and the removal of a sandstone unit above the Ground Floor door to allow for the entry of services. Whilst any alteration to the sandstone masonry is not ideal, efforts have been made to minimise this. Heritage 21 considers the removal of these two sandstone elements to be acceptable in order to ensure access requirements are met and to provide an opening for services. These are both functional requirements. Heritage 21 would recommend that avenues for reuse of these elements are explored.

Where external additions are proposed, they should be modest, and any impact to the vistas to and from the building, from the harbour or surrounding area should be minimised.

Heritage 21 response: The proposal involves an external addition to the western elevation. The introduction of a new lift to historic buildings is often a requirement to enable dignified access for all. There is generally an expectation that the introduction of a lift would have some impact, either on the fabric of or visually to, the historical building. In this case, there would be some visual impact as a result of the proposed external lift. However, Heritage 21 believes that as the lift is modest in scale, comparable to the existing built form, and would employ a high quality design with a degree of transparency through to the façade, this has been minimised and the views to and from the vista would not be majorly impacted.

There is no scope for vertical additions to the building.

Heritage 21 response: There would be no vertical additions to the subject building under this proposal.

There is tolerance for change to the interiors to facilitate new layouts and refurbishments, provided the timber structural elements remain intact. There should be no change to the three bay configuration, or the internal party walls.

Heritage 21 response: The proposal involves a refurbishment of the interiors. This would not involve any alteration or removal of structural timber elements (beams and storey posts), internal sandstone masonry party walls or the three bay configuration. The internal refurbishment aims to be minimally invasive, and consideration has been given to all connections of new partitions to significant fabric.

A Statement of Heritage Impact should be prepared for all works that has the potential to impact upon the heritage values of the place.¹⁶

Heritage 21 response: This report acts as a Statement of Heritage Impact for the proposed works and aims to assess the potential impact to the heritage values of the place.

6.2.4 Impact Assessment against SEPP (Precincts – Eastern Harbour City) 2021

The proposal would generally be compliant with the SEPP (Precincts – Eastern Harbour 2021). Below we assess the proposal against the following planning principles within Appendix 5 Section 21.

Heritage conservation:

(1) A person must not, in respect of a building, work, relic, tree or place that is a heritage item—(a) demolish, dismantle, move or alter the building, work, relic, tree or place, or

(b) damage or remove the relic, or

(c) excavate land for the purpose of discovering, exposing or moving the relic, or

(d) damage or despoil the tree or place, or

(e) erect a building on, or subdivide, land on which the building, work or relic is situated or that comprises the place, or

(f) damage any tree, or land on which the building, work or relic is situated, or the land that comprises the place, or

(g) make structural changes to the interior of the building or work,

except with the consent of the consent authority.

(2) However, consent under this section is not required if the proponent of the development has notified the consent authority of the proposed development and the consent authority has advised the proponent in writing before any work is carried out that it is satisfied that the proposed development—(a) is of a minor nature, or is for the maintenance of the heritage item, and

(b) would not adversely affect the significance of the heritage item.

The works would not involve the demolition, dismantling or relocation of a heritage item. The proposal would involve alterations to the Moore's Wharf Building; however, these alterations would not have more than a minor impact to the significance of the place. The works would not involve excavation for the purpose of discovering, exposing or moving an archaeological relic. There would be no subdivision or erection of new buildings on the site. Whilst there would be a major internal

¹⁶ Port Authority of NSW Heritage Inventory, *State Heritage Inventory*, SHI Number: 4560018, dated 19 June 2024.

refurbishment, the structural intent of the building remains intact and all structural elements, including the brick masonry skin and timber elements, would be retained.

6.2.5 Impact Assessment Against the NSW Department of Planning and Environment Guidelines

The NSW Department of Planning and Environment has identified a list of considerations in the form of questions aimed at directing and triggering Heritage Impact Assessments. Below is an assessment of the proposal against the most pertinent of these questions.

Question	Assessment
Partial demolition of a heritage item (including internal elements)	
<i>Is the partial demolition essential for the heritage item to function?</i>	<p>The proposed partial demolition to the Moore's Wharf Building would include the following:</p> <ul style="list-style-type: none"> • Demolition of majority of partitions, glazed partitions, joinery and doors on the Ground Floor. • Demolition of all partitions, glazed partitions, joinery and doors on the First Floor. • Removal of ceiling tiles and plasterboard ceilings on the Ground and First Floor. • Removal of sandstone threshold on the Western elevation, central gable, Ground Floor. • Removal of sandstone unit on the Western elevation, central gable, Ground Floor. <p>These demolition activities are not a requirement for the building to function. However, they are required to facilitate a new internal refurbishment. The existing layout is not meeting the operational requirements of Port Authority of NSW.</p>
<i>If partial demolition is proposed because of the condition of the fabric, can the fabric be repaired?</i>	The proposed demolition is not a result of the existing fabric. As noted above, the demolition is to accommodate a new internal refit with enhanced access.
<i>Are important features and elements of the heritage item affected by the proposed partial demolition (e.g. fireplaces in buildings)?</i>	With the exception of the two masonry elements proposed for removal, there are no other important features or elements impacted by this proposal. The sandstone masonry skin and all the structural timber elements (beams and storey posts) are proposed for retention.
<i>Will the proposed partial demolition have a detrimental effect or pose a risk to the heritage item and its significance? If yes, what measures are proposed to avoid/mitigate the impact?</i>	The proposed partial demolition would in no way compromise the significance of the place. The current layout was introduced in 1980, with some minor modifications since, and is not considered to be significance or worthy for retention.
<i>Identify and include advice about how significant elements, if removed by the proposal, will be salvaged and reused.</i>	Avenues for reuse of these sandstone elements has been explored, with a commitment to look to reuse these elements in the landscape where possible.
Alterations and additions	

Question	Assessment
<p><i>Do the proposed works comply with Article 22 of The Burra Charter, specifically Practice Note Article 22 – New Work (Australia ICOMOS 2013b)?</i></p>	<p>The proposed additions to the Moore's Wharf Building includes:</p> <ul style="list-style-type: none"> • New external lift and connecting structure to existing building located to the western elevation. • Introduction of new layout to the Ground and First Floor utilising lightweight partitions and glazed partitions. • New services in bathroom and kitchen areas. <p>The proposed new additions are compliant with Article 22 of the Burra Charter, specifically Practice Note Article 22 – New Work. The proposed additions in no way mimic the existing form or materials of the existing building. They would be readily recognisable as new work.</p>
<p><i>Are the proposed alterations/additions sympathetic to the heritage item? In what way (e.g. form, proportion, scale, design, materials)?</i></p>	<p>The proposed internal refurbishment is acceptable from a heritage perspective. Following the relocation of the building from 1980, the original layout of the building has been lost. The adaptive reuse of this building by Port Authority of NSW enables the building to be engaged with, maintained and ultimately conserved for future generations. As such, it is paramount to ensure that the building meets the operational requirements of the Port Authority of NSW without compromising its significance. In the opinion of Heritage 21, this has been achieved in the proposal.</p>
<p><i>Will the proposed works impact on the significant fabric, design or layout, significant garden setting, landscape and trees or on the heritage item's setting or any significant views?</i></p>	<p>The proposed works would not impact upon a significant layout, setting or landscape. The impact to the building is generally visual with the introduction of the new external lift.</p>
<p><i>How have the impact of the alterations/additions on the heritage item been minimised?</i></p>	<p>The new lift would employ high quality, contemporary materials and finishes to enable a degree of transparency. Efforts have been made by the design team to minimise the scale of the lift as much as reasonably possible, whilst still meeting the functional requirements of Port Authority of NSW.</p>
<p><i>Are the additions sited on any known or potentially significant archaeological relics? If yes, has specialist advice from archaeologists been sought? How will the impact be avoided or mitigated?</i></p>	<p>An archaeological assessment is outside the remit of this report. However, we note that an AHIMS search by Port Authority of NSW of the Lot & DP with a 50m buffer was undertaken on the 19 September 2024 and found 1 Aboriginal site. However, as Moore's Wharf is on reclaimed land, it would be highly unlikely for there to be an Aboriginal item in or near the excavation/drilling works location. An unexpected finds procedure has been included as a mitigation measure for Aboriginal and European heritage objects in Section 7.2 of this report.</p>
<p>Physical changes to fabric identified as significant</p>	
<p><i>Has the fabric that will be impacted by the proposed works been assessed and graded according to its significance?</i></p>	<p>There will be a minor impact to the sandstone masonry. This fabric is considered to be of exceptional significance in the context of the subject building, and there is very little tolerance for change or removal. All efforts would be made to conserve, retain and celebrate this fabric. However, there would be some impact to the fabric in terms of the removal of two elements and some minor penetrations to accommodate new internal partitions and barriers</p>

Question	Assessment
	over the glass doors. Where structurally possible, we would recommend that penetrations are made into the mortar joints only.
<i>Has specialist advice from a heritage professional, architect, archaeologist or engineer been sought?</i>	Heritage 21 has been involved in the design process from the inception phase and have provided ongoing specialist heritage advice on the management of significant fabric on the Moore's Wharf Building.
New services and service upgrades	
<i>Are any of the existing services of significance? In what way are they affected by the proposed works?</i>	There are no existing services of significance within the subject building. The design proposes to utilise the existing sewage reticulation plumbing stack and in-ground services. It is not proposed to excavate to the building foundations for installation of new sewage in-ground/foundation services. No new external fittings have been proposed to the building.
<i>How have the impacts of the installation of new services on heritage significance been minimised?</i>	Internally, there will be a requirement for the introduction of suspended ceilings to accommodate mechanical A/C equipment, lighting, cable trays and similar. Where possible, services would be mounted to suspended cable trays or unistruts; however, there will be some fixings required to floor joists for suspension. This is in line with the existing scenario of suspended services and is an essential service necessary for the functional requirements of the space. Wherever possible, great care has been taken to locate wall mounted services, such as GPO's or light switches, in non-sandstone walls, in order to prevent fixings or unsightly electrical conduits. There would be no chasing of masonry walls to accommodate services.
<i>Are any known or potential archaeological deposits affected by the proposed new services?</i>	An archaeological assessment is outside the remit of this report.
<i>Has specialist advice from a heritage consultant, architect, archaeologist or services engineer been sought?</i>	Aston Consulting are involved in the project as the services consultant. We recommend that a heritage consultant be involved in monitoring the delivery of the project and providing advice on the introduction of new services (as required).
Interpretation	
<i>Will the proposed works contribute to a continued understanding of the heritage item's history and significance?</i>	The proposed works would not aid in the continued understanding of the heritage item and its significance. However, with an internal refurbishment, an opportunity is presented to incorporate interpretative features within the design.
<i>Can interpretive features be integrated into the design?</i>	Heritage 21 would recommend that an interpretation strategy is developed and implemented as part of the proposal, as outlined within Section 7.2 of this report.
Works adjacent to a heritage item or within the heritage conservation area (listed on an LEP)	
<i>Will the proposed works affect the heritage significance of the adjacent</i>	The Moore's Wharf Building is in the vicinity of heritage item Two Mooring Anchors (Item 5063342), and two state listed heritage precincts: Walsh Bay Wharves Precinct (SHR #0059) and Millers

Question	Assessment
<i>heritage item or the heritage conservation area?</i>	Point and Dawes Point Village Precinct (SHR #01682). As noted above, the only visible feature of the proposal would be the external lift. Given the modest scale of this addition, it would not alter the relationship between the Moore's Wharf Buildings and this item and heritage precincts.
<i>Will the proposed works affect views to, and from, the heritage item? If yes, how will the impact be mitigated?</i>	The new lift would be highly visible, specifically from Sydney Harbour when approaching from the east. However, it would not obscure or interrupt any key vistas to the heritage item and heritage precincts.
<i>Will the proposed works impact on the integrity or the streetscape of the heritage conservation area?</i>	Not applicable. Towns Place is not located within a Heritage Conservation Area.

7.0 CONCLUSION & RECOMMENDATIONS

7.1 Impact Summary

The NSW Department of Planning and Environment's guidelines require the following aspects of the proposal be summarised.¹⁷

7.1.1 Aspects of the proposal which respect or enhance heritage significance

The following aspects of the proposal would respect the heritage significance of the subject site and heritage item and conservation areas in the vicinity, the Two Mooring Anchors (Item 5063342), Walsh Bay Wharves Precinct (SHR #0059) and the Millers Point and Dawes Point Village Precinct (#SHR 01682):

- The proposal would retain the original form, character, scale and significant fabric of the Moore's Wharf Building.
- The proposed internal refurbishment would involve the removal of non-significant fabric, introduced from 1980 onwards, including lightweight partitions, glazed partitions, ceiling panels, doors and bathroom and kitchen fittings.
- The proposed new layout would introduce new partitions and services, which have been designed to have no impact to the timber beams, storey posts, internal sandstone masonry party walls or three-bay configuration.
- The proposed lift has gone through a rigorous site selection process to ensure all physical and visual impacts to the building have been minimised.
- The proposed lift would be constructed of steel and glass, to ensure the addition has a degree of transparency and is readily recognisable as new work, as per Article 22 of the Burra Charter.
- The proposal would not alter the historic or visual relationship between the subject building and heritage item and conservation areas in the vicinity.

7.1.2 Aspects of the proposal which could have detrimental impact on heritage significance

In our view, there are no aspects of the proposal which could be detrimental to the significance of the subject site or the heritage item and conservation areas in the vicinity. The neutral and positive impacts of the proposal have been addressed above in Section 7.1.1.

Recommendations and further mitigation measures are provided in Section 7.2 below.

¹⁷ Department of Planning and Environment, *Guidelines for preparing a statement of heritage impact*.

7.2 Mitigation Measures and Recommendations

7.2.1 Mitigation Measures

To ensure maximum conservation of the significance of the subject site, Heritage 21 also recommends the following mitigation measures for the proposal:

Heritage Consultant. A suitably qualified heritage consultant should be employed to provide direction on any design issues which impact upon heritage fabric. Further, the consultant should be employed to periodically monitor the work during delivery and provide advice on-site regarding heritage issues. This is particularly pertinent during demolition activities and the introduction of new services, when more original fabric will likely be exposed.

Damage to Significant Fabric. In the instance of unexpected damage to significant fabric, works are to cease to allow for inspection by the heritage consultant. The heritage consultant is to provide advice on the repair methodology for any damaged fabric.

Heritage Tradespeople. Any works involving original fabric, including sandstone masonry and structural timber elements, are to be carried out by suitably qualified heritage tradespeople who have adequate experience working on historic structures.

Temporary Protection Measures. There should be temporary protection measures introduced to the sandstone masonry façade which could be impacted by vehicular movements. This would involve the south and west elevations.

Heritage Induction. The Contractor must be briefed by the Port Authority Project Manager on the heritage significance of the site, any site-specific heritage matters or issues and approval documentation processes prior to works commencing. If there is a change of Project Manager or Contractor during the construction phase, another site briefing would be required.

Unexpected Finds. If unexpected finds are discovered during any excavation activities which could be considered Aboriginal or European heritage items, we would recommend that the works are paused to allow for an archaeological assessment.

Heritage NSW. Prior to works commencing, Port Authority of NSW is to refer the proposal to Heritage NSW, as the delegate to the Heritage Council, for comment.

7.2.2 Further Recommendations

Interpretation Strategy. The Moore's Wharf Building is not accessible to the public and thus there are limited avenues for onsite interpretation. With the exception of the small plaque at the front of the building, there is no media which communicates the values of the place or its history to the building users and wider public. Heritage 21 recommends that Port Authority of NSW considers introducing additional interpretative media. This could include early photographs or drawings of the Moore's Wharf Building, which can be displayed internally within the building. If the sandstone

masonry elements are able to be extracted in sound condition, there may be options for onsite reuse as landscape and interpretative elements or as seating options. Heritage 21 also recommends the installation of an interpretative plaque at the entrance of the site. This would allow the general public to engage with the item.

Connections to Sandstone Masonry. Heritage 21 acknowledges that there will be a requirement to create penetrations into the sandstone masonry walls, for example with the installation of internal partitions and barriers to the double glass doors. Where structurally possible, these elements are to be installed into the mortar joints only.

7.3 General Conclusion

The proposed alterations and additions to the Moore's Wharf Building comply with pertinent heritage controls and would have a minimal impact on the heritage significance of the subject site.

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APPENDIX A – DETAILED HISTORY

The following is an extract from the Significance Assessment for the subject site, prepared by Heritage 21, dated June 2024.¹⁸

In 1807, James Meehan surveyed and prepared a map of Sydney, and settlement began to extend towards Millers Point. By 1830, land comprising the original subject site was granted to William Long and James Wright (refer to Figure 32). Long was a spirit merchant and Wright was a wealthy brewer. Together, under their merchant and shipping firm of Wright & Long, they had purchased much of the north side of Dawes Point by 1831.¹⁹ In 1835, Long and Wright began the construction of a wharf and a stone building divided internally into three bays. This building can be seen in the plan from 1837 in Figure 33, as well as an additional “store” and “smithy” to the east.²⁰ According to Long and Wright, £40,000 was spent on building the stores in 1835, which were constructed of locally quarried sandstone.²¹

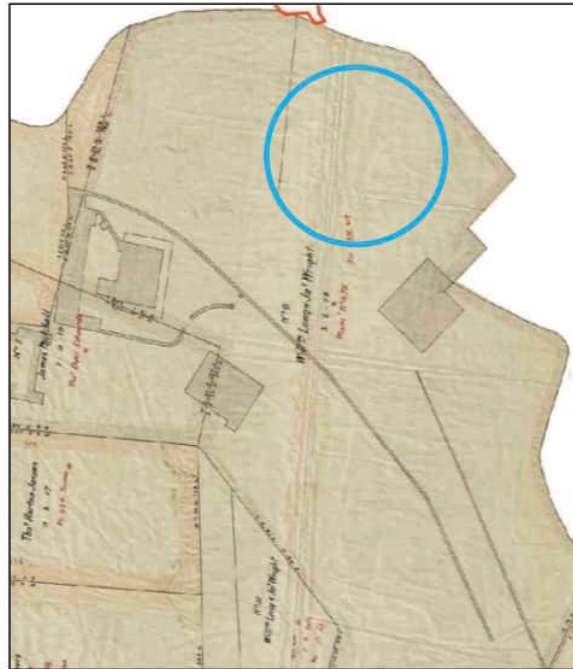


Figure 32. Map from 1833-34 showing land granted to “Willm Long and JA Wright”, with the approximate location of the original location of the subject building by the blue circle prior to relocation (Source: Austral Archaeology Pty Ltd, *Main Works Application – Headland Park, Barangaroo: Research Design & Archaeological Excavation Methodology*, Final Report, 11)

¹⁸ Heritage 21, *Significance Assessment – Moore's Wharf Building*, June 2024, p 21

¹⁹ Janette Holcomb, “A QUESTION OF TIMING: HENRY MOORE & CO.” *Early Merchant Families of Sydney: Speculation and Risk Management on the Fringes of Empire*, Anthem Press, 2014, pg. 232

²⁰ R.J. Lampert and M.C. Truscott, *The Archaeological Investigation of the Bond Store, Moore's Wharf, 1980: A Draft Report for the Maritime Services Board and the Heritage Council of N.S.W.* 1984, pg 1.

²¹ Janette Mary Holcomb, *Opportunities and Risks in the Development of the NSW Shipping Industry, (1821-1850)*, (PHD Thesis), University of New England, 2008.

By 1836, Long and Wright's partnership dissolved and the estate was declared bankrupt.²² The estate was sold by public auction on 20 November 1837. An article published on 22 November 1837 recorded details about each lot auctioned (refer to Figure 34).



Figure 33. Map entitled "Plan of Messrs. Long and Wright's Estate at the Miller's Point, Sydney, as sold by public auction on 20th Nov. 1837" by Surveyor P.L. Bemi, the original site indicated in blue (Source: State Library of NSW, FL8771426)

²² *Ibid.*

Isaac Simnons & Co., disposed of the whole of Messrs. Wright and Long's, unrivalled Wharf and Property at Miller's Point, on Monday, as undermentioned, viz:—	
Lot 1.—100 feet frontage to Darling Harbour, to Mr. M'Donald, at £10 per foot.....	£1000 0 0
Lot 2.—103 ditto, ditto, to Mr. McKone, at £10 per foot.....	1030 0 0
Lot 3.—73 feet frontage to ditto, ditto, ditto, to Mr. Henry Moore, at £13 per foot.....	962 0 0
Lot 4.—100 feet ditto, ditto, ditto, to Mr. Henry Moore, at £22 per foot.....	2200 0 0
Lot 5.—100 feet ditto, ditto, ditto, to Mr. Henry Moore, at £27 per foot.....	2700 0 0
Lot 6.—100 feet ditto, ditto, ditto, to Mr. Henry Moore, at £27 per foot.....	2700 0 0
Lot 7.—100 feet ditto, ditto, ditto, to Mr. Henry Moore at £20 per foot.....	2000 0 0
Lots 8, 9, & 10.—To Mr. Brighton Cotton, at £7 per foot.....	2100 0 0
Lot 11.—100 feet ditto, ditto, ditto, to Mr. William M'Donald, at £5 per foot.....	500 0 0
Lot 12.—70 feet frontage ditto, ditto, ditto, to Mr. M'Donald, at £6 per foot.....	420 0 0
Lot 13.—70 feet frontage to ditto, ditto, to Mr. M'Donald, at £4 per foot.....	280 0 0
Lots 14 & 14 given in to Mr. William Webb, at £10 per foot, 60 feet frontage to Darling Harbour	600 0 0
Lots 15, 16, 17, & 18.—To Mr. Henry Moore, at 50s. per foot....	502 0 0
Lot 19.—Unfinished Cottage, to Mr. Peacock.....	875 0 0
Lot 20.—50 feet frontage to Victoria Terrace, at £3 per foot, to Mr. Jeffrey.....	150 0 0
Lot 21.—50 ditto, ditto, ditto, at £3 per foot to Mr. Parbury.....	150 0 0
Lots 22 and 27.—Having 100 feet frontage to Crown Road, to Mr. J. Jones, at 60s. per foot.....	300 0 0
Lot 23.—50 feet frontage to Victoria Terrace, to Mr. Sommerbell, at £3 per foot.....	160 0 0
Lot 24.—50 feet ditto, ditto, ditto, to Mr. Peterson, at £3 10s. per foot.....	175 0 0
Lot 25.—50 feet, to John Jones, at 60s. per foot.....	160 0 0
Lot 26.—49 feet ditto, ditto, ditto, to Mr. Bowden, at 55s. per foot...	134 15 0
Lots 28 & 29.—175 feet frontage to Cromer Road, to Mr. Jones, at 40s. per foot.....	250 0 0
Lot 30.—The Offices, Dwelling House and Stores, at the entrance to Wright and Long's Wharf, to Mr. Wm. M'Donald.....	470 0 0
Lot 31.—80 feet in front of Captain Richard's residence to Mr. Peacock, at £5 per foot.....	400 0 0
Lot 32.—Mr. Wright's Cottage and Grounds, to Mr. Smart.....	2250 0 0
Lot 33.—Spencer Lodge, the residence of Colonel Wilson, to Mr. Francis Mitchell, for.....	2400 0 0
Lot 35.—80 feet frontage to Darling Harbour, at £4 per foot, to Mr. M'Donald.....	320 0 0
	£25,459 5 0
This is the greatest public Sale that has been effected in the Colony.—The Orphan dues upon which amount to £181 17s. 9d.	

Figure 34. Article detailing the lots for public auction of Long and Wright's estate (Source: Trove, *Commercial Journal and Advertiser*, 22 November 1837, 2).

Joseph and Henry Moore

In 1837, Joseph and Henry Moore purchased part of Long and Wright's estate, including the wharf, Lots 3-7 (comprising a three-storey warehouse and bonded stores) and Lots 15-18.²³ A plan from 1840 shows this area had been named "Moore's Wharf", and a dwelling and goods shed had now been constructed to the north (refer to Figure 35). An illustration by Walter G. Mason in 1857 shows the stores at Moore's Wharf and the residence and shed to the north (refer to Figure 36).

²³ Janette Holcomb, "A QUESTION OF TIMING: HENRY MOORE & CO." *Early Merchant Families of Sydney: Speculation and Risk Management on the Fringes of Empire*, Anthem Press, 2014, pg. 232

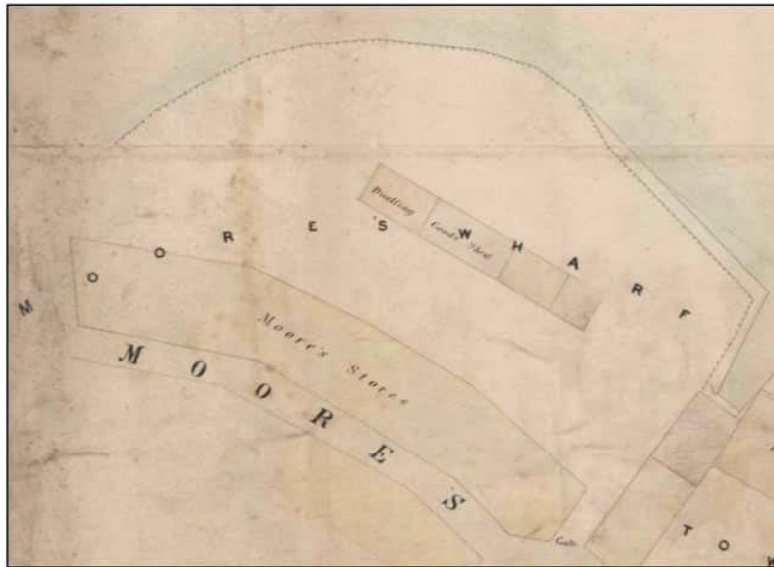


Figure 35. Map entitled "Wharves at Millers Point, Walsh Bay, Sydney showing the stores, and a dwelling and goods shed in front, facing harbour" (Source: National Library of Australia, Map F 866)

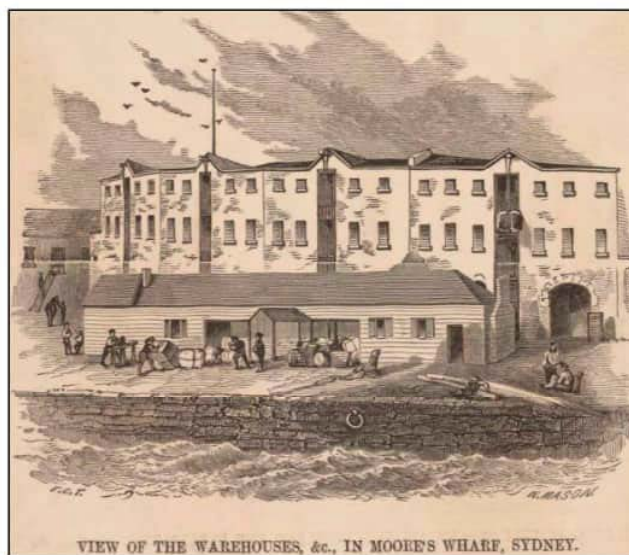


Figure 36. Image entitled "View of the warehouses in Moore's Wharf, Sydney" by Walter G. Mason (Source: National Library of Australia, PIC Volume 6A #S1412)

Captain Joseph Moore originally visited Sydney commanding Birnie & Co.'s merchant and whaling ships, the *Mary Anne* (1812) and the *Cretan* (1815), and later settled with his family in the Sydney colony in c.1820.²⁴ He worked for some time with the South Seas Fishery and joined the Sydney firm of William Walker and Company as their agent in 1828. Joseph's son Henry Moore was born in 1815 in London, United Kingdom, after completing his education in Sydney, gained work with the merchant firm Jones and Walker. After working for Jones and Walker for 11 years, Henry went into

²⁴ Janette Mary Holcomb, *Opportunities and Risks in the Development of the NSW Shipping Industry, (1821-1850)*, (PHD Thesis), University of New England, 2008.

business with his father, establishing Henry Moore & Co.²⁵ However, Joseph's own role within the company was more so as a silent partner, and there is no evidence that he played an active role in the company after its formation.²⁶

By 1838, Joseph and Henry had established a lucrative Sydney merchant and ship-owning partnership.²⁷ They owned and operated a large fleet of South Sea whalers, as well as a merchant house trading in tea, sugar and other commodities.²⁸ They also had business links with Magniac, Jardine & Co. of Canton and London, Thacker & Co. and Walker & Co.²⁹ Joseph and Henry expanded their business further by purchasing part of Long and Wright's estate in 1837, which "represented prize real estate and, in the sheer size of its wharf and warehousing facilities, [and] gave the firm a leading edge over the other merchant and shipping agencies".³⁰ As well as this property, they also purchased several adjoining properties and nine acres of land at the junction of the old and new South Head Roads.³¹

By 1843, Moore & Co. had invested greatly in shipping, owning seven whaling ships including the *Woodlark*, *Jane Eliza*, *Clarkstone*, *Cape Packet*, *Tamar*, *Jessie* and *Lady Blackwood*, and costing the firm over £20,000. Between 1843 and 1844, Moore & Co. exported whale products and sealskins valued at £20,663 and American oil, coconuts and cigars valued at £1,452.³²

By early 1844, Moore & Co. faced a deficiency of approximately £35,747 and on 10 February 1844 they applied for sequestration. Their main creditors included Thacker, Mason & Co., John Jones, Lamb & Parbury, Campbell, Hill & Co., the estate of Robert Campbell junior, Campbell & Co., the estate of W. Tucker & Co., C. W. Roemer and William Walker & Co.³³

²⁵ Parliament of NSW, Mr Henry Moore (1815-1888), <https://www.parliament.nsw.gov.au/members/Pages/member-details.aspx?pk=431>, accessed 15 April 2024.

²⁶ Janette Holcomb, "A QUESTION OF TIMING: HENRY MOORE & CO." *Early Merchant Families of Sydney: Speculation and Risk Management on the Fringes of Empire*, Anthem Press, 2014, pg 232

²⁷ Janette Mary Holcomb, *Opportunities and Risks in the Development of the NSW Shipping Industry, (1821-1850)*, (PHD Thesis), University of New England, 2008.

²⁸ *Ibid.*

²⁹ *Ibid.*

³⁰ Janette Holcomb, "A QUESTION OF TIMING: HENRY MOORE & CO." *Early Merchant Families of Sydney: Speculation and Risk Management on the Fringes of Empire*, Anthem Press, 2014, pg. 232

³¹ *Ibid.*

³² *Ibid.*

³³ *Ibid.*

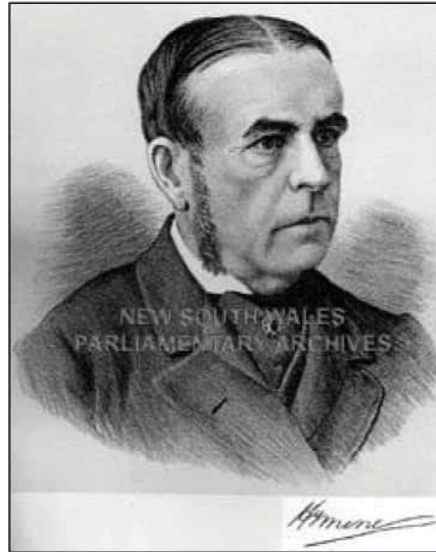


Figure 37. "The Honourable Henry Moore. Illustration for Australian Men of Mark illustrated with Authentic Portraits, Vol 1" by Charles F Maxwell in 1888 (Source: Parliament of NSW, <https://www.parliament.nsw.gov.au/members/Pages/member-details.aspx?pk=431>).

The subject building frequently changed ownership and held goods from various categories. In 1844, the stores building, as part of Henry Moore's insolvent estate, was to be sold at auction by order of the Trustees, including all the stock held inside the building at the time. The list of items for sale provides evidence of the different uses for the building during its life (refer to Figure 38).

<p>in trade of the insolvent, with tools and other articles used in conducting the business of the wharf, and office furniture, consisting of Seventy-two puncheons rum Ninety-six hogheads rum Three cases Hunt's port wine, in pints and quarts Twenty-one casks arrow root Two hogheads and one puncheon loaf sugar Five casks crushed lump sugar One cask brushware About seventeen cwt. corkwood Ten packages gig shafts Seventeen tierces colonial beef Fifty tons bar and rod iron Ten tons hoop iron Three casks hinges Harpoons, lances, spades, and mincing knives Manila coir, and Europe rope Eight bales felt Quantity of ash oars and blocks Three chronometers</p>	<p>Four hundred Dantzic oak staves four feet length About five thousand feet New Zealand pine One patent crane Coopers' and blacksmiths' tools Falls, blocks, &c., beams and scales, triangle Spurs and planks, winches Dray, and box cart Two horses, with shaft and trace harness Office desks, tables, chairs, &c. Copying machine, eight day clock With a variety of other articles. ** The rums, wine, arrow root, and sugar, will be put up at one o'clock on Wednesday. Terms at sale. Catalogues are in preparation, and may be had at the mart of the auctioneer, two days before the day of sale.</p> <p style="text-align: right;">G. R. GRIFFITHS, W. S. DELOITTE, FREDK PARBURY, Trustees.</p> <p>971</p>
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Figure 38. List of items held at the Moore's Wharf building at the time of Henry Moore's insolvent estate sale (Source: Trove, *New South Wales Government Gazette*, 23 April 1844, TWO SAYS' SALE, 605)

Following this auction, Henry commenced work as a commission agent working on North Kent Street, opposite the Sydney Gas Works.³⁴ During this time, Henry aimed to rebuild his business by enlisting the help of his brothers and expanding business into other Australian ports. By the late

³⁴ Janette Holcomb, "A QUESTION OF TIMING: HENRY MOORE & CO." *Early Merchant Families of Sydney: Speculation and Risk Management on the Fringes of Empire*, Anthem Press, 2014, pg. 241

1840s, Henry's brother David was acting as Moore & Co.'s agent and travelling to Melbourne on a regular basis.³⁵

By the 1850s, Henry was the local Director for the London Chartered Bank of Australia and agent for the London and Oriental Steam Transit Insurance Company. In 1852, Henry became the agent for the Peninsular and Oriental (P&O) Steam Navigation Company and remained in this position until 1880, with slight intervals.³⁶ In the same year, the first Peninsular and Oriental Steam Navigation Company's "screw-steam-ship Chusan, hauled alongside of Moore's Wharf and formed a source of much attraction and curiosity. No gangway was extended to the shore, but many hundreds of visitors went on board by the watermen's boats in attendance; and the satisfaction derived from the urbanity and attention of the officers tended to keep up a constant stream of sight-seers from morning till night." (Figure 39)³⁷

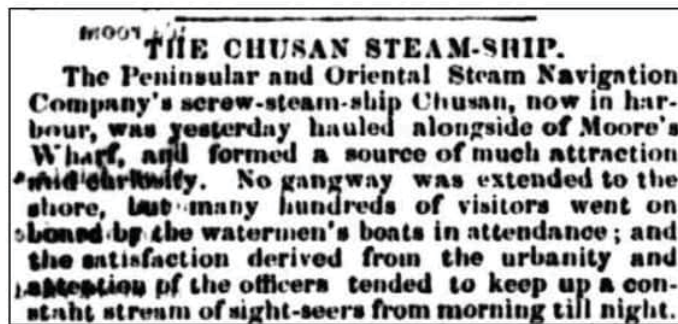


Figure 39. Article mentioning the first Peninsular and Oriental Steam Navigation Company's "screw-steam-ship Chusan" (Source: Trove, *Empire*, 5 August 1852 "The Chusan Steam-Ship", Pg 2)

Henry repurchased the subject site in 1854 and brought the wharf up to modern requirements due to the wharf not being able to accommodate vessels close alongside and only affording room for two vessels.³⁸ Henry "placed the matter in the hands of Mr. Norman Self" who was "well-known to have given great attention to the shipping accommodation of the port"³⁹.

An article published in the Australian Town and Country Journal details the extension and provides a drawing of the plan (refer to Figure 18). An article published in the New South Wales Government Gazette in 1880 states that an application had been made by Henry Moore to extend the jetty fronting Moore's Wharf, by "120 feet in prolongation of the north east side of that jetty and having a width of 36 feet" (refer to Figure 19).⁴⁰ It is unknown whether the jetty was extended after the lodgement of the application.

³⁵ *Ibid.*

³⁶ *Ibid.* and The Sydney Morning Herald (NSW:1842-1954), *Obituary* (5 July 1888), Pg 11, <https://trove.nla.gov.au/newspaper/article/28343566#>, accessed 23 April 2024.

³⁷ *Empire* (Sydney, NSW:1850-1875), *The Chusan Steam-Ship* (5 August 1852), Pg 2, <https://trove.nla.gov.au/newspaper/article/60133441>, accessed 24 April 2024

³⁸ Australian Town and Country Journal (Sydney, NSW: 1870 - 1919), *Moore's Wharf, Miller's Point, Sydney* (5 October 1878). pg. 24., <http://nla.gov.au/nla.news-article70595490>, accessed 23 April 2024.

³⁹ *Ibid.*

⁴⁰ New South Wales Government Gazette, Tuesday 23 March 1880, Extension of Jetty, 1390

<https://trove.nla.gov.au/newspaper/article/224191060?searchTerm=extension%20moores%20wharf#>, accessed 15 April 2024.

Moore's Wharf, Miller's Point, Sydney.

ONE of the best-known and oldest wharves in the harbour of Port Jackson is the property of the Hon. Henry Moore, and known as "Moore's Wharf." It occupies a very prominent position on Miller's Point, round which all our steamers turn to their places in Darling Harbour, and has for years been known as the terminus of the Peninsula and Oriental Company's mail boats. For many years Moore's Wharf has been a favourite one with importers on account of the room it offers for cargo and the good road out, but it has laboured under the same disadvantages as the Circular Quay in not being able to accommodate vessels close alongside and in requiring stages from the ship to the shore, and it only afforded room for two vessels. In order to bring the wharf up to modern requirements, Mr. Moore placed the matter in the hands of Mr. Norman Self, who is well known to have given great attention to the shipping accommodation of the port. As the limit line of extension laid down by the authorities only permitted of about seventy feet of encroachment on the harbour, it was not possible to run out jetties in the ordi-

nary way, and Mr. Self has therefore adopted the plan shown in our illustration. By this plan the accommodation is of a very superior class, and affords much greater facilities for getting away cargo. The three new berths are inclined round the curve of the wharf something like the teeth of a circular saw, and give over 150 feet more frontage than was before available, and besides keeping the vessels quite separate from each other, give accommodation for much greater tonnage and deeper water. At the same time these wharves admit of extension to suit still larger vessels if they should be required without encroaching much more into the stream. Several ships, as the Loch Etive, Ascalon, and others, have already discharged cargo at the new wharves, and the berths are secured for some time to come. It is satisfactory to find that Mr. Moore is thus early reaping the fruit of his enterprise, as it will stimulate private wharf-owners to improve their properties. Since the great controversy about the Circular Quay, a few years ago, Messrs. Dibbs, Smith, Parbury, and now Mr. Moore, have provided accommodation for the largest class of vessels, which the Government have neglected to do; and looking to the vast increase in our harbour-steamers' traffic lately, it seems as if it would require the whole of the Circular Quay for their accommodation. If the delay in improving Sydney Cove ultimately results in a noble stone quay being built, the colony in general, and Sydney in particular, will have cause to be thankful. In the meanwhile, our business men and merchants will look out that accommodation for ocean steamers and sailing ships is provided as fast as it is wanted. We congratulate Mr. Moore on this latest improvement at Miller's Point. We may state that the contractors are Messrs. Rankin and Batty, and that two out of the three berths are now completed.

Figure 40. Article detailing the extension of Moore's Wharf (Source: Trove, *Australian Town and Country Journal*, 5 October 1878, "Moore's Wharf, Miller's Point, Sydney," 24)

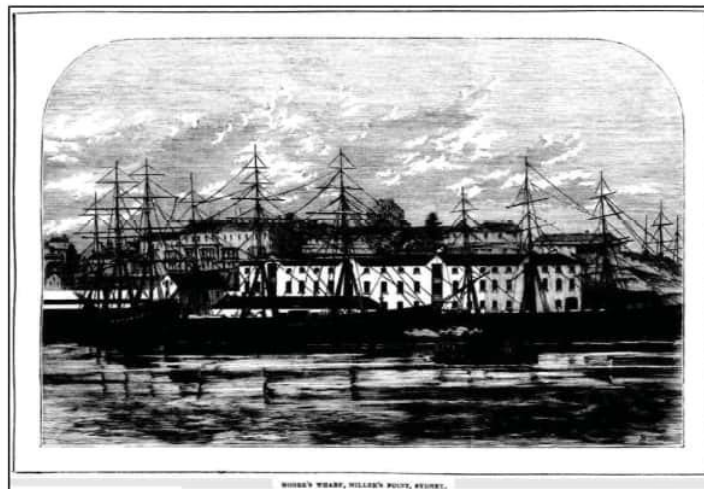


Figure 41. The plan referred to in the article published in *Australian Town and Country Journal* (Source: Trove, *Australian Town and Country Journal*, 5 October 1878, "Moore's Wharf, Miller's Point, Sydney," 24)

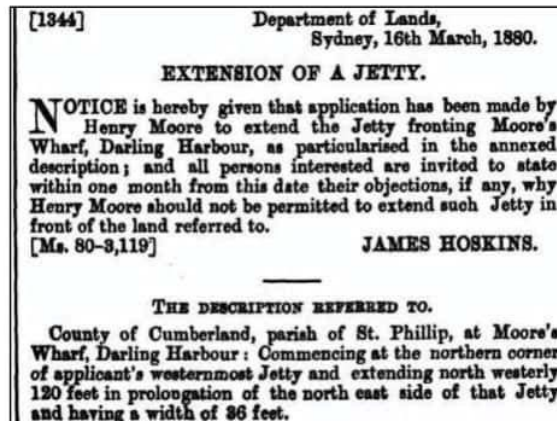


Figure 42. Article detailing the application made by Moore to extend the Jetty (Source: Trove, *New South Wales Government Gazette*, 23 March 1880, "Extension of Jetty," 1390)

Joseph Moore passed away from paralysis at Henry's residence at Miller's Point, Sydney on 25 September 1857.⁴¹ In 1866, Henry was appointed to the Upper House of the New South Wales Legislative Council, however he "did not play a prominent part in politics but had firm views in the favour of free trade".⁴² He and his family resided at Barncleuth House at Potts Point, which was mentioned in a newspaper article from 1872:

*Among the delightfully situated houses and gardens which cluster about Potts Point, there are few, if any, possessed of more horticultural interest than Barncleuth, the residence of the Hon. Henry Moore.*⁴³

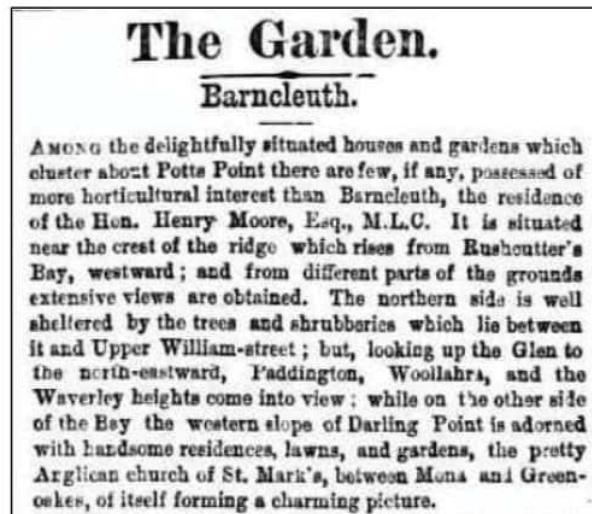


Figure 43. Article from the Sydney Mail and New South Wales Advertiser describing Barncleuth (Source: Trove, *Sydney Mail and New South Wales Advertiser*, 20 April 1872, "The Garden", pg. 489)

⁴¹ Janette Holcomb, "A QUESTION OF TIMING: HENRY MOORE & CO." *Early Merchant Families of Sydney: Speculation and Risk Management on the Fringes of Empire*, Anthem Press, 2014, pg. 241

⁴² Janette Holcomb, "A QUESTION OF TIMING: HENRY MOORE & CO." *Early Merchant Families of Sydney: Speculation and Risk Management on the Fringes of Empire*, Anthem Press, 2014, pg. 241

⁴³ Sydney Mail and New South Wales Advertiser (NSW: 1871 - 1912), Saturday 20 April 1872, pg 489

From 1876 to 1888, Henry Moore and his family resided at Strickland House, also known as Carrara, a heritage-listed property of local and State significance (Figure 44). The historical notes for Strickland House on the State Heritage Inventory states that, "*The site has associations with ... historical figures ... and subsequent occupants including Henry Moore and members of the Allen family are of significance. The status of these people as leading political figures in the nineteenth century ensured that Carrara was well known within important social circles in Sydney at that time.*"⁴⁴ As such, Moore was highly regarded in the local community throughout his life.

Henry passed away on 29 June 1888 after a short illness. He left an estate of £150,000 including a large Queensland sheep station, called 'Womblebank'.⁴⁵ The following obituary was published in the Sydney Morning Herald on 5 July 1888:

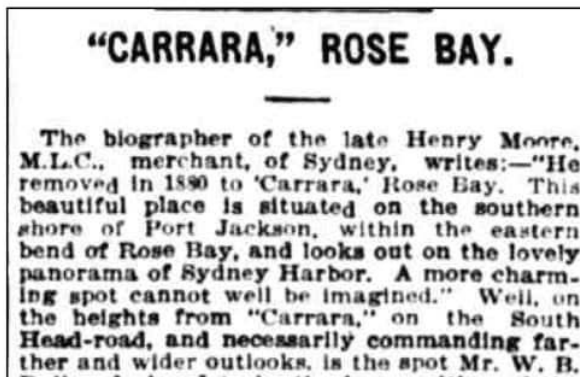


Figure 44. Article published in The Sun referencing Moore residing at Carrara (Strickland House) (Source: Trove, The Sun, 9 September 1911, "Carrara," Rose Bay", pg. 3)

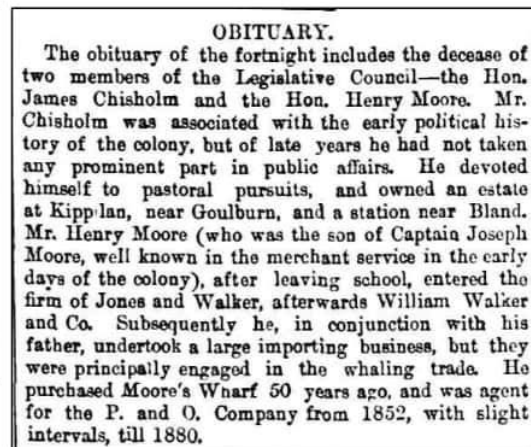


Figure 45. Article from the Sydney Morning Herald with an obituary for Henry Moore (Source: Trove, The Sydney Morning Herald, 5 July 1888, "Obituary", pg. 11)

Changes to site from 1978 and the Maritime Services Board (MSB)

The following summary has been extracted from the Section 170 Register Inventory Sheet and the Port Authority of NSW website, and notes the changes to the subject site from 1978 onwards as a result of the Maritime Services Board's (MSB) redevelopment of Darling Harbour:

Throughout the 1800s, Sydney's wharves were privately owned, and their ramshackle development contributed to the outbreak in 1900 of bubonic plague. The Sydney Harbour Trust was formed in 1901 to take over and develop the wharves. These arrangements continued until 1936 when the Maritime Services Board (MSB) was established to coordinate, under one

⁴⁴ Heritage NSW, "Strickland House," State Heritage Inventory, Heritage Item ID: 5045502, accessed 24 April 2024, <https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5045502>.

⁴⁵ Janette Holcomb, "A QUESTION OF TIMING: HENRY MOORE & CO." *Early Merchant Families of Sydney: Speculation and Risk Management on the Fringes of Empire*, Anthem Press, 2014, pg. 241

authority, all port and navigation services for NSW, with the exception of Port Kembla which came under MSB control in 1948.

During the 1960s, the MSB embarked on a ten-year plan to redevelop Darling Harbour. With the growth of container trade making increasing demands on wharf space and facilities, the MSB commenced feasibility studies on the development of Botany Bay.⁴⁶

In 1978, redevelopment plans at Darling harbour necessitated the move of the building. MSB left a contract for \$680,000 to take down the building stone by stone and reconstruct it 50 yards west across the dock facing Walsh Bay. It was reopened in 1981 and currently houses a marine operation base for Port Authority of NSW as well as office space. Since 1978, the building has gone through the following notable changes:

- *1978- the building was moved stone by stone to its new position at the western end of Walsh Bay overlooking the new wharf area (The corrugated iron roofing was replaced with shingle to replicate the original). It was then internally refurbished for customs and delivery officers and amenities for port workers. The fourth segment of the building built in the 1840s was not reconstructed as its stonework had deteriorated beyond repair.*
- *2014- interior timber replaced*
- *2017- shingled roof replaced with slate and removal of rooftop plant to ground level*
- *2019- in-ground diesel fuel tank on the northern end of Moore's Wharf was replaced with an above ground tank.⁴⁷*

The Sydney Ports Corporation was established in 1995 after a series of reforms to the MSB, allowing the new, State-owned corporation to take a greater commercial and customer focused approach to the management of international shipping.

The MSB was abolished under the Port Corporations and Waterways Management Act 1955, now known as the Ports and Maritime Administration Act 1995 bringing an end to a chapter in the history of Sydney Harbour and other New South Wales' ports.⁴⁸

As stated in the extract above, the MSB facilitated the dismantling and move of the subject building as a result of their ten-year plan to redevelop Darling Harbour. The relocation of the building was deemed necessary as part of their plans, and the building was taken down stone by stone and reconstructed 50 yards north-east⁴⁹, facing Walsh Bay. According to a newspaper article published in 1948, the MSB had previously dismantled other buildings. The article states that their "old offices"

⁴⁶ Port Authority of New South Wales, History, <https://www.portauthoritiesnsw.com.au/corporate/about-us/history/>, accessed 15 April 2024

⁴⁷ Port Authority of NSW Heritage Inventory, *State Heritage Inventory*, SHI Number: 4560018, accessed 15 February 2024, 2.

⁴⁸ Port Authority of New South Wales, History, <https://www.portauthoritiesnsw.com.au/corporate/about-us/history/>, accessed 15 April 2024

⁴⁹ Heritage 21 notes that the previous study indicated that the building was relocated west. This is incorrect and the building was in fact relocated north-east of its original location.

were to be "dismantled for the construction of the railway and overhead roadway at Circular Quay"⁵⁰:

Amongst construction works for the year were the commencement of operations on the Board's new Head Office, opposite the old offices which are to be dismantled for the construction of the railway and overhead roadway at Circular Quay, and also the reconstruction of wharfage at Pyrmont for use by overseas ships. In preparation for the remodelling of wharfage in Darling Harbour for interstate and intra-state shipping a depot was established at Rozelle Bay for the manufacture of pre-cast concrete piles and other wharf units. The traditional use of hardwood timbers for this purpose was also superseded by concrete in the case of the redecking of existing wharves. Work also proceeded on the fitting-out wharf at the Captain Cook Graving Dock for the Commonwealth Government.

Figure 46. Maritime Services Board 12th Annual Report, published in 1948 (Source: Trove, Construction, 2 June 1948 "Maritime Services Board 12th Annual Report", pg. 5).

The subject building was reopened in 1981 and now houses a marine operation base for the Port Authority of NSW as well as office space. Following a series of reforms to the MSB, the Sydney Ports Corporation was established in 1995 and the MSB was subsequently abolished under the *Port Corporations and Waterways Management Act 1955* (now known as the *Ports and Maritime Administration Act 1995*).

Sydney Harbour Trust (1901-36)

By 1900, the bubonic plague had reached Sydney and infiltrated much of The Rocks, Millers Point and Darling Harbour. Disinfection of these areas began in March, with much of the focus placed on the wharves and ports of Sydney. A land resumption scheme under the *Darling Harbour Wharves Resumption Act 1900* and the Sydney Harbour Trust was established in 1901. This led to the resumption of the city's port into the ownership of the New South Wales Government.⁵¹

⁵⁰ Construction (Sydney, NSW: 1938 - 1954) *Maritime Services Board 12th Annual Report*, 2 June 1948, pg. 5. Accessed 23 April 2024 <http://nla.gov.au/nla.news-page24722758>

⁵¹ Port Authority of New South Wales, *Section 170 Heritage and Conservation Register*, Cover Report, May 2023, 13.

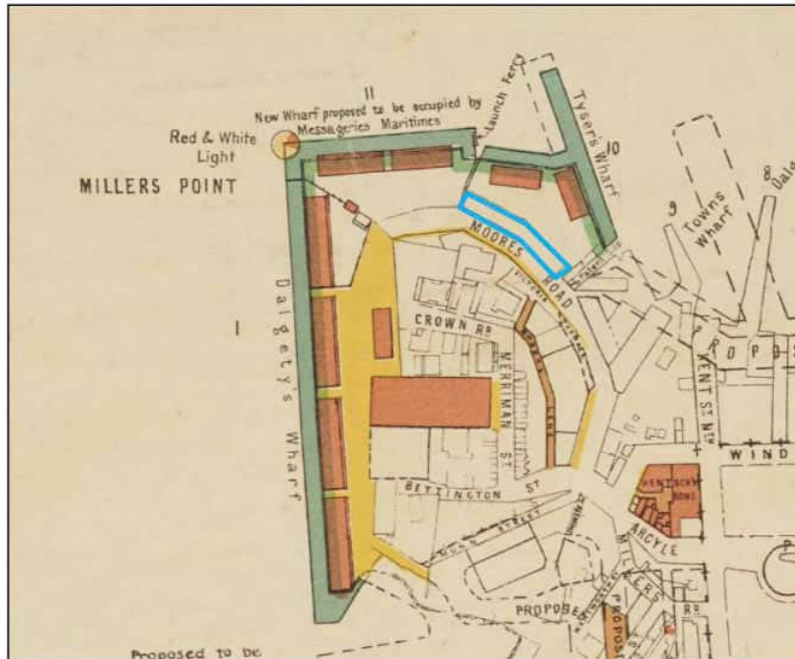


Figure 47. Extract of map displaying land and wharfage vested in by Sydney Harbour Trust Commissioners in 1907, with the subject site outlined in blue (Source: State Library of NSW, Z/M3 811.15/1907/1)

Maritime Services Board of New South Wales (1936-95)

A meeting between the Maritime Services Coordination Board and the NSW Government was held at the Treasury office in 1933 to advise on the “...coordination of maritime services, including the Sydney Harbour Trust, Department of Navigation, Department of Fisheries and Dredges Branch.”⁵² After this meeting, the Sydney Harbour Trust and Department of Navigation amalgamated, creating the Maritime Services Board (MSB) in 1936. The role of the MSB were as follows:

*The MSB assumed control and management of all ports in New South Wales, except Port Kembla (which was transferred into MSB control in 1948), and general powers over navigation, pilotage, and conservation in all navigable waters.*⁵³

To accommodate overseas shipping, the MSB established a 10-year plan to facilitate the extension and expansion of the wharves of Sydney, including wharves in Balmain, Pyrmont, Circular Quay, and Botany Bay. The building that currently houses the Museum of Contemporary Art was once the offices of MSB, specially commissioned for MSB use.⁵⁴

⁵² Port Authority of New South Wales, *Section 170 Heritage and Conservation Register*, Cover Report, May 2023, 17.

⁵³ Port Authority of New South Wales, *Section 170 Heritage and Conservation Register*, Cover Report, May 2023, 17.

⁵⁴ Port Authority of New South Wales, *Section 170 Heritage and Conservation Register*, Cover Report, May 2023, 18.

Maritime Services Board Sydney Ports Authority (1989-95)

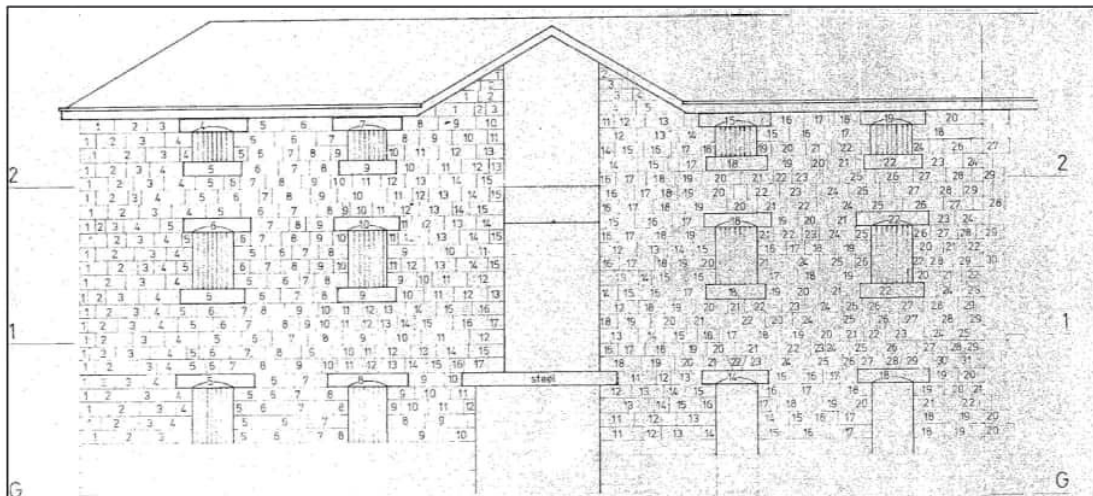
The Maritime Services Board Sydney Ports Authority was established in 1989, fulfilling the role of MSB, along with further marine administration provisions. The staff of MSB was halved and “...refocused its operations on customer service and efficiency objectives.”⁵⁵

Further development of the site

The following table outlines works completed on the building since its relocation in the late 1970s.

Year	Description of works
1978	Plans for relocation of the Moore’s Wharf Stores building, numbering of all stones for reconstruction. Corrugated iron roof was replaced with shingle roof to replicate original.
1980	Building was relocated stone by stone. Internally refurbished for customs and delivery officers and amenities for port workers.
1981	Building reopened
1985	Services and amenities upgrades
1992	Further alterations to amenities
2002	Changes to partitions and doors
2007-9	Installation of fire safety equipment and other services
2010	Internal modifications to amenities, partitions, flooring, lighting
2014	Interior timber replaced
2016	Air conditioner unit replacement and roof refurbishment. Shingle roof was replaced with slate roof.
2019	In-ground diesel fuel tank replacement with above ground tank.

Figure 48 illustrates the numbering of the individual stones for later reconstruction of the building and Figure 56 shows the active reconstruction of the building in its current location c. 1980.



⁵⁵ Port Authority of New South Wales, *Section 170 Heritage and Conservation Register, Cover Report, May 2023, 18.*

Figure 48. Extract of 1978 plan displaying Bay 1 and the individual numbering of the stones for later reconstruction of the Moore's Wharf building (Source: Historical plans provided by GroupGSA)

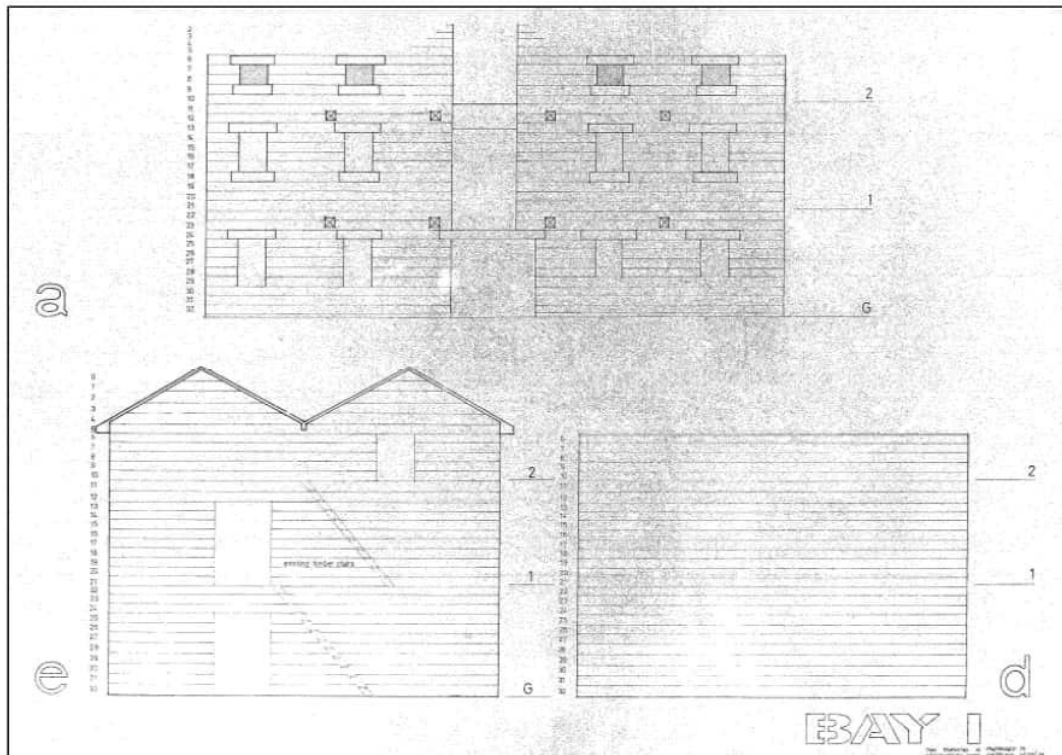
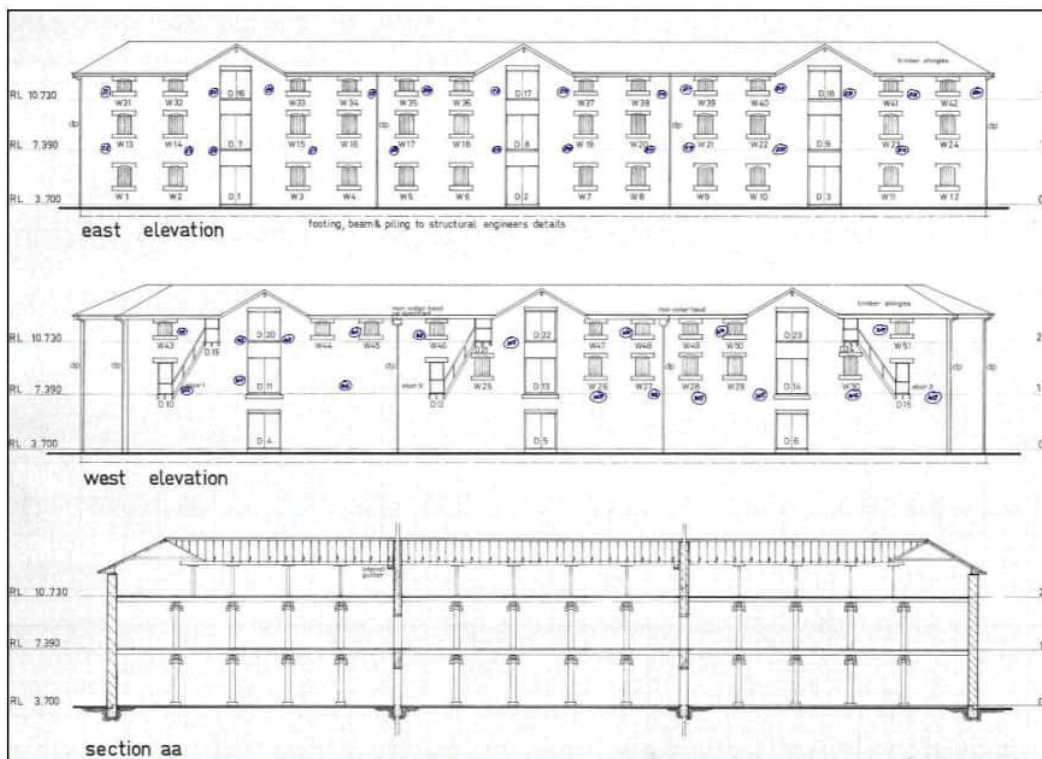


Figure 49. Extract of 1978 plan displaying the exterior elevations of Bay 1 of the Moore's Wharf building prior to relocation (Source: Historical plans provided by GroupGSA)



Statement of Heritage Impact **Moore's Wharf Building** 4 Towns Place, Millers Point

Figure 50. Extract of 1978 plan displaying the exterior elevations and section of the Moore's Wharf building prior to relocation (Source: Historical plans provided by GroupGSA)

GENERAL

G1 These drawings shall be read in conjunction with all architectural and other consultants drawings and specifications and with such other written instructions as may be issued during the course of the project. All discrepancies shall be referred to the Superintendent for decision before proceeding with the work.

G2 Dimensions shall not be obtained by scaling the structural drawings.

G3 Cutting out dimensions shown on the drawings shall be verified by the contractor.

G4 During construction the structure shall be maintained in a stable condition and no part shall be overstrained.

G5 All workmanship and materials shall be in accordance with the requirements of the A.S. Codes and the By Laws and Ordinances of the relevant Building Authority.

G6 Reinforcement smaller than 100 dia are not shown on the Structural Drawings. All penetrations shall be verified from all other Consultants Drawings by the Contractor.

FOUNDATIONS

F1 Piling is to be in accordance with AS 2199 - SAH Piling Code.

F2 Piles shall be driven to refusal on rock unless shown otherwise on the Structural Drawings.

CONCRETE

C1 All workmanship and materials shall be in accordance with AS 1480 current edition with amendments (except where varied by the contract documents).

C2 Concrete Quality: Maximum Slump: 80 mm; Maximum Size of Aggregate in structural concrete: 20 mm; Cement: Type A.

C3 All concrete shall have a characteristic compressive strength (F_{ck}) of 25 MPa.

C4 Clear concrete cover to reinforcement shall be as follows unless otherwise shown:

ELEMENT	TOP OF SLAB OR BOTTOM OF COLUMN OR BEAM	IN BUILT-UP STRUCTURE	EXPOSED TO WEATHER (WORKMANSHIP ON THE SURFACE)
EXPOSED SURFACES	1	5	5
COLUMNS AND BEAMS	40	50	75
SLABS	25	40	65
ROOFING BEAMS	50	50	55
SLABS AND WALLS	50	50	65
REINFORCED CONCRETE	50	50	55

C5 Size of concrete elements does not include thickness of applied finish.

C6 Construction joints, where not shown shall be located to the approval of the Superintendent.

C7 Beam depths are written first and include steel thickness, if any.

C8 No holes or chases other than those shown on the Structural Drawings shall be made in concrete members without the prior approval of the Superintendent.

C9 Reinforcement is considered discontinuous and is not necessarily shown in true position.

C10 Stakes in reinforcement shall be made only in positions shown. The written approval of the Superintendent shall be obtained for any other stakes where the lap length is not shown if shall be sufficient to satisfy AS 1480 cl.11.10.

C11 The welding of reinforcement will not be permitted unless shown on the Structural Drawings.

C12 Bars or cables shall not be placed within the concrete cover to reinforcement without the approval of the Superintendent.

C13 Reinforcement Symbols:

- S: Structural grade deformed bar in accordance with AS 1300 grade 330 S.
- C: Cold worked deformed bar in accordance with AS 1300 grade 410 C.
- R: Plain round in accordance with AS 1300 grade 330 R.
- F: Hard drawn reinforcing fabric in accordance with AS 1304.

The number following the symbol S, C or R is the bar dia in millimetres.

C14 All unsupported bars shall be laid in transverse direction to C12 of 600.

C15 Square fabric reinforcement shall have 425 and 235 side face.

C16 Rectangular fabric reinforcement shall have 425 and 175 side face.

STRUCTURAL STEEL

S1 All workmanship and materials shall be in accordance with AS 1550 except where varied by the Contract Documents.

S2 Unless otherwise noted all steel shall be in accordance with AS 1304 grade 350.

S3 The contractor shall prepare workman drawings and submit them for approval. Fabrication shall not commence until approval has been received.

S4 Welds to be 5mm continuous fillet, both M30, grade 100, unless otherwise noted.

S5 Bolt heads where indicated on the drawings to be complete penetration full width.

S6 All high strength bolts with their nuts and washers shall comply with AS 1555. They shall be installed in accordance with AS 1511.

S7 Concrete encased steelwork shall be wrapped with 4mm wire of 100mm size or with F4 fabric and shall have 50mm gap cover unless noted otherwise.

S8 Structural steelwork shall have the surface cleaned and treated in accordance with the Specification.

S9 The contractor shall provide all plate and drill all holes necessary for fixing steel to steel on timber to grid whether or not detailed on the drawings.

S10 All nuts, bolts, washers and screws shall be hot-dip galvanized unless noted otherwise.

S11 All bolts shall be metric hexagon commercial bolts, strength grade 4.6 to AS 1111.

S12 All exposed ends are to be ground smooth.

BRICKWORK AND BLOCKWORK

B1 All workmanship and materials shall be in accordance with AS 1640.

B2 Walls shown on Structural Drawings are load bearing walls unless otherwise noted. Non load bearing walls under slabs shall be separated from the slab in an approved manner.

B3 No brickwork or blockwork which is supported by the concrete structure shall be erected until formwork has been removed.

B4 Brickwork or blockwork supporting concrete slabs and beams shall be founded on ground and separated from the bearing surface by Mortarless 'Cantilever' Concrete 'MBC' 'G' or an approved equivalent.

B5 The minimum ultimate strength F_{th} of the brickwork shall be 4.5 MPa.

STRUCTURAL TIMBER

T1 All workmanship and materials shall be in accordance with AS 1730.

T2 All timber members which have to be notched shall be notched handwood stress grade P17 unless specified otherwise in drawings or agreed with the Superintendent.

T3 Provide 25 mm mortar bed between all bearing parties & supporting brickwork.

T4 The timber shall carry out all necessary loads or additional loads required by the Engineer.

T5 The contractor shall allow for all temporary bracing and connections required.

Figure 51. Extract of 1978 plan displaying the specifications of the relocation of the Moore's Wharf building (Source: Historical plans provided by GroupGSA)

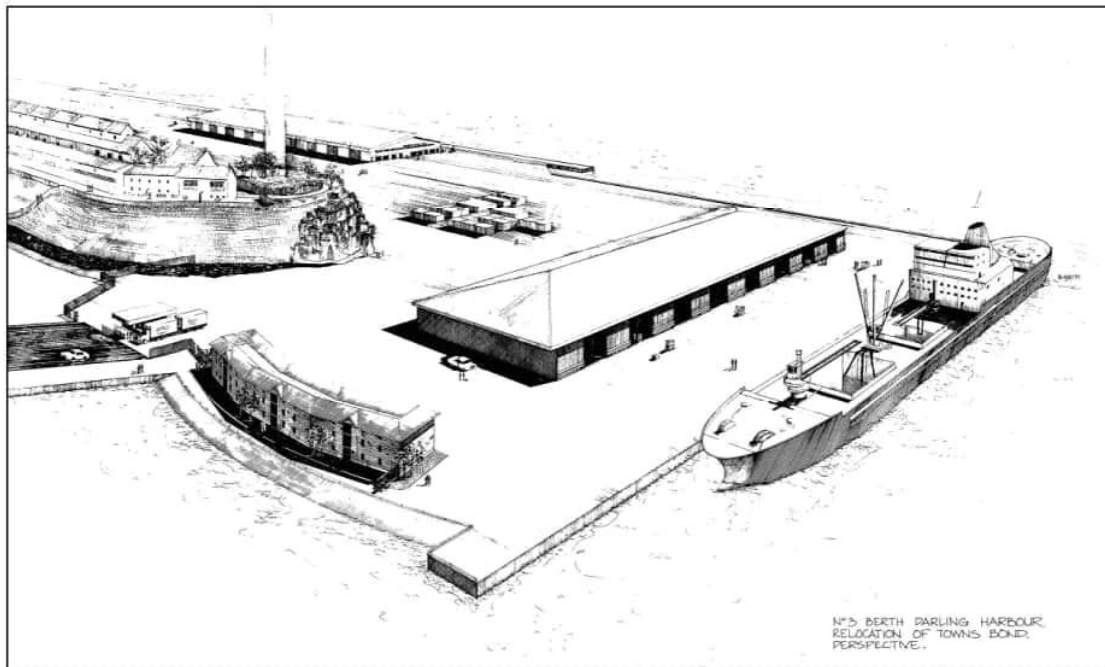


Figure 52. Extract of 1978 plan displaying the relocation perspective of the Moore's Wharf building (Source: Historical plans provided by GroupGSA)

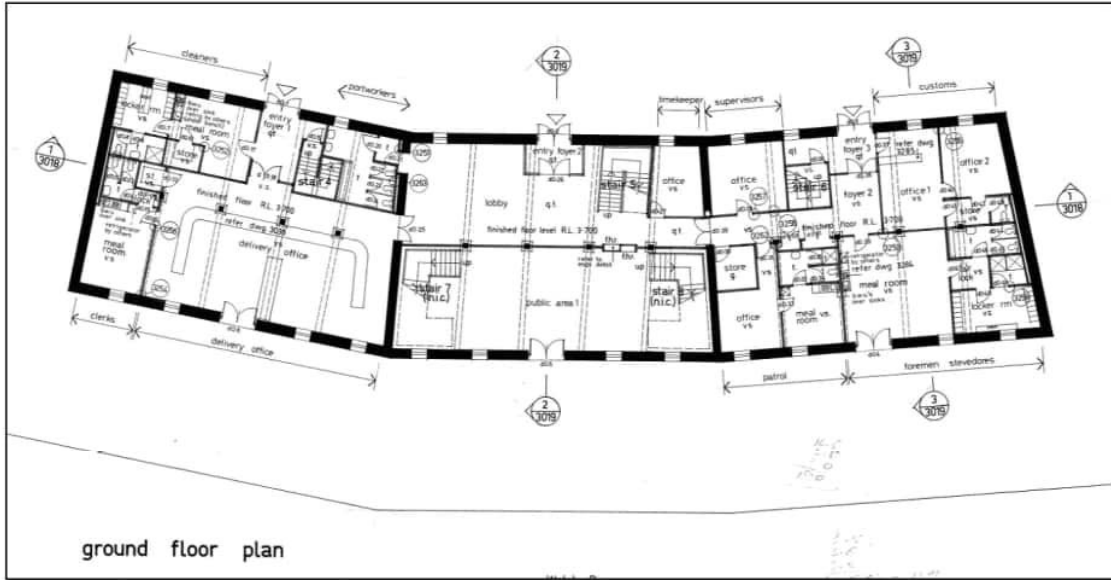


Figure 53. Extract of 1980 plan displaying the ground floor plan of the Moore’s Wharf building after relocation (Source: Historical plans provided by GroupGSA)

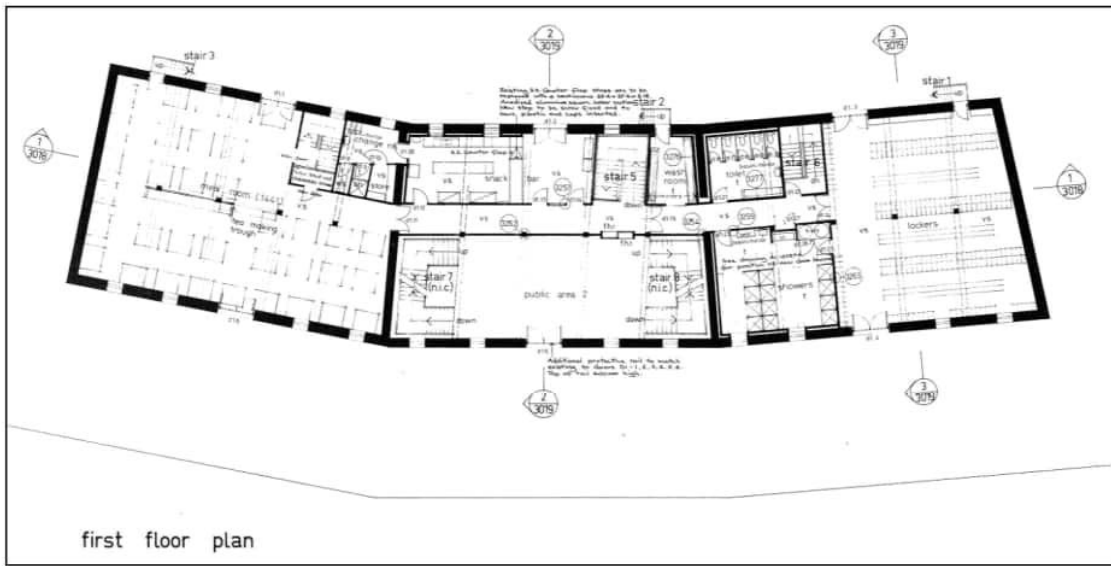


Figure 54. Extract of 1980 plan displaying the first floor plan of the Moore’s Wharf building after relocation (Source: Historical plans provided by GroupGSA)

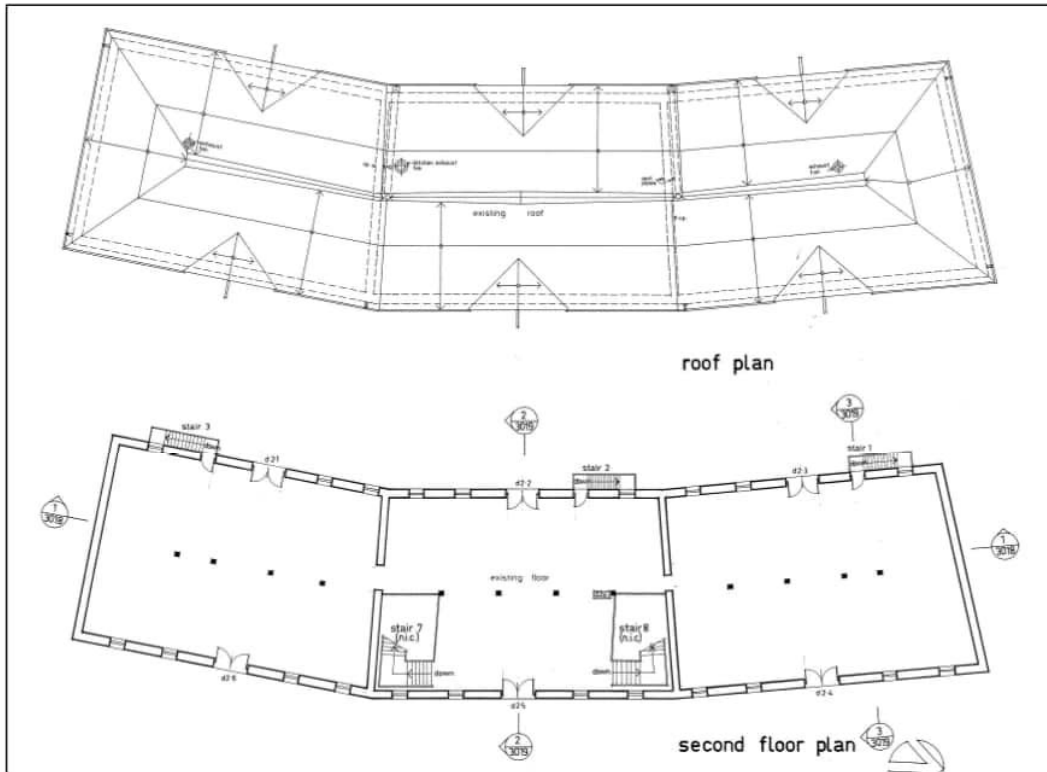


Figure 55. Extract of 1980 plan displaying the second floor and roof plan of the Moore's Wharf building after relocation (Source: Historical plans provided by GroupGSA)



Figure 56. Image of the subject site during reconstruction in c. 1980 (Source: R.J. Lampert & M.C. Trustcott, *Archaeological investigation of the Bond Store, Moore's Wharf: a draft report for the Maritime Services Board and the Heritage Council of NSW, 1984, Figure 3*)

The following images display the site during different periods since its construction. Figure 57 shows the original position of the building and Figure 58 shows the building when the fourth bay was

intact. The office towards the side of the building and the sheds in front of the building were demolished, however further information on when this occurred was not able to be obtained. Figure 59 shows the original location of the building prior to its relocation approximately 100m north of the position in the image. Its presentation towards the harbour after relocation can be seen in Figure 60. A brief historical summary of the building can be found near the entrance to the building, in the form of a commemorative plaque in Figure 61.



Figure 57. Extract of City of Sydney map by Francis Webb Shields in 1845, showing Moore's (Moor's) Wharf located next to Jones' Wharf, which was purchased by Robert Towns. The subject building is indicated in yellow (Source: City of Sydney Archives, A-00880420, annotated by Heritage 21)



Figure 58. Painting by Frederick Garling entitled "Shipping Horses For the Government of India at Millers Point Wharf - Darling Harbour N.S. Wales," displaying the subject site in c. 1847 (Source: State Library of NSW, DG SV1A/9)



Figure 59. Image of the Moore's Wharf building prior to its relocation in c. 1980, indicated by yellow (Source: City of Sydney Archives, A-00018434)

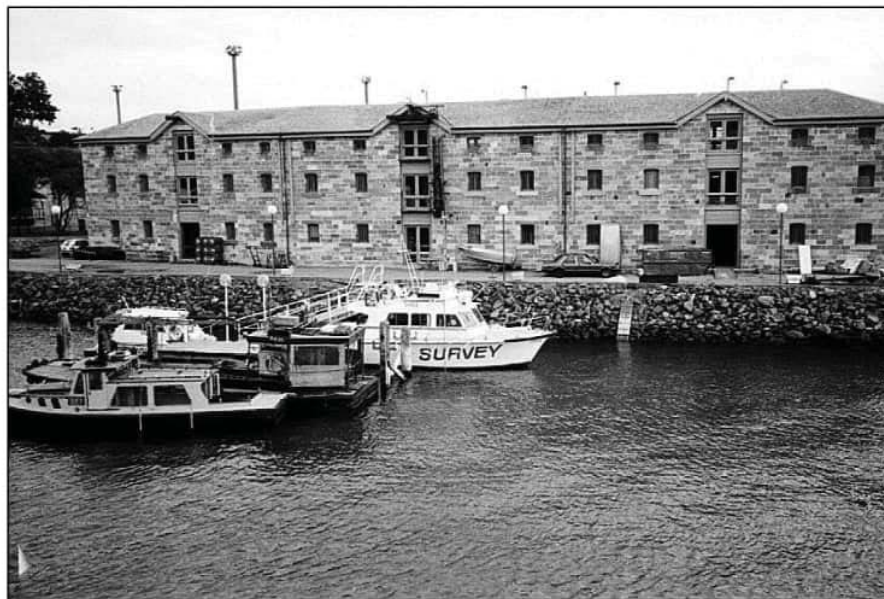


Figure 60. Image of the subject site, then referred to as the Maritime Services Board (MSB) base and plant building, in 1992 (Source: City of Sydney Archives, A-00075455)

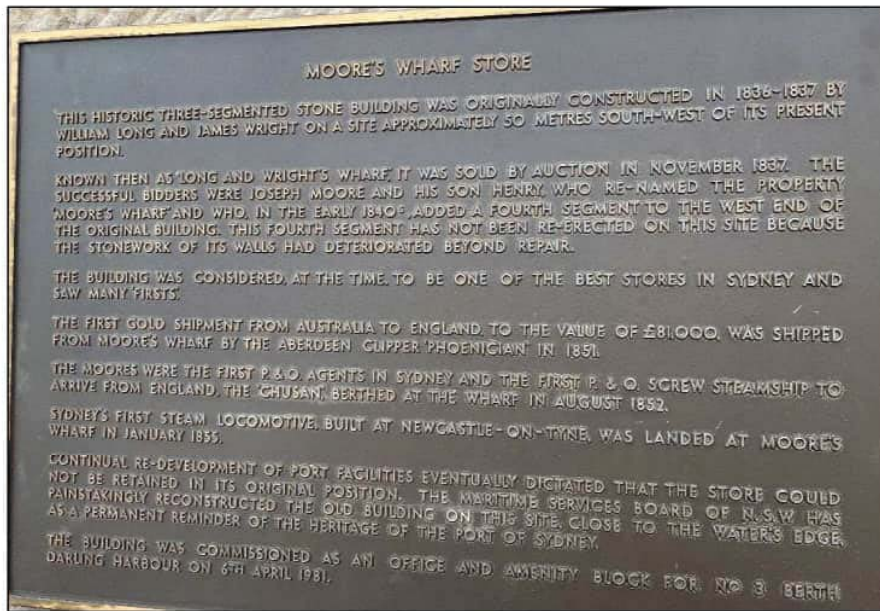


Figure 61. Commemorative Plaque displayed at the subject building, detailing story of construction of the subject site, including its relocation and development history (Source: Heritage 21, 9 April 2024)

CHRONOLOGY OF BOND STORE AT MOORE'S WHARF*	
1807	Area known as Cockle Bay
1835	William Long and James Wright listed as claimants for allotments 9 and 10 of City Section 92 on survey plans and began developing site.
July, 1836	Long and Wright granted allotment 19 of 3 acres, 2 rods and 7½ perches.
17 November, 1837	Detailed description of Bond Store and Wharf appears in advertisement in the newspaper "Australian".
January, 1838	Title conveyed by Long and Wright to Joseph Moore and Henry Moore.
1838-1844	Fourth Store (Bay IV) erected on Lot 7.
30 May, 1844	Titles of Wharf and Stores surrendered to Thacker, Mason and Co, wool brokers.
1845	Bays I-III described as shingled. Bay IV " " " slated.
November 1847	Title conveyed to James Matheson of Durham House, Saint James Park in the County of Middlesex M.P.
1848-51	Entire Store described as slated.
1851	Henry Moore leased store.
1852	P & O Royal Mail Company located at Moore's Wharf.
3 April 1853	Royal Mail Steamer "Chusan" berthed marking the commencement of the first regular mail service between England and New South Wales.
1854	Henry Moore re-bought property.
1868	Henry Moore member of Legislative Council.
4 July 1888	Death of Henry Moore.
1891	Trustees leased Wharf to Sydney Stevedoring and Wool Dumping Co. Ltd.
1900	Wharves and stores to Darling Harbour resumed by the Government to control rat and plague problem.
August 1902	Moore's Wharf released to the Crown.

*taken from Historical Research Report compiled by Fox and Associates, Architects/Planners, 29 August 1978.

Figure 62. Extract of the Chronology of the Moore's Wharf building. Note that the original Historical Research Report by Fox and Associates could not be found (Source: R.J. Lampert & M.C. Trustcott, *The Archaeological Investigation of the Bond Store, Moore's Wharf: A Draft Report for the Maritime Services Board and the Heritage Council of N.S.W.*, 1984, Table 1)

Unless otherwise stated, the images below have been sourced from the NSW Government's Historical Imagery Viewer and annotated by Heritage 21. As noted above, the subject building was relocated in the late 1970s. The building is still in its original position in the 1970 aerial image, and relocated in the 1986 image (refer to Figure 66 and Figure 67). The fourth bay could not be relocated, and as such, the reconstructed building only features three bays. This can be seen in the aerial images post-1970 as the new building is shorter in length.

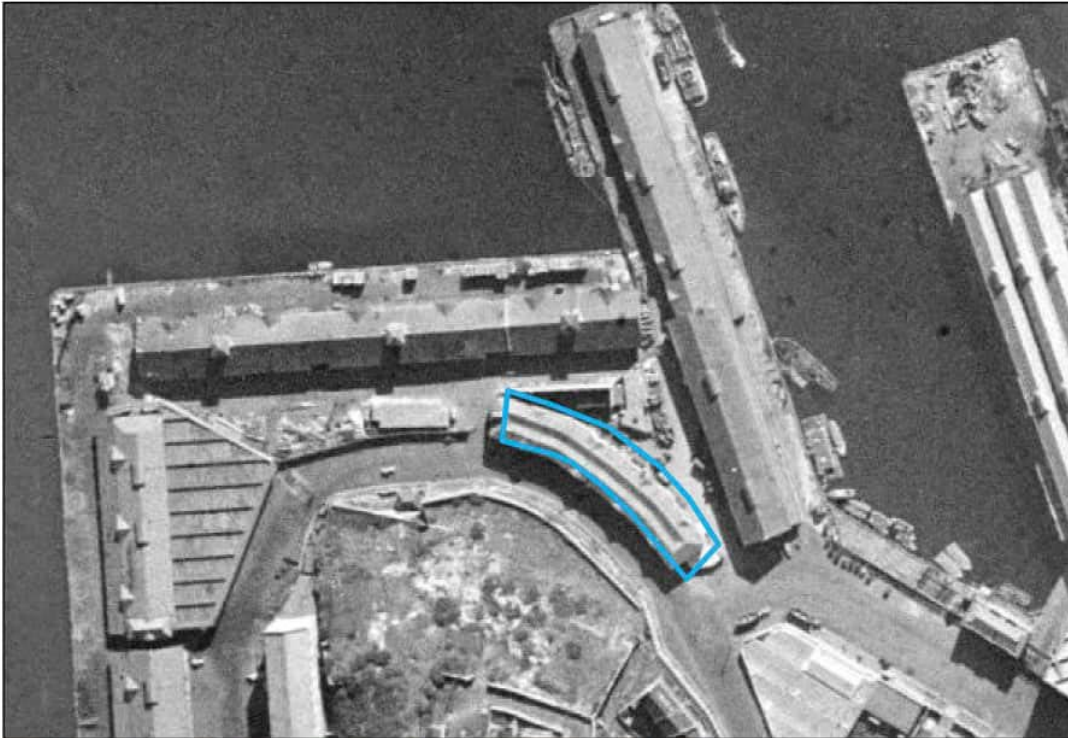


Figure 63. 1943 aerial view of the site (Source: NSW Government Spatial Services, accessed 23 April 2024, <https://portal.spatial.nsw.gov.au/portal>, annotated by Heritage 21)

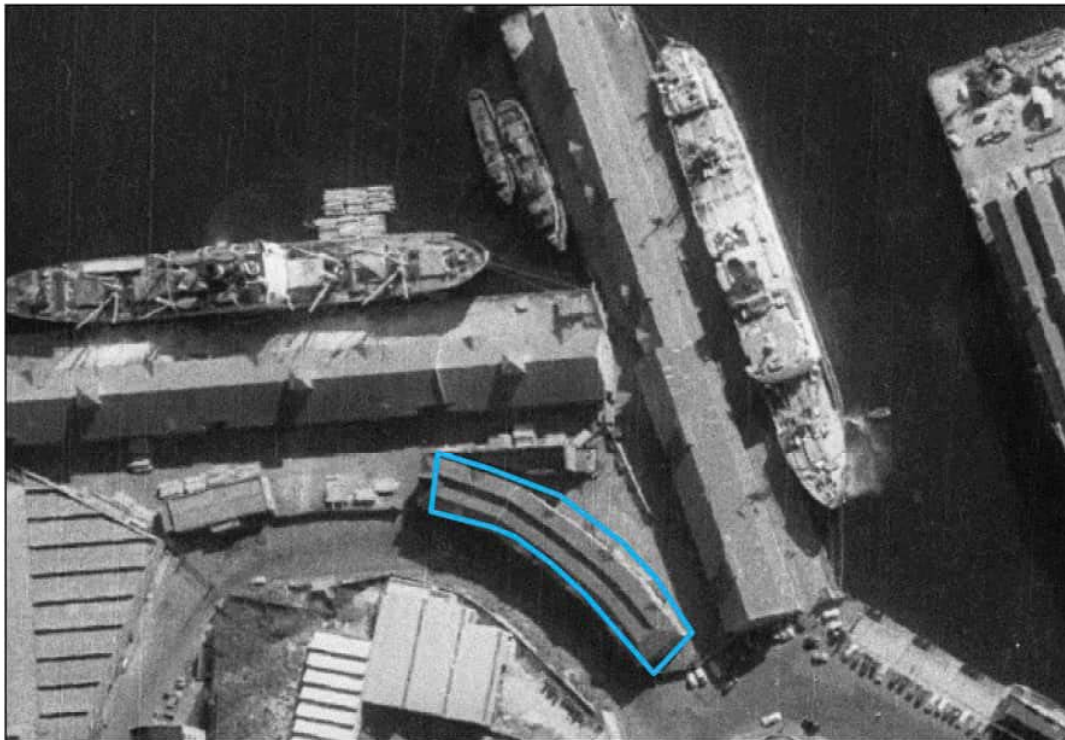


Figure 64. 1955 aerial view of the site (Source: NSW Government Spatial Services, accessed 23 April 2024, <https://portal.spatial.nsw.gov.au/portal>, annotated by Heritage 21)

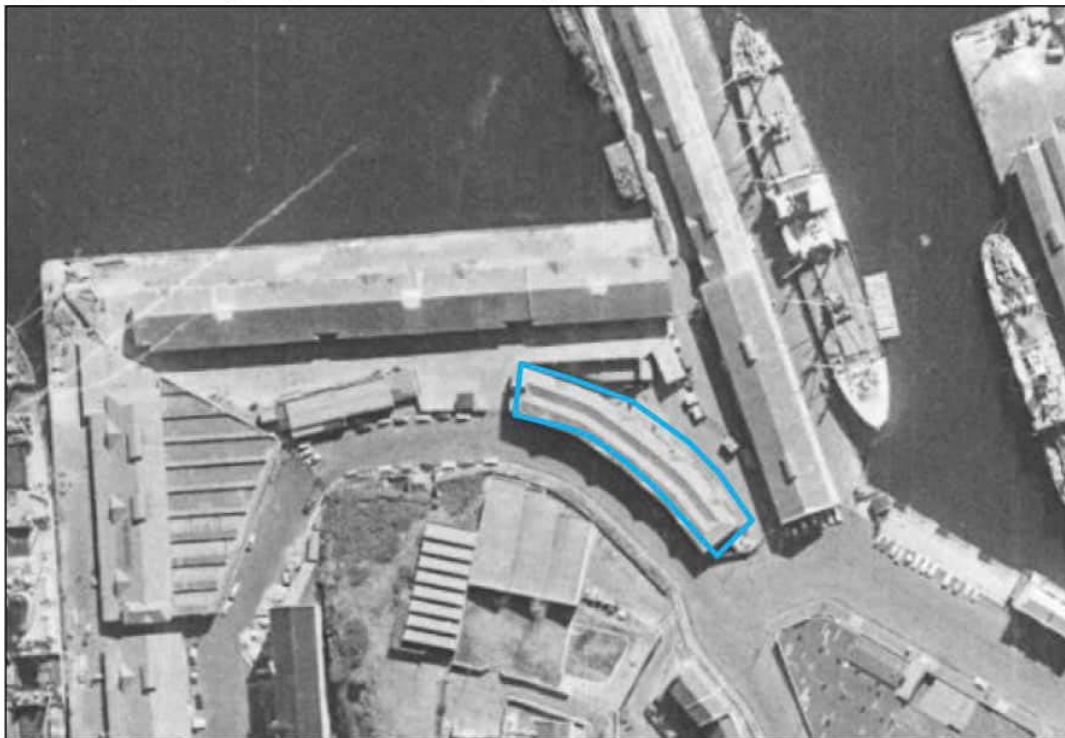


Figure 65. 1965 aerial view of the site (Source: NSW Government Spatial Services, accessed 23 April 2024, <https://portal.spatial.nsw.gov.au/portal>, annotated by Heritage 21)

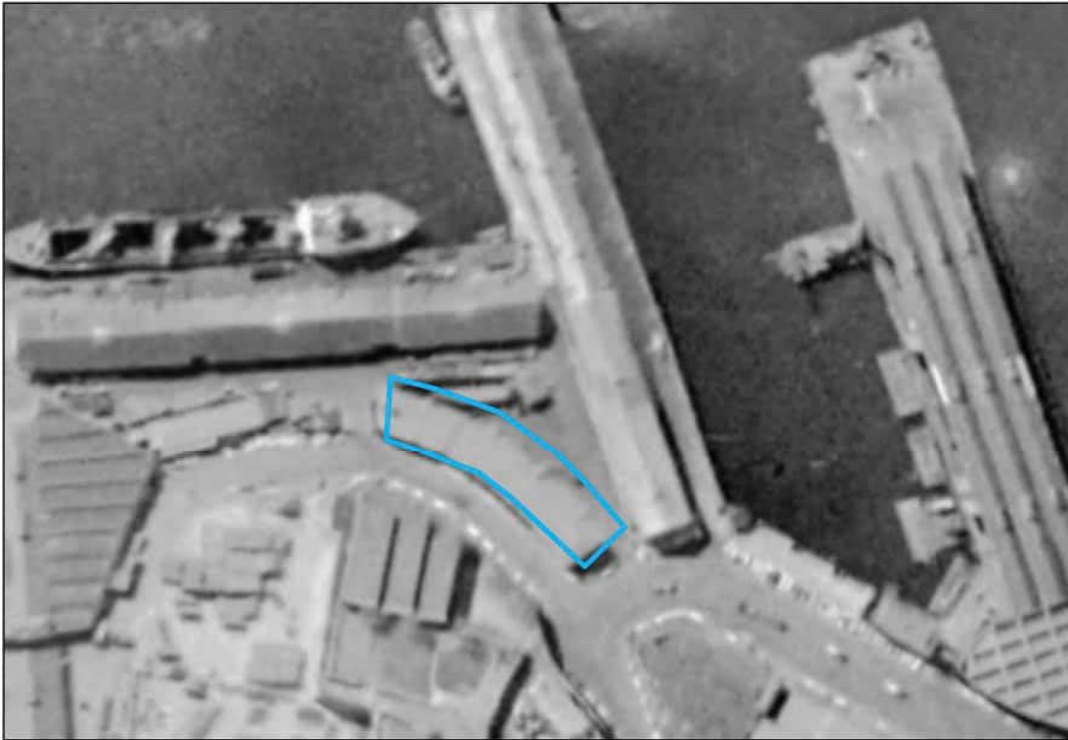


Figure 66. 1970 aerial view of the site (Source: NSW Government Spatial Services, accessed 23 April 2024, <https://portal.spatial.nsw.gov.au/portal>, annotated by Heritage 21)

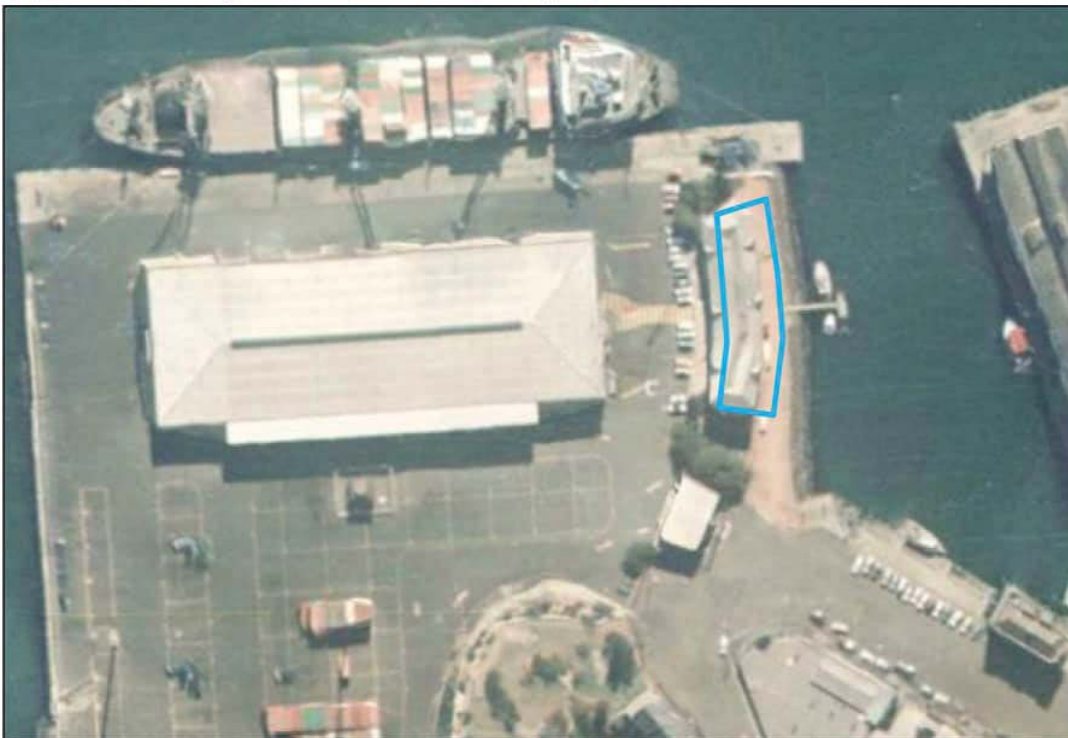


Figure 67. 1986 aerial view of the site (Source: NSW Government Spatial Services, accessed 23 April 2024, <https://portal.spatial.nsw.gov.au/portal>, annotated by Heritage 21)



Figure 68. 1991 aerial view of the site (Source: NSW Government Spatial Services, accessed 23 April 2024, <https://portal.spatial.nsw.gov.au/portal>, annotated by Heritage 21)



Figure 69. 2005 aerial view of the site (Source: NSW Government Spatial Services, accessed 23 April 2024, <https://portal.spatial.nsw.gov.au/portal>, annotated by Heritage 21)

Mooring anchors, also listed under the Port Authority of NSW Section 170 Register, were relocated to the Moore's Wharf site in 2017.⁵⁶ They are currently located towards the southern end of the site, marked by the red arrow in Figure 5.



Figure 70. Image of the Mooring Anchors currently on display at the Moore's Wharf site (Source: Heritage 21, 9 April 2024)

⁵⁶ Port Authority of NSW, *Rare anchors installed at Moore's Wharf*, 2017 News, <https://www.portauthoritynsw.com.au/news-and-publications/2017-news/rare-anchors-installed-at-moore-s-wharf/>, accessed 6 February 2024.

APPENDIX B - DRAWINGS

Our assessment of the proposal is based on the following drawings by Group GSA dated 27 September 2024 and received by Heritage 21 on 1 October 2024. These are reproduced below for reference only; the full set of drawings accompanying the REF should be referred to for any details. If any major changes are made the design, the heritage impacts should be re-assessed.

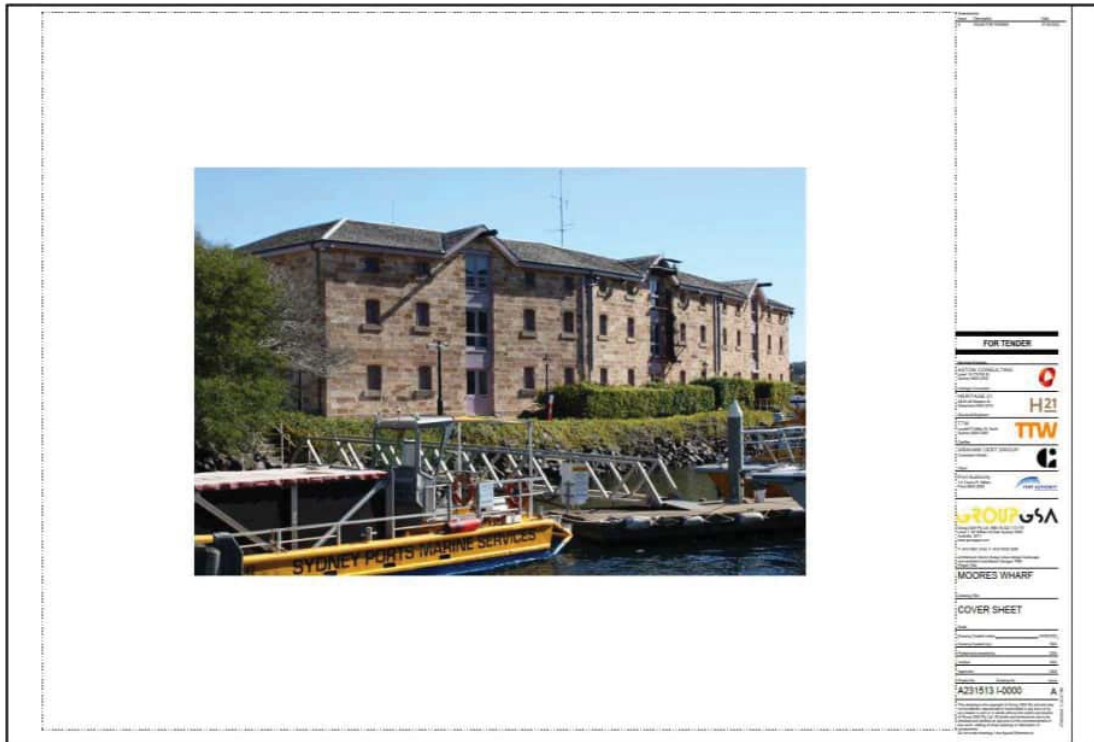


Figure 71. Cover Sheet

Statement of Heritage Impact *Moore's Wharf Building* 4 Towns Place, Millers Point

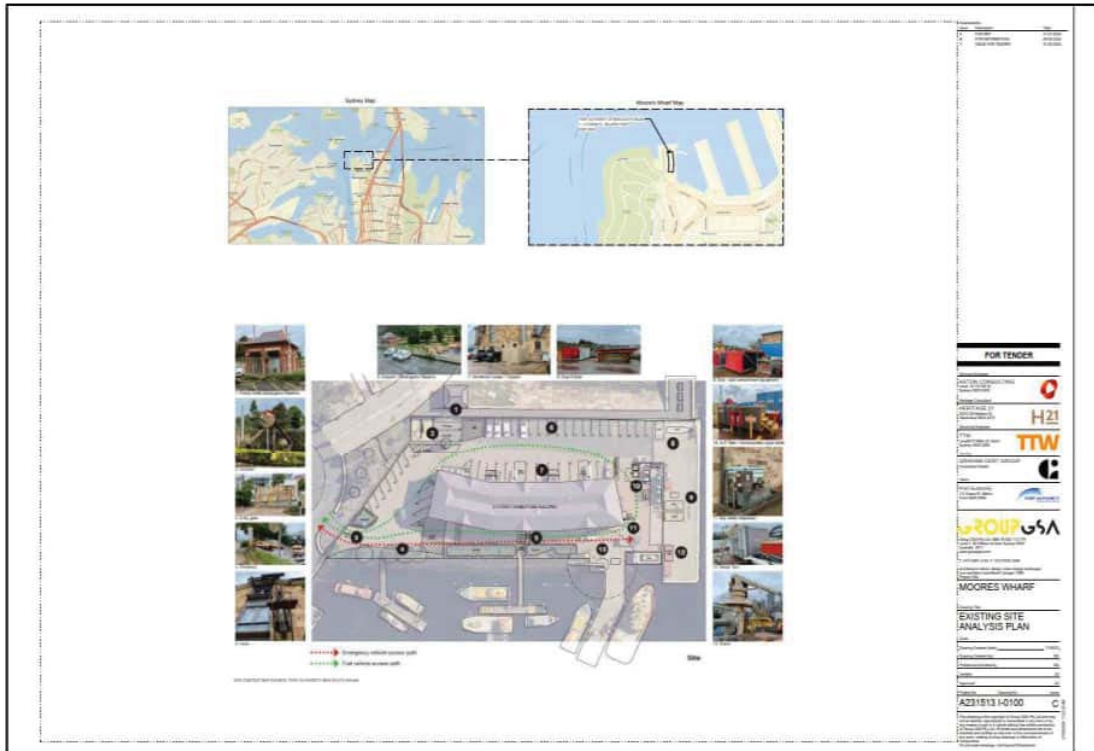


Figure 72. Existing Site Context/Site Analysis Plan

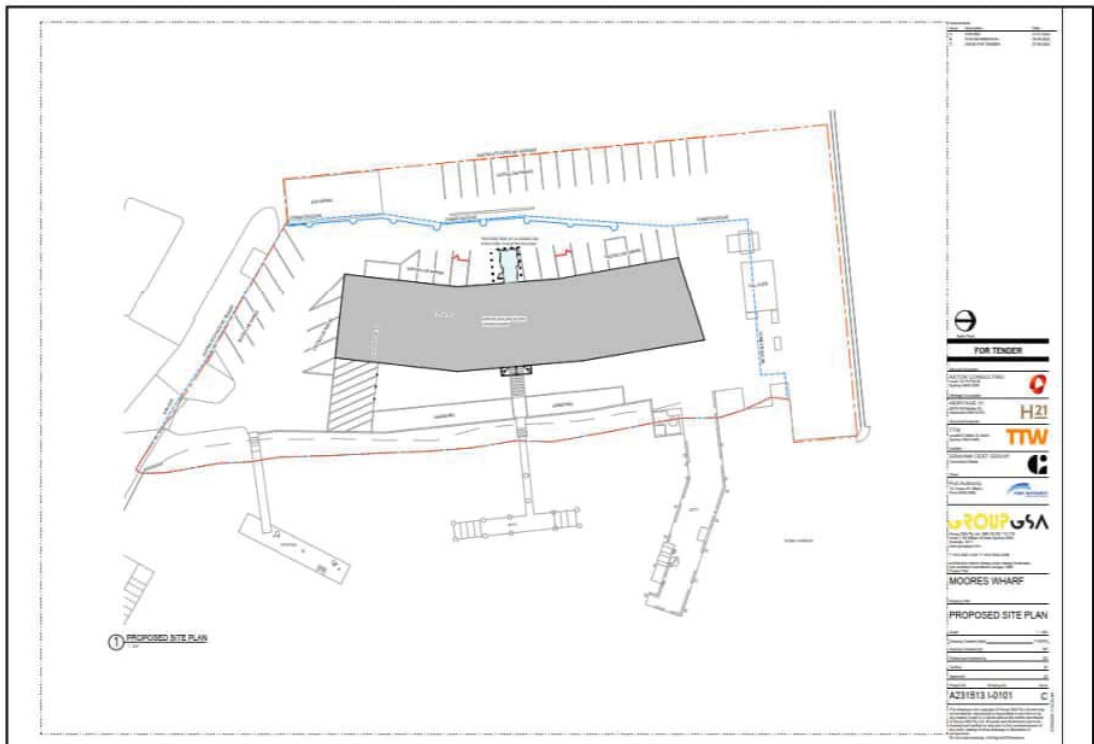


Figure 73. Proposed Site Plan

Statement of Heritage Impact *Moore's Wharf Building* 4 Towns Place, Millers Point

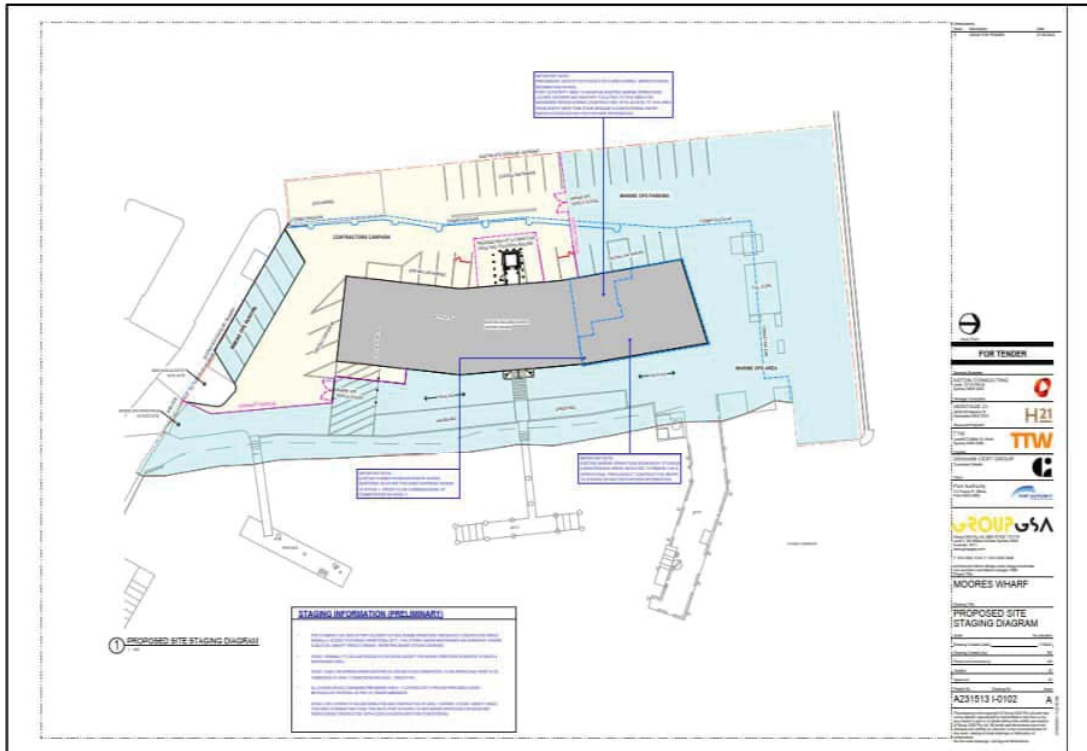


Figure 74. Proposed Site Staging Diagram

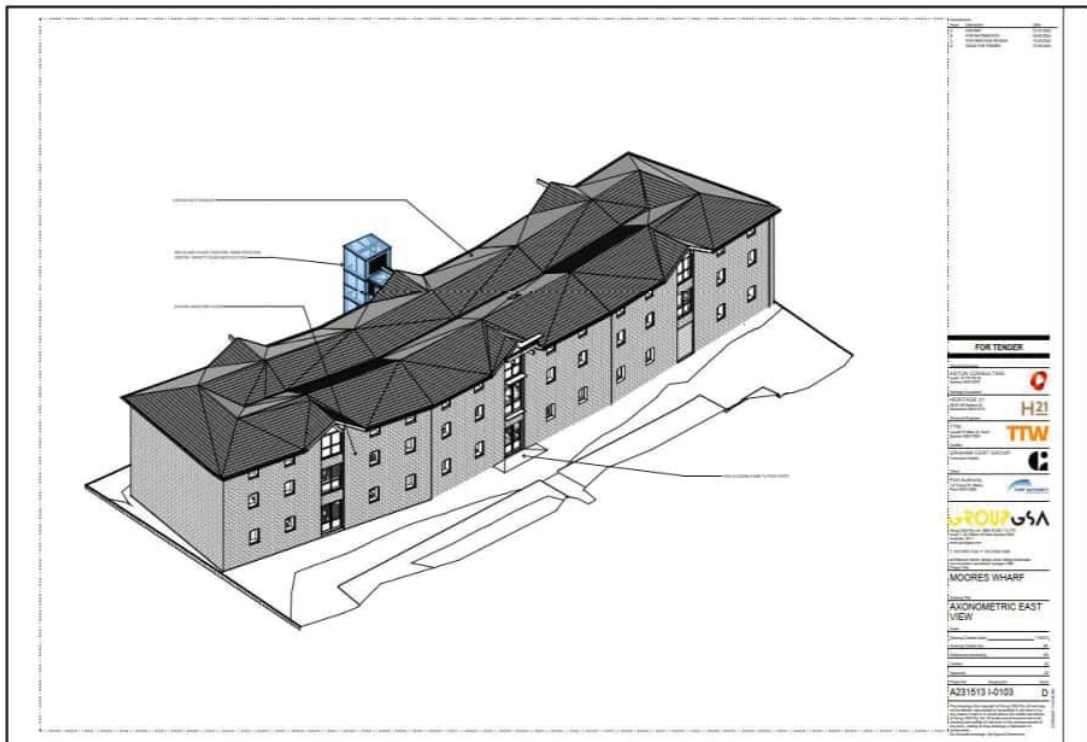


Figure 75. Axonometric East View

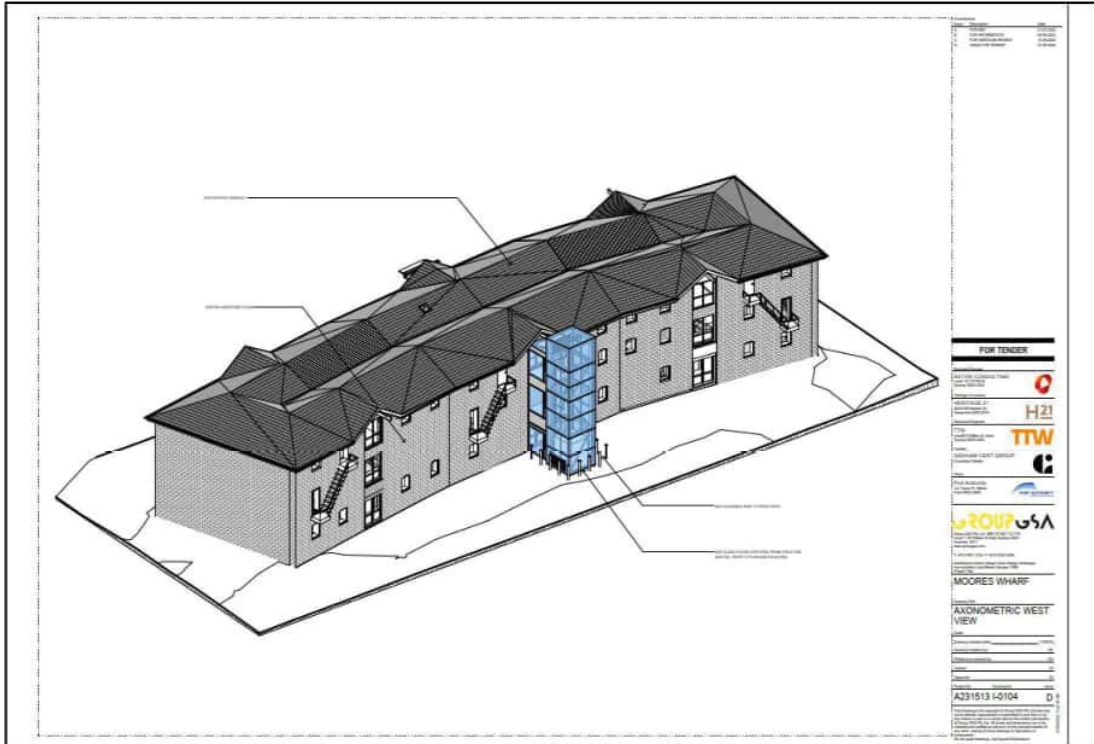


Figure 76. Axonometric West View

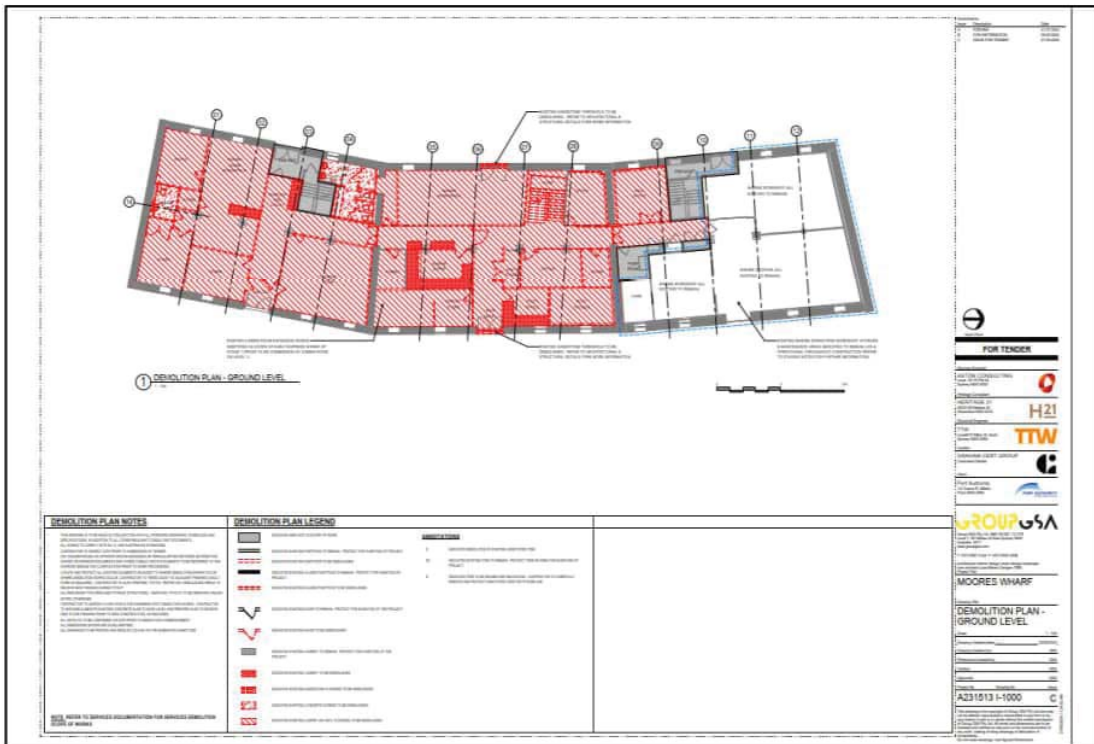


Figure 77. Demolition Plan – Ground Level

Statement of Heritage Impact *Moore's Wharf Building* 4 Towns Place, Millers Point

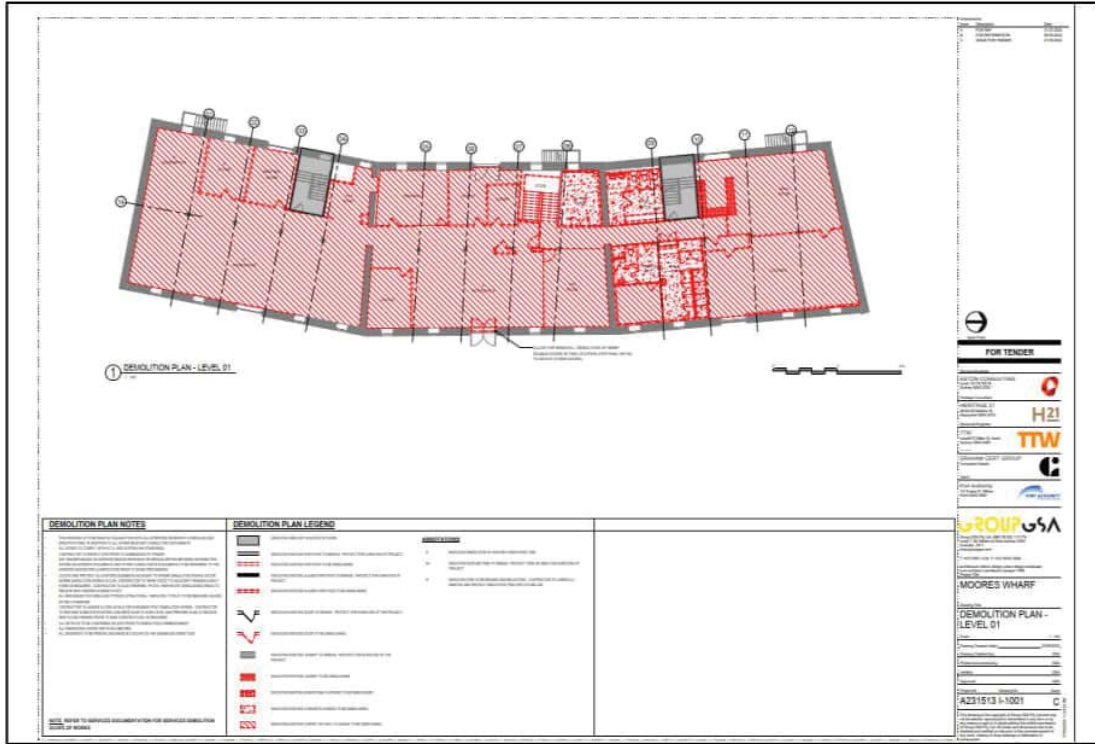


Figure 78. Demolition Plan – Level 01

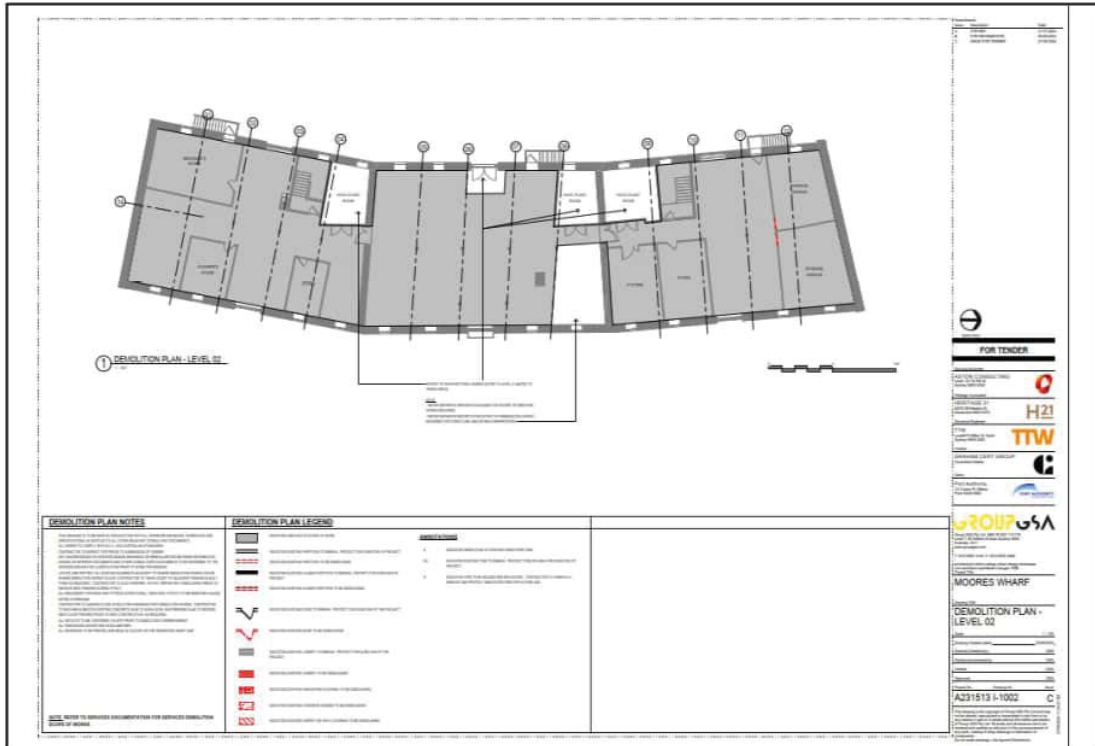


Figure 79. Demolition Plan – Level 02

Statement of Heritage Impact *Moore's Wharf Building* 4 Towns Place, Millers Point

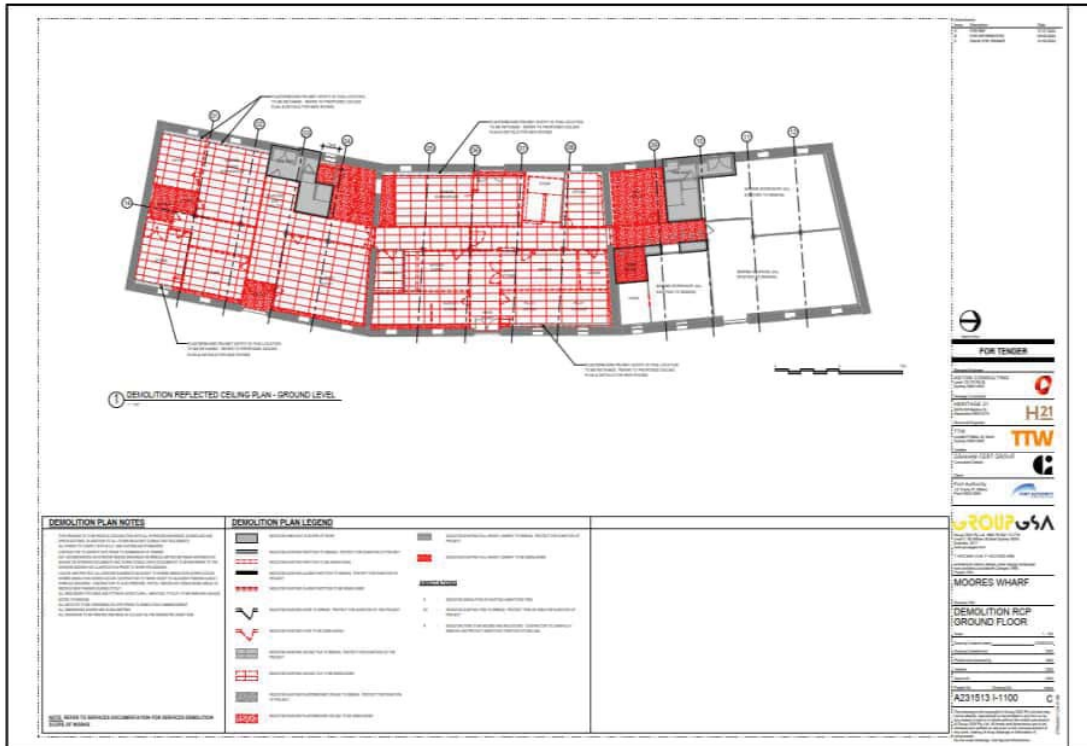


Figure 80. Demolition RCP – Ground Floor

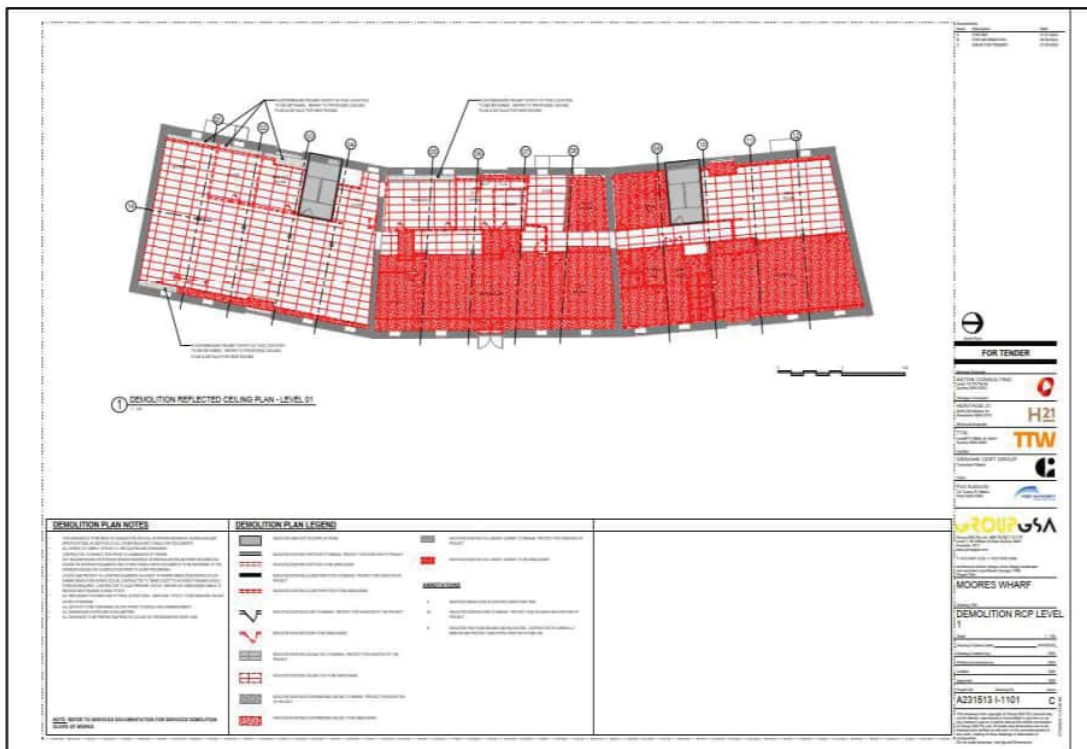


Figure 81. Demolition RCP - Level 1

Statement of Heritage Impact *Moore's Wharf Building* 4 Towns Place, Millers Point

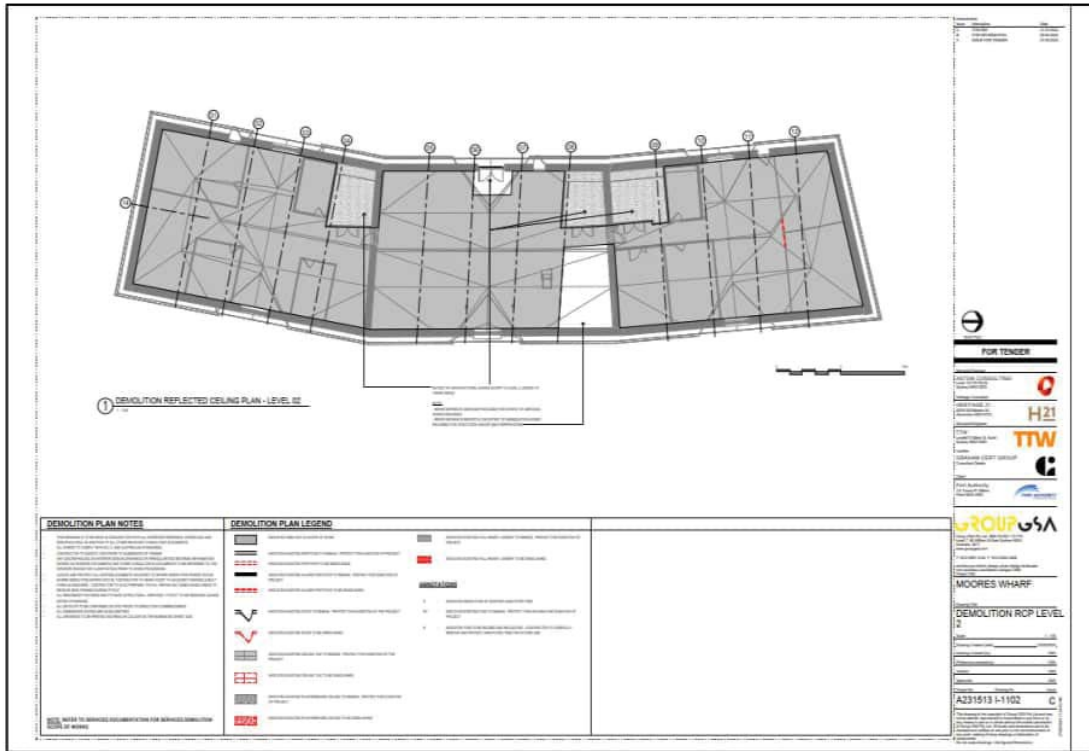


Figure 82. Demolition RCP - Level 1

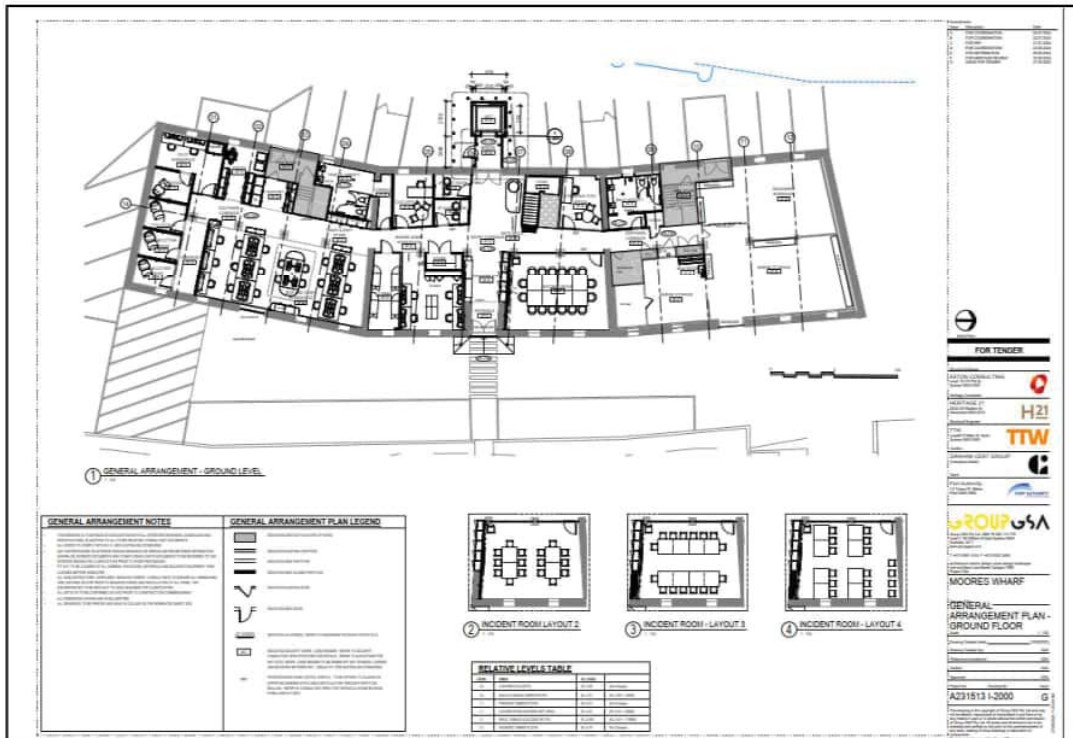


Figure 83. Arrangement Plan – Ground Floor

Statement of Heritage Impact *Moore's Wharf Building* 4 Towns Place, Millers Point

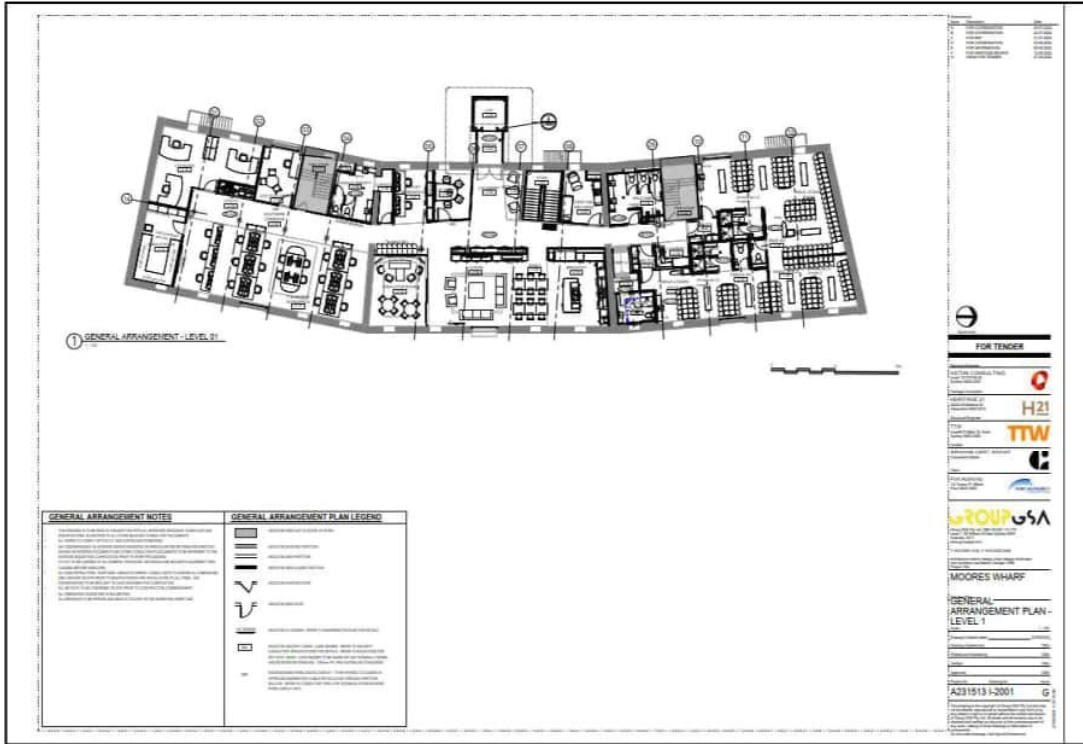


Figure 84. Arrangement Plan – Level 1

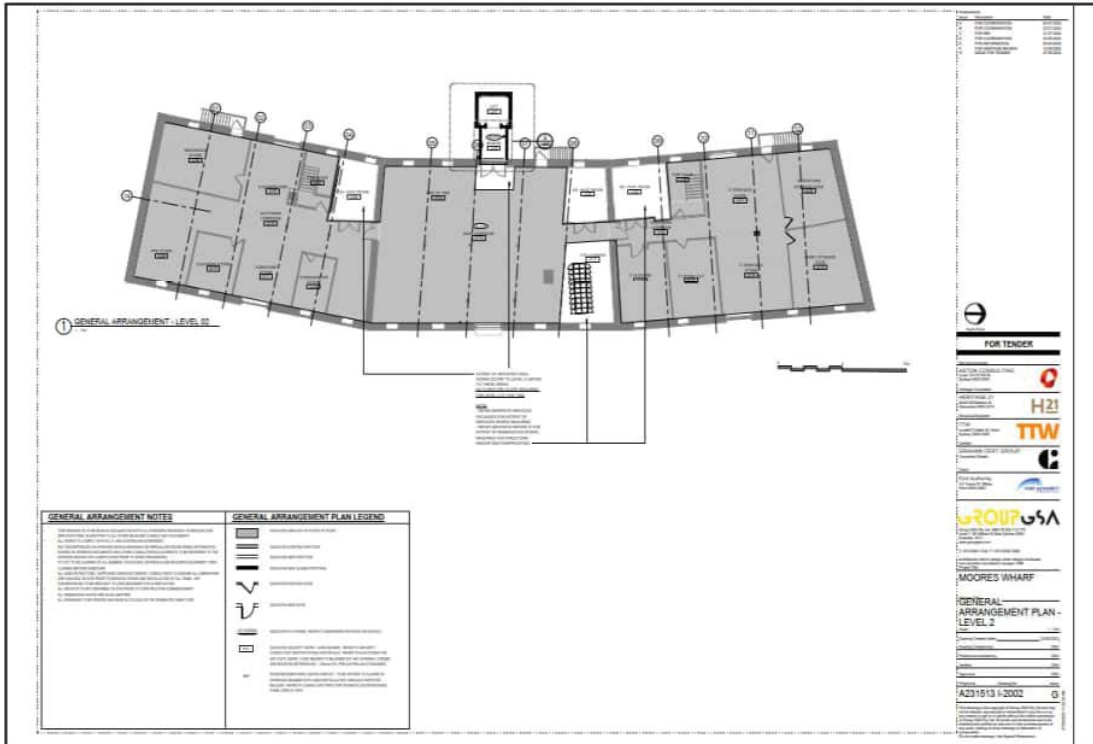


Figure 85. Arrangement Plan – Level 2

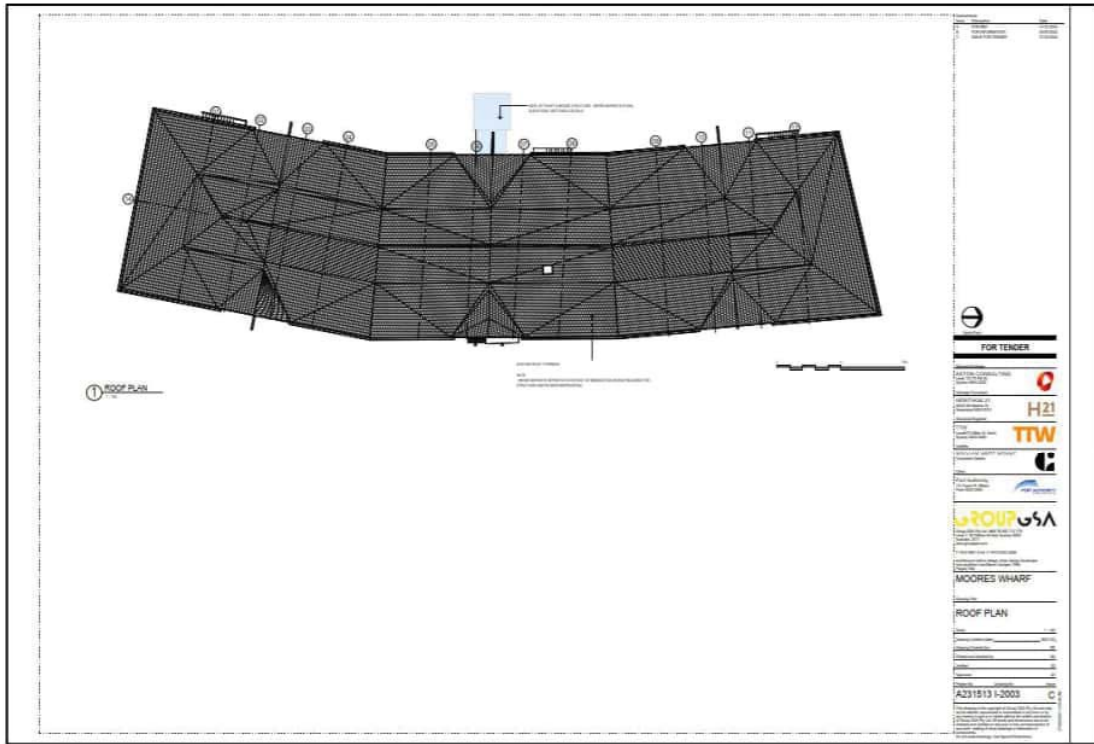


Figure 86. Roof Plan

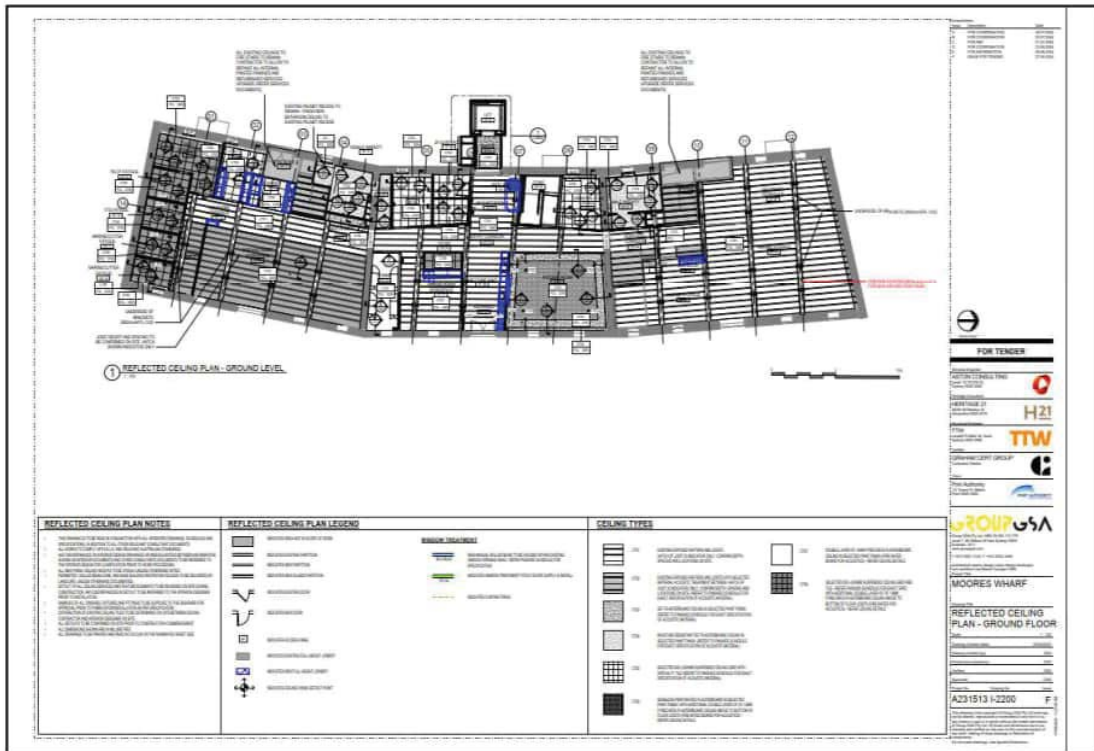


Figure 87. Reflected Ceiling Plans – Ground Floor

Statement of Heritage Impact *Moore's Wharf Building* 4 Towns Place, Millers Point

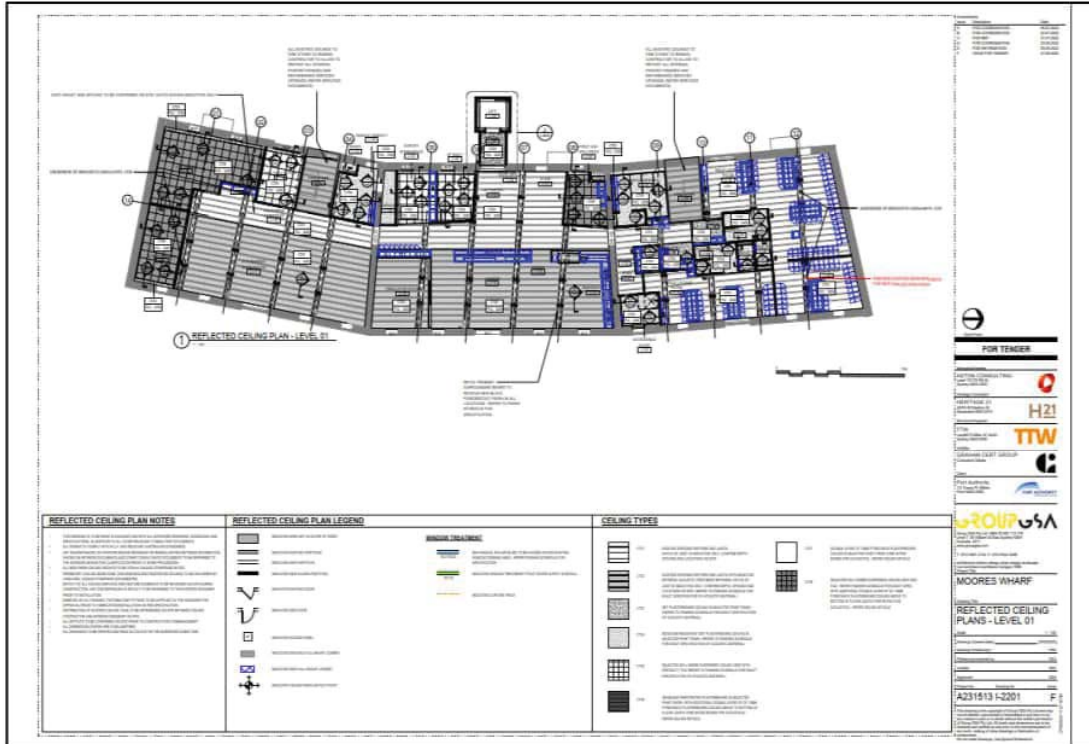


Figure 88. Reflected Ceiling Plans – Level 01

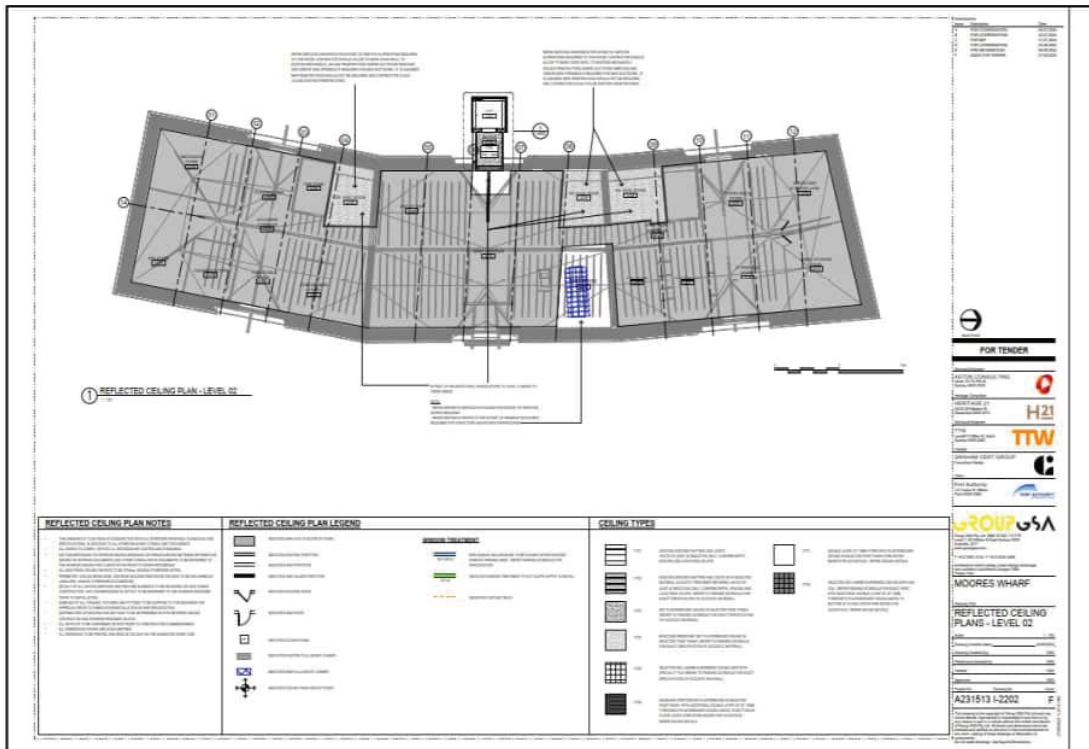


Figure 89. Reflected Ceiling Plans – Level 02

Statement of Heritage Impact *Moore's Wharf Building* 4 Towns Place, Millers Point

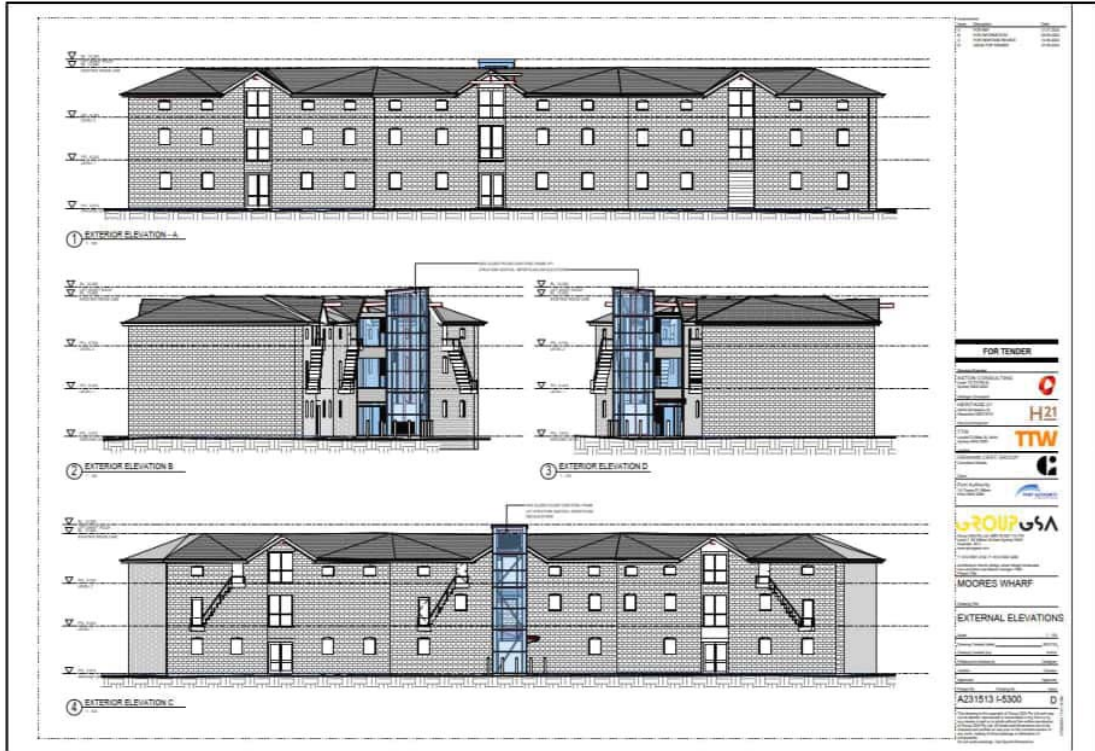


Figure 90. External Elevations



Figure 91. Building Sections

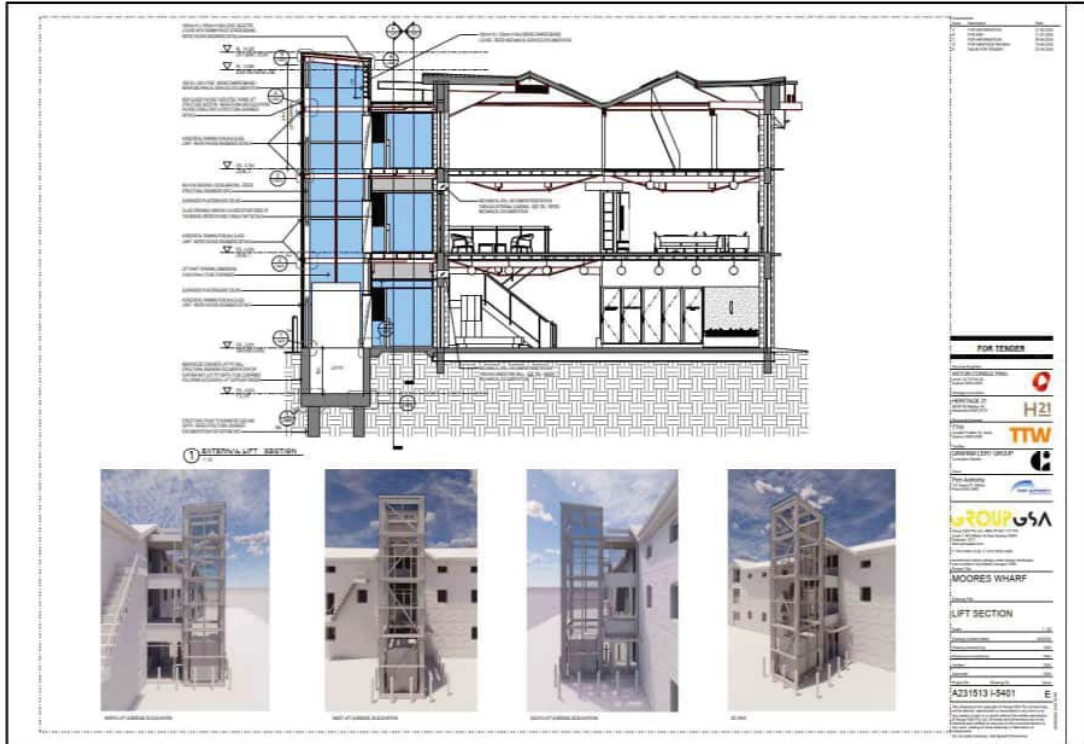


Figure 92. Lift Section



Appendix C. Heritage NSW Consultation



Tim Smith (OAM)
 Director – Heritage Assessments
 Heritage NSW
 Level 14, 4PSQ
 Parramatta NSW 2150

Email: Tim.Smith@environment.nsw.gov.au
 Cc: heritagemailbox@environment.nsw.gov.au

Dear Mr Smith,

Moore's Wharf Building Renewal project – Consultation as per clause 4.14 of the State Agency Heritage Guide

Port Authority of New South Wales (Port Authority) is proposing alterations and additions to the Moore's Wharf Building (subject building), located at 4 Towns Place, Millers Point (the site).

The "Moore's Wharf Building" is listed on Port Authority's Section 170 Heritage and Conservation Register as item no. 4560018 and has been assessed as having State heritage significance (not listed on the State Heritage Register).

The purpose of this letter is to consult and seek feedback from Heritage NSW prior to commencing works, as per clause 4.14 of the State Agency Heritage Guide (SAHG) (NSW Heritage Office, 2005), issued by the Heritage Council of NSW under section 170A(3) of the *Heritage Act 1977* (NSW).

Section 170A of the Heritage Act states that

(2) Each government instrumentality is responsible for ensuring that the items entered on its register under section 170 and items and land to which a listing on the State Heritage Register applies that are under its care, control or management are maintained with due diligence in accordance with State Owned Heritage Management Principles approved by the Minister on the advice of the Heritage Council and notified by the Minister to government instrumentalities from time to time.

(3) The Heritage Council can from time-to-time issue heritage asset management guidelines to government instrumentalities, being guidelines with respect to the conservation of the items entered on registers under section 170 and items and land to which a listing on the State Heritage Register applies that are under the care, control or management of the government instrumentality. The guidelines can relate to (but are not limited to) such matters as maintenance, repair, alteration, transfer of ownership and demolition. A government instrumentality must comply with the guidelines.

Port Authority, as a 'government instrumentality', is responsible for ensuring compliance with sections 170 and 170A of the Heritage Act and that the items entered on its s170 Heritage and Conservation Register are

YAMBA	NEWCASTLE	SYDNEY	PORT KEMBLA	EDEN
PO Box 143 Yamba NSW 2464 T: 61 2 6646 2002	PO Box 663 Newcastle NSW 2300 T: 61 2 4985 8222	PO Box 25 Millers Point NSW 2000 T: 61 2 9296 4999	PO Box 89 Port Kembla NSW 2505 T: 61 2 4275 0100	PO Box 137 Eden NSW 2551 T: 61 2 66461596

maintained with due diligence in accordance with the State Agency Heritage Guide (SAHG) (NSW Heritage Office, 2005), issued by the Heritage Council of NSW.

Clause 4.14 of the SAHG states that:

Proposals involving the alteration, disposal or demolition of the heritage assets of State heritage significance (not listed on the State Heritage Register) should be referred to the Heritage Council for comment. Note that the Heritage Council will provide comment to the State Agency within 40 days of receipt of the proposal.

Heritage 21 has prepared a Statement of Heritage Impact (SoHI) (**attached**) – on behalf of Group GSA who have been engaged by Port Authority – to assess the potential impacts of the proposed works. The SoHI will support a Review of Environmental Factors (REF), which is currently being prepared to assess the proposal.

The following is a summary of the proposal. Further information can be found in the attached SoHI.

Site

The existing site, its context and setting are shown below in Figure 1, with detail of heritage curtilage shown in Figure 2, a photograph of the site in Figure 3, and the external lift in Figure 4.

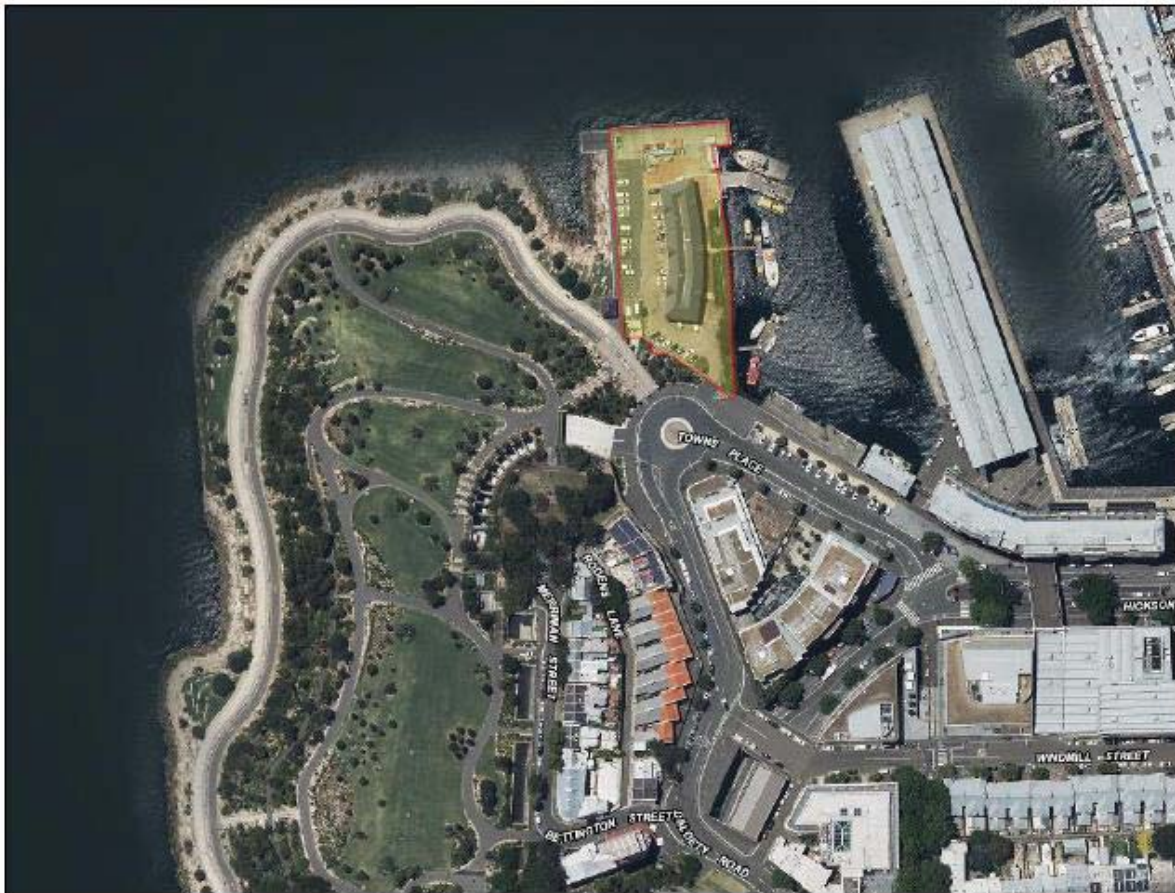


Figure 1: Contemporary aerial view of the site highlighted in yellow and surrounding urban environment (Source: SoHI, Heritage 21, October 2024; NSW Spatial Services, "SIX Maps," accessed 6 February 2024, <http://maps.six.nsw.gov.au>).



Figure 2: Detail of heritage curtilage of Moore's Wharf Building Curtilage SHI 4560018, in red. Port Authority of NSW land ownership is outlined in blue. (Source. Port Authority of NSW, 2024).



Figure 3: External view of the western elevation of the Moore's Wharf Building, facing north-east (Source: SoHI, October 2024).



Figure 4: Axonometric west view, issue A (source: Group GSA, 2024).

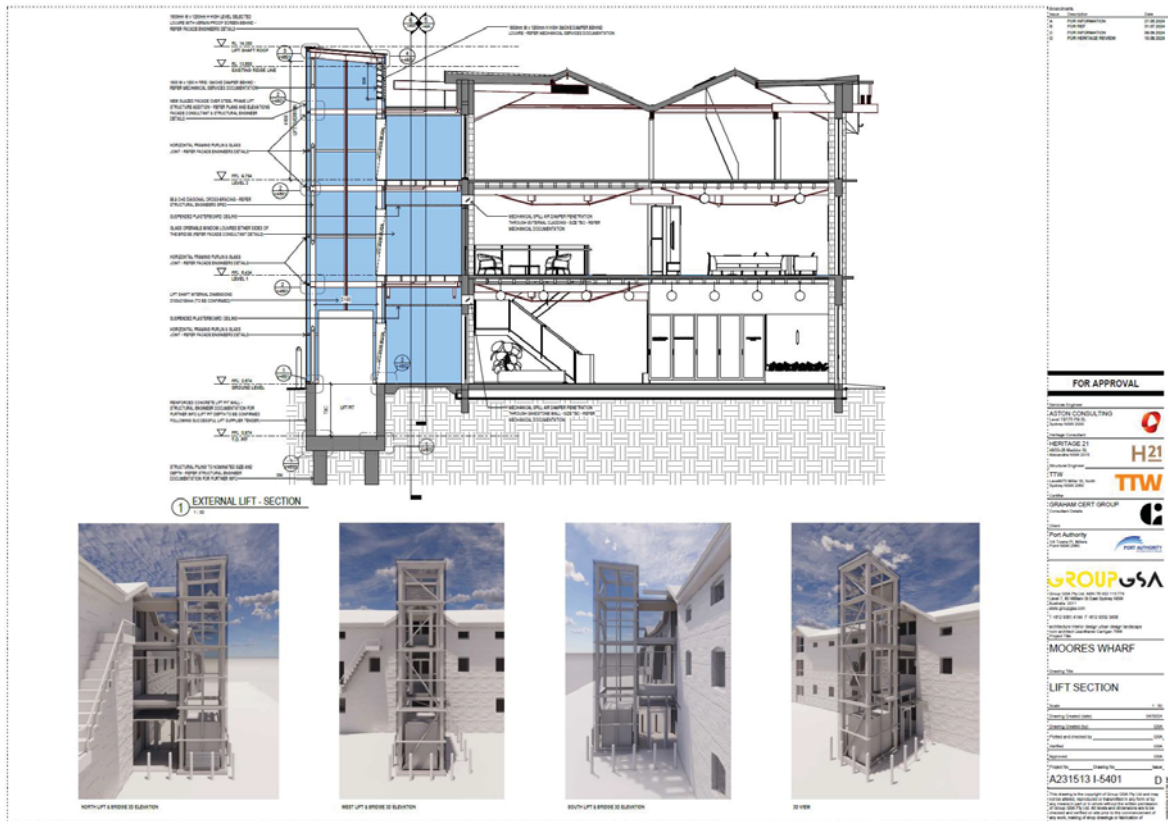


Figure 5: Lift section (source: Group GSA, 2024).

Scope of works

The scope of works involves a major internal refurbishment of the three-storey Moore's Wharf building to accommodate the requirements of the maritime base operations for the Port Authority. The proposal also includes the installation of a new lift to meet current accessibility, emergency access and building regulation requirements. The proposed alterations and additions include:

- constructing a new external lift and connecting structure to existing building.
- major internal refurbishment of the Moore's Wharf building, involving:
 - demolition of majority of partitions, glazed partitions, joinery and doors on Ground Level.
 - demolition of all partitions, glazed partitions, joinery and doors on Level 1.
 - removal of ceiling tiles and plasterboard ceilings on Ground Level and Level 1.
 - introduction of new layout to the Ground Level and Level 1 utilising lightweight partitions and glazed partitions.
 - new services and fittings in bathroom and kitchen areas.

Further details of the proposal and drawings of the proposed alterations are included in the attached SoHI.

It would be appreciated if any comments or feedback on the proposal can be provided as soon as possible.

Should you request any further detail on the matters raised in this letter, please do not hesitate to contact Francisca Alvarez, Environmental Planning Officer on 0476 682 910 or via email at falvarez@portauthoritynsw.com.au

Yours sincerely,



Fiona McKay
Principal Environmental Planner

9 October 2024

Attachment:

Statement of Heritage Impact: Proposed alterations and additions at Moore's Wharf Building, prepared by Heritage 21, dated October 2024

Francisca Alvarez
Environmental Planning Officer
Port Authority of New South Wales
PO Box 25, Millers Point NSW 2000
Email: falvarez@portauthoritynsw.com.au

Moore's Wharf Building Renewal Project

Dear Ms Alvarez

Thank you for the opportunity to be consulted in relation to the proposed alterations and additions to the Moore's Wharf Building at 4 Towns Place, Millers Point. Moore's Wharf Building is listed on Port Authority's section 170 Heritage and Conservation Register (item 4560018) and has been assessed as having State heritage significance.

I understand that this consultation is being undertaken in accordance with clause 4.14 of the State Agency Heritage Guide (2005) that requires agencies to consult with the Heritage Council on proposals including alterations to heritage assets of State heritage significance that are not listed on the State Heritage Register. I note that the proposal is for the addition of an external lift and for major internal refurbishment works. The works will be conducted under a Review of Environmental Factors (REF) that will be determined by Port Authority under the Transport and Infrastructure State Environmental Planning Policy 2021 (the SEPP).

Heritage NSW appreciates the positive intent of the proposed works to enable continuing adaptive use of Moore's Wharf Building and to provide all abilities access to all floors.

We have reviewed the Statement of Heritage Impact (SOHI) prepared by Heritage 21 (dated October 2024) that was provided with the referral and prepared the following advice. This advice has been informed by our recent meetings with you and your team.

Visual impacts of the proposed lift need to be considered

The external lift well presents a marked change to the vistas of the building and surrounding the site from other heritage sites. The lift well structure would be visible from the harbour and change the original frontage of the building. A visual impact is also likely from Walsh Bay Wharves and the Millers Point / Dawes Point Village Precinct. The SOHI could be strengthened by including a detailed visual impact assessment.

We understand from our meeting (31 October 2024) that various options for the lift have been considered. We suggest including an options analysis in the REF that sets out how the proposed lift design and location has been selected, and how heritage considerations have been balanced in this decision making.

Our key concerns in relation to the lift include:

- The lift well structure extends above the roofline of the heritage building.
- The lift well appears to require deep excavation and an archaeological impact assessment is therefore required.

The proposed building renovation works require careful planning

We understand that a detailed significance assessment of the Moore's Wharf Building was completed as part of the Port Authority's recent update to its s170 register. This work should be incorporated into the SOHI.

We recommend that:

- The grading of significance of different features of the building (as established through the detailed significance work already undertaken) is incorporated into detailed heritage management recommendations that form the basis for instruction to contractors.
- Where possible, existing penetrations to heritage fabric are reused. Creating new penetrations, for example for plumbing and electrical services, should be avoided.
- The architect should provide detailed plans of proposed fix points to help avoid unnecessary impacts.
- A detailed heritage induction is provided to all construction workers.
- Hold points are developed to provide opportunities for the heritage architect to inspect works and to help avoid unintended impacts to the heritage fabric.
- The height of the lift well structure is reduced if possible, noting that the mechanics of the lift are a constraint in this regard.

Potential archaeological values and impacts need to be assessed

The scope of the SOHI does not include archaeological assessment. We note that the Moore's Wharf Building is located on reclaimed land. Given this, we advise that there is limited risk of Aboriginal archaeological deposits being present however a desktop assessment of the potential for historical or maritime archaeological deposits should be conducted to inform the REF.

Historical and maritime archaeological assessments should be prepared by suitably qualified and experienced historical and maritime archaeologists (respectively) in accordance with the guidelines Archaeological Assessment (1996) and Assessing Significance for Historical Archaeological Sites and Relics (2009). Any maritime archaeological works must be undertaken by a suitably qualified and experienced maritime archaeologist as defined in the Australasian Institute for Maritime Archaeology Code of Ethics s 2 e.

The historical and maritime archaeological assessments should identify what relics, if any, are likely to be present (known as archaeological potential), assess their significance and consider the impacts from the proposal on this potential archaeological resource. Where harm is likely to occur, it is recommended that the significance of the relics be considered in determining an appropriate mitigation strategy. If harm cannot be avoided in whole or part, a s140 permit is required. As part of the permit application, an appropriate Research Design and Excavation Methodology, with a nominated Excavation Director ([Criteria for assessing Excavation Directors \(nsw.gov.au\)](https://www.nsw.gov.au/criteria-for-assessing-excavation-directors)), should also be prepared to guide any proposed excavations or salvage program.

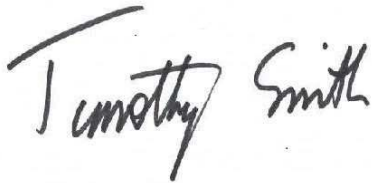
We have prepared further detailed archaeological advice at **Attachment 1** for your consideration.

Heritage NSW is able to provide further advice on future proposed relocation of the anchors

We understand that consideration is being given to moving two historic mooring anchors on the south end of the site, and that they may be relocated to another area to facilitate other projects. Heritage NSW can assist with further advice on this matter once a detailed proposal is available i.e. in regard to public interpretation and display, and conservation requirements.

If you have any questions about the above, please contact Rose O'Sullivan at Heritage NSW on 4224 4177 or heritagemailbox@environment.nsw.gov.au.

Yours sincerely

A handwritten signature in black ink that reads "Timothy Smith". The signature is written in a cursive, slightly slanted style.

Tim Smith OAM
Director Assessments
Heritage NSW
As Delegate of the Heritage Council of NSW and for Heritage NSW
11 November 2024

Attachment 1 – Archaeological assessment recommendations

Historical Archaeology

A Historical Archaeological Assessment (HAA) desktop study is required to determine whether sites or relics are present in this area.

- A Historical Archaeological Assessment (HAA) should be prepared by a suitably qualified and experienced historical archaeologist in accordance with the guidelines Archaeological Assessment (1996) and Assessing Significance for Historical Archaeological Sites and Relics (2009).
- This assessment needs to identify what relics, if any, are likely to be present (known as archaeological potential), assess their significance and consider the impacts from the proposal on this potential archaeological resource.
- Where harm is likely to occur, it is recommended that the significance of the relics is considered in determining an appropriate mitigation strategy.
- If harm cannot be avoided in whole or part, a s140 permit would be required. As part of the permit application, an appropriate Research Design and Excavation Methodology, with a nominated Excavation Director (Criteria for Assessing Excavation Directors), should also be prepared to guide any proposed excavations or salvage program.
- A s.140 application may be required if any ground disturbance in areas including the lift footprint, replacement of concrete floor slab and masonry on the ground floor is likely to harm relics.
 - More information on historical archaeological approvals can be found here:
 - <https://www.environment.nsw.gov.au/topics/heritage/apply-for-heritage-approvals-and-permits/historical-archaeology>

Maritime Archaeology

We recommend that a Maritime Archaeological Desktop Assessment (MADA) is prepared for the proposed deeper excavation of the lift well, particularly given that the area has been subject to land reclamation. Previous maritime heritage items including shipwrecks or maritime infrastructure may be buried in this area and have been found in similar contexts in nearby locations.

- A Maritime Archaeological Desktop Assessment (MADA) must be undertaken to assess the potential for maritime heritage items in the proposal area. This assessment should investigate:
 - The past use of the area and possible maritime archaeological heritage items which are known to exist within the proposal area, including Underwater Cultural Heritage (UCH) such as: historic shipwrecks, historic maritime infrastructure and submerged Aboriginal Cultural Heritage objects, and whether these sites are likely to have been buried by landfill reclamation.

- Statutory databases should also be consulted and summarised in this regard (including both Commonwealth and State Maritime/ UCH Databases – dependent on jurisdiction).
 - The MADA must also similarly address the conditions outlined in the HAA (see above)
- If potential maritime heritage items are identified within the proposal area, then the following studies must be undertaken:
 - A Maritime Statement of Heritage Significance (MSOHI) and Maritime Archaeological Research Design and Excavation Methodology (MARDEM) to assess the nature, extent and significance of any UCH or maritime heritage items /sites/ relics/ artefacts that may exist within the proposal area.
 - The MSOHI must consider both the direct and indirect impacts of the proposed works and any ancillary works over short-and long-term periods on any maritime/ UCH heritage item(s) both in the proposal area and adjacent regions.
 - The MSOHI should also be guided by the principles of Commonwealth Guidelines for Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (<https://www.dcceew.gov.au/parks-heritage/heritage/publications/assessing-managing-impacts-underwater-cultural-heritage>).
 - Maritime archaeological testing may be required to inform the REF and an appropriate MARDEM should also be prepared to guide any proposed excavations. Where harm may possibly occur, the significance of the relics must be considered in determining an appropriate mitigation strategy, to be undertaken in consultation with Heritage NSW.
 - A specific Maritime Unexpected Finds Protocol (MUFP), which in addition to standard historical UFP items must specifically include:
 - briefings of onsite works staff in recognition of maritime heritage items and appropriate reporting, and management strategies.
 - consideration of short-and long-term management, conservation, storage, restoration and interpretation of any significant maritime heritage items, along with how these aspects will be funded.
 - possibility for redesign must be considered if significant maritime heritage items are discovered during works.
- All these works must be undertaken by a suitably qualified and experienced maritime archaeologist as defined in the Australasian Institute for Maritime Archaeology Code of Ethics s 2 e. (https://www.aima-underwater.org.au/files/AIMA-Code-of-Ethics-Version-0.3_FINAL.pdf).

Unexpected Heritage Finds

- If any archaeological deposits or relics are discovered during works, works must cease and the Heritage Council of NSW must be notified immediately.
- A s146 notification to the Heritage Council of NSW must be lodged through HMS. Additional assessment and approval may be required prior to works continuing in the affected area(s) based on the nature of the discovery. Advice would be provided in response to the lodged s146 notification.
- More information on discovery of a relic can be found here:
<https://www.environment.nsw.gov.au/topics/heritage/apply-for-heritage-approvals-and-permits/historical-archaeology/notify-discovery-of-a-relic>.



Appendix D. ESD Matrix



Project name	Moores Wharf Building Refurbishment
Project Location	4 Towns Place, Millers Point NSW 2000
Project NLA - Class 5 & 7b (m2)	1,620
No. of Computers/ Workstations	52
Date	23/09/2024
Revision	Final Issue (For Tender)

Bold = Primary responsibility

Code	Initiatives	Summary of Requirements	Documentation Required	Responsibility
Energy				
1	E1 Energy Efficiency (towards Net Zero)	Conduct an assessment of the past performance of the Moores Wharf Building and set a target for at least 35% reduction in energy use intensity. Develop a plan to ensure that the fitout achieves these targets by conducting energy modelling/estimation.	1. Past 24 months of electricity consumption profile / bills (PA NSW) 2. Develop a baseline Energy Use Intensity (Aston Sustainability)	- Aston Sustainability - Port Authority
2	E2 Target NABERS Energy tenancy rating (self-assessed)	Prepare a energy estimation budget based on the NABERS Reverse calculator for the tenancy to achieve 5 Star NABERS Energy Tenancy rating (self-assessed).	1. NABERS Reverse Calculator (Aston Sustainability)	- Aston Sustainability - Group GSA - Aston Consulting
3	E3 Efficient electrical appliances	Ensure all new Appliances procured for fitout are within 1 Star of the highest available for that category.	1. Draft Schedule (Group GSA) 2. Review & Comments on draft schedule (Aston Sustainability)	- Aston Sustainability - Group GSA
4	E4 Efficient electrical equipment	Ensure all new equipment procured for fitout are with higher MEPS. Where possible, add controls for more efficient operations.		- Aston Sustainability - Aston Consulting
5	E5 Efficient Lighting	Aim for at least 20% more efficient lighting, when compared to code compliance. <u>Stretch target:</u> 30% more efficient lighting		- Aston Sustainability - Aston Consulting
6	E6 Purchase 100% Green Power	Procure 100% GreenPower, or provide details of the existing Power Purchase Agreement.	1. Power Purchase Agreement details	- Port Authority - Aston Sustainability
Water				
7	W1 Efficient water appliances	Ensure dishwashers are within 1 Star of the highest available.		- Aston Sustainability - Group GSA
8	W2 Efficient water fittings and fixtures	Ensure the water fittings and fixtures have the following performance: - Showerheads: 6 to 7.5 L/m - Toilets and Urinals: 4 Star WELS - Taps: 5 Star WELS		- Aston Sustainability - Group GSA
Indoor Environment Quality				
9	IE1 Achieve daylight access	Achieve daylight access for at least 15% of the workstation areas		- Aston Sustainability - Group GSA
10	IE2 Achieve views to the exterior	Achieve views to the exterior for at least 20% of the workstation areas.		- Aston Sustainability - Group GSA
11	IE3 Emissions	Achieve low-volatile organic compounds (VOC) offgassing/emissions by specifying low-VOC paints, adhesives, sealants and engineered wood products.		- Aston Sustainability - Group GSA
12	IE4 Acoustics quality	Achieve better acoustic outcome for the below mentioned acoustic parameters: - improved internal noise levels - lower reverberation - improved acoustic separation		- Aston Acoustics - Group GSA - Aston Sustainability
13	IE5 Lighting quality	Design lighting with the following parameters: - colour rendering index (CRI): >90 - lighting uniformity - Unified glare rating (UGR): <19 - Circadian Lighting for workstation areas only: daytime equivalent melanopic lux of 120 lux.		- Aston Consulting - Aston Sustainability
14	IE6 Thermal comfort	Design mechanical system with the following parameters (where possible): - dry bulb temperature: between 20 °C and 24 °C - relative humidity: between 40% and 60% (active humidity control not required) - air velocity: <0.2 m/s at air register - perimeter zone depth: <4 m (where possible, given the limitation with the building depth)		- Aston Consulting - Aston Sustainability
15	IE7 Air quality	Target indoor air quality with lower particulate matter PM10 and PM2.5 - Install F7 filters at the air handling system - During bushfire season, swap filters to a combination of F7 and Carbon filters (and replace back to F7 at the end of the season).		- Head Contractor - Aston Consulting - Aston Sustainability



Code	Initiatives	Summary of Requirements	Documentation Required	Responsibility
Waste				
16	P1 Operational waste reduction	<p>Provision for the following waste streams and associated volumes (litres) across the tenancy (for 1,620 sqm):</p> <ul style="list-style-type: none"> - general waste: 208 litres across all floors - recycling (glass, metal, plastic): 208 litres across all floors - recycling (paper, cardboard): 96 litres kitchen/breakout and utility - kitchen / organics: 56 litres at kitchen/breakout - e-waste: 80 litres within IT Build (for batteries, keyboards, mice, etc.) <p>The volumes have been derived through the City of Sydney's Policy for Waste Minimisation guidelines and modified for the project.</p>		<ul style="list-style-type: none"> - Port Authority - Head Contractor - Aston Sustainability - Group GSA
Materials & Embodied Carbon				
17	M1 Lower embodied carbon	<p>Incorporate design and construction practices that reduces the embodied carbon of the fitout as compared to a standard practice fitout through Life Cycle Assessment (LCA) methodology. Target: 10% reduction.</p> <p><u>Stretch target:</u> 20% reduction</p>		<ul style="list-style-type: none"> - Aston Sustainability - Head Contractor - Group GSA
18	M2 Healthy and sustainable materials	<ul style="list-style-type: none"> - Incorporate materials finishes that carry sustainability certification labelling. Target: 20% by cost - Incorporate furniture that carry either sustainability or health certification labelling. Target: 10% by cost 		<ul style="list-style-type: none"> - Aston Sustainability - Head Contractor - Group GSA
Responsible Construction Practices				
19	RC1 Contractor with ISO 14001	Ensure that the Head Contractor must have Environmental Management System accredited to ISO 14001		- Head Contractor
20	RC2 Best practice Environmental Management Plan for fitout works	Ensure that the Head Contractor prepares a site-specific Construction Environmental Management Plan prior to construction commencement.		- Head Contractor
21	RC3 Sustainability and wellbeing support on-site	<p>Ensure that the Head Contractor deploys the following support on-site:</p> <ul style="list-style-type: none"> - deploy sustainability education video (7-8 minutes) as a compulsory element for site induction - deploy up to 6 health and wellbeing initiatives for the site workers throughout the course of construction 	<ol style="list-style-type: none"> 1. Aston Sustainability will provide the sustainability induction video 2. Aston Sustainability will provide an indicative list of health and wellbeing initiatives 3. Head Contractor to schedule and deploy the training/support for site workers. 	<ul style="list-style-type: none"> - Aston Sustainability - Head Contractor
22	RC4 Construction and demolition waste	<p>Ensure that the total demolition and construction waste sent to landfill does not exceed 1.5 kg / sqm of net lettable area (i.e. <1.5 tonnes of waste in total).</p> <p><u>Stretch target:</u> < 1 kg / sqm (i.e. < 1 tonne of total waste to landfill)</p>		<ul style="list-style-type: none"> - Aston Sustainability - Head Contractor
23	RC5 Meet minimum procurement of the contract works through business that are majority-indigenous owned	The Head Contractor must procure at least 3% of the total construction works package from majority indigenous-owned businesses.		- Head Contractor
Monitoring and Reporting				
24	R1 Set targets upfront and issue completion report	<ul style="list-style-type: none"> - Set targets agreed at the concept design stage into a summary note for endorsement - Measure and track progress during the design and then construction stage - Issue final report, mapping it against the concept design targets, after practical completion 		- Head Contractor



Appendix E. Noise Estimator Output Sheets

Noise Estimator (Scenario)

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name		Moore Wharf Building Renewal Project	
Scenario name		Bridge works	
Receiver address		1 Towns Place, Barangaroo (Residential)	
Select area ground type		Developed settlements (urban and suburban areas)	
Select type of background noise level input		User Input	

Noise area category		Representative Noise Environment		User Input	
RBL or LAL Background level (dB(A))	Day				54
	Evening				50
	Night				45
LAeq(5min) Noise management level (dB(A))	Day				64
	Evening				59
	Night				55

Representative distance (m) **131**

Scenario	SWL LAeq (dB(A))	Is there line of sight to receiver?	Shielding correction (dB(A))	Distance used in calculation (m)	Contribution SPL (dB(A))
Bridge works	120	Yes	0	131	66

Total SPL LAeq(5min) (dBA) 66

- Steps:**
1. Enter project name (cell C9).
 2. Enter scenario name (cell C10).
 3. Enter receiver address (cell C11).
 4. Select type of background noise level input - Representative noise environment (to make assumptions) or user input (where noise monitoring data is available).
 5. Select type of background noise level input - Representative noise environment (to make assumptions) or user input (where noise monitoring data is available).
 6. Enter representative noise management level (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
 7. Where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
 8. Select the representative distance in cell C24.
 9. Is there a line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction, hearing, acoustic curtain, timber topped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
 10. Identify the level above background and/or noise management level (see rows 36 to 41).
 11. Identify and implement standard mitigation measures where feasible and reasonable. Include any shielding implemented as part of the standard mitigation measures by changing the selection in this is there line of sight to receiver drop-down list.
 12. Document a summary report detailing:
 - (a) project description including location, duration, hours of work, construction methodology, plant, potentially impacted receivers, etc.).
 - (b) background noise levels.
 - (c) noise management levels.
 - (d) predicted noise levels for each time period.
 - (e) predicted noise levels for each time period.
 - (f) predicted noise levels for each time period.
 - (g) predicted noise levels for each time period.
 - (h) predicted noise levels for each time period.
 - (i) predicted noise levels for each time period.
 - (j) predicted noise levels for each time period.
 - (k) predicted noise levels for each time period.
 - (l) predicted noise levels for each time period.
 - (m) predicted noise levels for each time period.
 - (n) predicted noise levels for each time period.
 - (o) predicted noise levels for each time period.
 - (p) predicted noise levels for each time period.
 - (q) predicted noise levels for each time period.
 - (r) predicted noise levels for each time period.
 - (s) predicted noise levels for each time period.
 - (t) predicted noise levels for each time period.
 - (u) predicted noise levels for each time period.
 - (v) predicted noise levels for each time period.
 - (w) predicted noise levels for each time period.
 - (x) predicted noise levels for each time period.
 - (y) predicted noise levels for each time period.
 - (z) predicted noise levels for each time period.
 13. Document a summary report detailing:
 - (a) project description including location, duration, hours of work, construction methodology, plant, potentially impacted receivers, etc.).
 - (b) background noise levels.
 - (c) noise management levels.
 - (d) predicted noise levels for each time period.
 - (e) predicted noise levels for each time period.
 - (f) predicted noise levels for each time period.
 - (g) predicted noise levels for each time period.
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 - (i) predicted noise levels for each time period.
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 - (n) predicted noise levels for each time period.
 - (o) predicted noise levels for each time period.
 - (p) predicted noise levels for each time period.
 - (q) predicted noise levels for each time period.
 - (r) predicted noise levels for each time period.
 - (s) predicted noise levels for each time period.
 - (t) predicted noise levels for each time period.
 - (u) predicted noise levels for each time period.
 - (v) predicted noise levels for each time period.
 - (w) predicted noise levels for each time period.
 - (x) predicted noise levels for each time period.
 - (y) predicted noise levels for each time period.
 - (z) predicted noise levels for each time period.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise specialist for more information)

	Residential receiver						Non-residential receivers					
	Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets					
Standard hours												
Day (OOHW)												
OOHW Period 1												
OOHW Period 2												
Standard hours												
Day (OOHW)												
OOHW Period 1												
OOHW Period 2												
Standard hours												
Day (OOHW)												
OOHW Period 1												
OOHW Period 2												
Standard hours												
Day (OOHW)												
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OOHW Period 2												
Standard hours												
Day (OOHW)												
OOHW Period 1												
OOHW Period 2												
Standard hours												
Day (OOHW)												
OOHW Period 1												
OOHW Period 2												

Abbreviation	Measure
N	Notification
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification



Noise Estimator (Scenario)

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	Moore's Wharf Building Renewal Project
Scenario name	Bridge works
Receiver address	1 Towns Place, Barangaroo (Commercial)
Select area ground type	Developed settlements (urban and suburban areas)
Select type of background noise level input	User Input

Representative Noise Environment		User Input
RBL or L _{eq} Background level (dB(A))	Day	54
	Evening	50
LA _{eq} (5min) Noise management level (dB(A))	Day	45
	Evening	64
Representative distance (m)	Day (OOHW)	59
	Night	55

Representative distance (m) 131

Scenario	Bridge works	SWL LA_{eq} (dB(A))	120	Shielding correction (dB(A))	0	Distance used in calculation (m)	131	Contribution SPL (dB(A))	66
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Total SPL L_{Aeq}(5min) (dBA) 66

- Steps:**
- Enter project name (cell C9).
 - Enter scenario name (cell C10).
 - Enter receiver address (cell C11).
 - Enter background noise level input - select type of background noise level input - Representative noise environment (to make assumptions) or user input (where noise monitoring data is available).
 - Select type of background noise level input - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
 - (a) Where representative noise environment is selected - select the appropriate noise area category.
 - (b) Where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
 - Select the representative distance in cell C24.
 - Select the noise management level (cell A27).
 - (a) Is there a line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction, hearing, acoustic curtain, timber topped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
 - Identify the level above background and/or noise management level (see rows 36 to 41).
 - (a) Identify and implement standard mitigation measures where feasible and reasonable. Include any shielding implemented as part of the standard mitigation measures by changing the selection in this is there line of sight to receiver drop-down list.
 - (b) Identify and implement additional mitigation measures (see rows 42 to 44).
 - Document a summary report detailing:
 - (a) project description (including location, duration, hours of work, construction methodology, plant, potentially impacted receivers, etc.).
 - (b) background noise levels.
 - (c) noise management levels.
 - (d) predicted noise levels for each time period.
 - (e) predicted noise levels for each time period.
 - (f) predicted noise levels for each time period.
 - (g) predicted noise levels for each time period.
 - (h) predicted noise levels for each time period.
 - (i) predicted noise levels for each time period.
 - (j) predicted noise levels for each time period.
 - (k) predicted noise levels for each time period.
 - (l) predicted noise levels for each time period.
 - (m) predicted noise levels for each time period.
 - (n) predicted noise levels for each time period.
 - (o) predicted noise levels for each time period.
 - (p) predicted noise levels for each time period.
 - (q) predicted noise levels for each time period.
 - (r) predicted noise levels for each time period.
 - (s) predicted noise levels for each time period.
 - (t) predicted noise levels for each time period.
 - (u) predicted noise levels for each time period.
 - (v) predicted noise levels for each time period.
 - (w) predicted noise levels for each time period.
 - (x) predicted noise levels for each time period.
 - (y) predicted noise levels for each time period.
 - (z) predicted noise levels for each time period.
 - Identify suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise specialist for more information.

Noise Management Level (dB(A))	Residential receiver					Non-residential receivers				
	Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets			
Standard hours	64	65	55	65	60	75	70			
Day (OOHW)	59	65	55	65	60	75	70			
OOHW Period 1	55	65	55	65	60	75	70			
OOHW Period 2	50	65	55	65	60	75	70			
Standard hours	72	65	55	65	60	75	70			
Day (OOHW)	72	65	55	65	60	75	70			
OOHW Period 1	72	65	55	65	60	75	70			
OOHW Period 2	72	65	55	65	60	75	70			
Standard hours	7	11	11	1	6	-	-			
Day (OOHW)	7	11	11	1	6	-	-			
OOHW Period 1	7	11	11	1	6	-	-			
OOHW Period 2	7	11	11	1	6	-	-			
Standard hours	N, V	N, V	N, V	-	-	-	-			
Day (OOHW)	N, R1, DR	N, R1, DR	N, R1, DR	-	-	-	-			
OOHW Period 1	N, R1, DR	N, R1, DR	N, R1, DR	-	-	-	-			
OOHW Period 2	V, IB, N, PC, SN, R2, DR	V, N, R2, DR	V, N, R2, DR	-	-	-	-			

Abbreviation	Measure
N	Notification
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification



Noise Estimator (Scenario)

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name		Moore Wharf Building Renewal Project
Scenario name		Bridge works
Receiver address		4 Towns Place, Barangaroo (Commercial)
Select area ground type		Developed settlements (urban and suburban areas)
Select type of background noise level input		User Input

Noise area category		Representative Noise Environment	User Input
RBL or L&O Background level (dB(A))	Day		54
	Evening		50
	Night		45
LAeq(5min) Noise management level (dB(A))	Day		64
	Day (OOHW)		59
	Night		55

Representative distance (m) **0**

Scenario	SWL LAeq (dB(A))	Is there line of sight to receiver?	Shielding correction (dB(A))	Distance used in calculation (m)	Contribution SPL (dB(A))
Bridge works	120	Yes	0	0	93

Total SPL LAeq(5min) (dBA) 93

- Steps:**
- Enter project name (cell C9).
 - Enter scenario name (cell C10).
 - Enter receiver address (cell C11).
 - Enter background noise level input - Representative noise environment (to make assumptions) or user input (where noise monitoring data is available).
 - Select type of background noise level input - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
 - (a) Where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
 - (b) Where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
 - Select the representative distance in cell C24.
 - Select the noise management level (cell A27).
 - (a) Is there line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction, hearing, acoustic curtain, timber topped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
 - Identify the level above background and/or noise management level (see rows 36 to 41).
 - Identify and implement standard mitigation measures where feasible and reasonable. Include any shielding implemented as part of the standard mitigation measures by changing the section in this is there line of sight to receiver drop-down list.
 - Document a summary report detailing:
 - (a) project description (including location, duration, hours of work, construction methodology, plant, potentially impacted receivers, etc.).
 - (b) background noise levels.
 - (c) noise management levels.
 - (d) predicted noise levels for each time period.
 - (e) predicted noise levels for each time period.
 - (f) mitigation measures.
 - (g) team member responsible for implementing mitigation measures and managing noise and vibration.
 - Document a summary report detailing:
 - (a) project description (including location, duration, hours of work, construction methodology, plant, potentially impacted receivers, etc.).
 - (b) background noise levels.
 - (c) noise management levels.
 - (d) predicted noise levels for each time period.
 - (e) predicted noise levels for each time period.
 - (f) mitigation measures.
 - (g) team member responsible for implementing mitigation measures and managing noise and vibration.
- (Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise specialist for more information)

Noise Management Level (dB(A))	Residential receiver					Non-residential receivers						
	Standard hours	Day (OOHW)	OOHW Period 1	OOHW Period 2	Standard hours	Day (OOHW)	OOHW Period 1	OOHW Period 2	Standard hours	Day (OOHW)	OOHW Period 1	OOHW Period 2
Level above background (dB(A))	64	59	55	50	64	59	55	50	64	59	55	50
Level above NML (dB(A))	38	33	33	33	38	33	33	33	38	33	33	33
Additional mitigation measures	N, V, PC, RO	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	N, V, PC, RO	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	N, V, PC, RO	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN
	Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets					
	38	38	38	38	38	38	38	38	38	38	38	38
	26	26	26	26	26	26	26	26	26	26	26	26
	N, V, PC, RO	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN	V, IB, N, R1, DR, PC, SN

Abbreviation	Measure
N	Notification
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification



Noise Estimator (Scenario)

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	Moore Wharf Building Renewal Project
Scenario name	Bridge works
Receiver address	6 Towns Place, Barangaroo (Residential)
Select area ground type	Developed settlements (urban and suburban areas)
Select type of background noise level input	User Input

Representative Noise Environment		User Input
RBL or L ₉₀ Background level (dB(A))	Day	54
	Evening	50
LA _{eq} (5min) Noise management level (dB(A))	Day	45
	Evening	64
Representative distance (m)	Day (OOHW)	59
	Night	55

Representative distance (m) 130

Scenario	SWL LA _{eq} (dB(A))	Is there line of sight to receiver?	Shielding correction (dB(A))	Distance used in calculation (m)	Contribution SPL (dB(A))
Bridge works	120	Yes	0	130	66

Total SPL L A_{eq}(5min) (dBA) 66

- Steps:**
- Enter project name (cell C9).
 - Enter scenario name (cell C10).
 - Enter receiver address (cell C11).
 - Enter background noise level input - select type of background noise level input - Representative noise environment (to make assumptions) or user input (where noise monitoring data is available).
 - Select type of background noise level input - Representative noise environment (to make assumptions) or user input (where noise monitoring data is available).
 - Where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
 - Where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
 - Select the representative distance in cell C24.
 - Where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
 - Is there a line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction, hearing, acoustic curtain, timber topped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
 - Identify the level above background and/or noise management level (see rows 36 to 41).
 - Identify and implement standard mitigation measures where feasible and reasonable. Include any shielding implemented as part of the standard mitigation measures by changing the selection in this is there line of sight to receiver drop-down list.
 - Document a summary report detailing:
 - project description including location, duration, hours of work, construction methodology, plant, potentially impacted receivers, etc.;
 - background noise levels;
 - noise management levels;
 - predicted noise levels for each time period;
 - predicted noise levels for each time period;
 - predicted noise levels for each time period;
 - mitigation measures;
 - team member responsible for implementing mitigation measures and managing noise and vibration.
 - Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise specialist for more information.

	Non-residential receivers						
	Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Standard hours							
Day (OOHW)		65	55	65	60	75	70
OOHW Period 1		65	55	65	60	75	70
OOHW Period 2		65	55	65	60	75	70
Standard hours							
Day (OOHW)		65	55	65	60	75	70
OOHW Period 1		65	55	65	60	75	70
OOHW Period 2		65	55	65	60	75	70
Standard hours							
Day (OOHW)	11	11	11	1	6		
OOHW Period 1	11	11	11	1	6		
OOHW Period 2	11	11	11	1	6		
Standard hours							
Day (OOHW)	N, V		N, V				
OOHW Period 1	N, R1, DR		N, R1, DR				
OOHW Period 2	N, R1, DR		N, R1, DR				
Additional mitigation measures	V, IB, N, PC, SN, RZ, DR		V, N, R2, DR				

Abbreviation	Measure
N	Notification
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification



Noise Estimator (Scenario)

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	Moonies Wharf Building Renewal Project
Scenario name	Bridge works
Receiver address	Pier 899 (Commercial)
Select area ground type	Developed settlements (urban and suburban areas)
Select type of background noise level input	User Input

Representative Noise Environment		User Input
RBL or L ₉₀ Background level (dB(A))	Day	54
	Evening	50
	Night	45
	Day	64
LA _{eq} (5min) Noise management level (dB(A))	Day (OOHW)	59
	Evening	55
	Night	50

Representative distance (m) **109**

Scenario	Bridge works	SWL LA_{eq} (dB(A))	120	Shielding correction (dB(A))	0	Distance used in calculation (m)	109	Contribution SPL (dB(A))	68
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Total SPL L_{Aeq}(5min) (dBA) **68**

- Steps:**
- Enter project name (cell C9).
 - Enter scenario name (cell C10).
 - Enter receiver address (cell C11).
 - Enter background noise level input - select the appropriate noise level input (where noise monitoring data is available).
 - Select type of background noise level input - Representative noise environment (to make assumptions) or user input (where noise monitoring data is available).
 - Where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
 - (a) Where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
 - (b) Where representative noise environment is selected - enter the measured background noise level for each time period (cells D17 to D19).
 - Select the representative distance in cell C24.
 - Select the noise management level (cell A27).
 - (a) Is there a line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction, hearing, acoustic curtain, timber topped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
 - Identify the level above background and/or noise management level (see rows 36 to 41).
 - Identify and implement standard mitigation measures where feasible and reasonable. Include any shielding implemented as part of the standard mitigation measures by changing the selection in this is there line of sight to receiver drop-down list.
 - Document a summary report detailing:
 - (a) project description including location, duration, hours of work, construction methodology, plant, potentially impacted receivers, etc.;
 - (b) background noise levels;
 - (c) noise management levels;
 - (d) predicted noise levels for each time period;
 - (e) predicted noise levels for each time period;
 - (f) predicted noise levels for each time period;
 - (g) predicted noise levels for each time period;
 - (h) predicted noise levels for each time period;
 - (i) predicted noise levels for each time period;
 - (j) predicted noise levels for each time period;
 - (k) predicted noise levels for each time period;
 - (l) predicted noise levels for each time period;
 - (m) predicted noise levels for each time period;
 - (n) predicted noise levels for each time period;
 - (o) predicted noise levels for each time period;
 - (p) predicted noise levels for each time period;
 - (q) predicted noise levels for each time period;
 - (r) predicted noise levels for each time period;
 - (s) predicted noise levels for each time period;
 - (t) predicted noise levels for each time period;
 - (u) predicted noise levels for each time period;
 - (v) predicted noise levels for each time period;
 - (w) predicted noise levels for each time period;
 - (x) predicted noise levels for each time period;
 - (y) predicted noise levels for each time period;
 - (z) predicted noise levels for each time period;
 - Document a summary report detailing:
 - (a) project description including location, duration, hours of work, construction methodology, plant, potentially impacted receivers, etc.;
 - (b) background noise levels;
 - (c) noise management levels;
 - (d) predicted noise levels for each time period;
 - (e) predicted noise levels for each time period;
 - (f) predicted noise levels for each time period;
 - (g) predicted noise levels for each time period;
 - (h) predicted noise levels for each time period;
 - (i) predicted noise levels for each time period;
 - (j) predicted noise levels for each time period;
 - (k) predicted noise levels for each time period;
 - (l) predicted noise levels for each time period;
 - (m) predicted noise levels for each time period;
 - (n) predicted noise levels for each time period;
 - (o) predicted noise levels for each time period;
 - (p) predicted noise levels for each time period;
 - (q) predicted noise levels for each time period;
 - (r) predicted noise levels for each time period;
 - (s) predicted noise levels for each time period;
 - (t) predicted noise levels for each time period;
 - (u) predicted noise levels for each time period;
 - (v) predicted noise levels for each time period;
 - (w) predicted noise levels for each time period;
 - (x) predicted noise levels for each time period;
 - (y) predicted noise levels for each time period;
 - (z) predicted noise levels for each time period;
- (Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise specialist for more information)

	Residential receiver		Non-residential receivers				
	Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	64	55	55	60	70	75	70
Level above background (dB(A))	9	13	13	3	3	3	3
Level above MNL (dB(A))	13	13	13	3	3	3	3
Additional mitigation measures	N, V	N, V	N, V	-	-	-	-
	N, R1, DR	N, R1, DR	N, R1, DR	N, R1, DR	N, R1, DR	N, R1, DR	N, R1, DR
	V, IB, N, PC, SN, R2, DR	V, IB, N, PC, SN, R2, DR	V, IB, N, PC, SN, R2, DR	V, IB, N, PC, SN, R2, DR	V, IB, N, PC, SN, R2, DR	V, IB, N, PC, SN, R2, DR	V, IB, N, PC, SN, R2, DR

Abbreviation	Measure
N	Notification
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification



Noise Estimator (Scenario)

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	Moonies Wharf Building Renewal Project
Scenario name	Bridge works
Receiver address	Waimili Lawns (Baragaroo Reserve North)
Select area ground type	Developed settlements (urban and suburban areas)
Select type of background noise level input	User Input

Representative Noise Environment		User Input
RBL or L4eq Background level (dB(A))	Day	54
	Evening	50
	Night	45
	Day (OOHW)	64
LAeq(5min) Noise management level (dB(A))	Evening	59
	Night	55

Representative distance (m) **67**

Scenario	Bridge works	SWL LAeq (dB(A))	120	Shielding correction (dB(A))	0	Distance used in calculation (m)	67	Contribution SPL (dB(A))	72
-----------------	--------------	-------------------------	-----	-------------------------------------	---	---	----	---------------------------------	----

Total SPL LAeq(5min) (dBA) **72**

- Steps:**
- Enter project name (cell C9).
 - Enter scenario name (cell C10).
 - Enter receiver address (cell C11).
 - Enter background noise level input - Representative noise environment (to make assumptions) or user input (where noise monitoring data is available).
 - Select type of background noise level input - Representative noise environment (to make assumptions) or user input (where noise monitoring data is available).
 - Where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
 - Where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
 - Select the representative distance in cell C24.
 - Select the background noise level in cell A27.
 - Is there a line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction, hearing, acoustic curtain, timber topped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
 - Identify the level above background and/or noise management level (see rows 36 to 41).
 - Identify and implement standard mitigation measures where feasible and reasonable. Include any shielding implemented as part of the standard mitigation measures by changing the selection in this is there line of sight to receiver drop-down list.
 - Document a summary report detailing:
 - project description (including location, duration, hours of work, construction methodology, plant, potentially impacted receivers, etc.).
 - background noise levels.
 - predicted noise levels for each time period.
 - predicted noise levels for each time period.
 - predicted noise levels for each time period.
 - mitigation measures.
 - mitigation measures.
 - team member responsible for implementing mitigation measures and managing noise and vibration.
 - Document a summary report detailing:
 - project description (including location, duration, hours of work, construction methodology, plant, potentially impacted receivers, etc.).
 - background noise levels.
 - predicted noise levels for each time period.
 - predicted noise levels for each time period.
 - predicted noise levels for each time period.
 - mitigation measures.
 - mitigation measures.
 - team member responsible for implementing mitigation measures and managing noise and vibration.
 - Document suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise specialist for more information).

Noise Management Level (dB(A))	Residential receiver					Non-residential receivers						
	Standard hours	Day (OOHW)	OOHW Period 1	OOHW Period 2	Standard hours	Day (OOHW)	OOHW Period 1	OOHW Period 2	Standard hours	Day (OOHW)	OOHW Period 1	OOHW Period 2
Level above background (dB(A))	64	59	55	50	64	59	55	50	64	59	55	50
Level above NML (dB(A))	17	17	17	17	17	17	17	17	17	17	17	17
Additional mitigation measures	N, R1, DR	V, N, R1, DR	V, N, R1, DR	V, N, R1, DR	N, R1, DR	N, R1, DR	N, R1, DR	N, R1, DR	N, R1, DR	N, R1, DR	N, R1, DR	N, R1, DR
	-	-	-	-	-	-	-	-	-	-	-	-
	V, IB, N, PC, SN, R2, DR	V, IB, N, PC, SN, R2, DR	V, IB, N, PC, SN, R2, DR	V, IB, N, PC, SN, R2, DR	V, N, R2, DR	V, N, R2, DR	V, N, R2, DR	V, N, R2, DR	V, N, R2, DR	V, N, R2, DR	V, N, R2, DR	V, N, R2, DR

Abbreviation	Measure
N	Notification
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification



Appendix F. Geotechnical and Soil Contamination Investigation



Moore's Wharf Building Refurbishment - New Lift

Geotechnical and Soil Contamination Investigation

Port Authority of NSW

11 October 2024





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A handwritten signature in black ink, appearing to read "S. Padina".

Sven Padina | Principal Geotechnical Engineer

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Information about your D&N Geotechnical Report

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Appendix A Borehole Log

Appendix B Laboratory Test Reports

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Document Register

Revision	Date	Description	Written by	Reviewed by	Approved by
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1 Introduction

This report presents the results of a geotechnical and soil contamination investigation carried out by D&N Geotechnical Pty Ltd (D&N) for a proposed new external lift to be constructed as part of the Moores Wharf Building Refurbishment, 4 Towns Place, Walsh Bay, NSW. This investigation was commissioned by the Port Authority of NSW (NSW Ports) on the basis of our fee proposal S-0159.00 P2, dated 15 August 2024.

From the supplied concept drawings, we understand the lift will have a pit excavation of between 1.5 metres (m) to 2.0 m deep depending on selected lift size.

The purpose of this geotechnical investigation was to obtain information on ground conditions at the site for comment and recommendations on the following aspects of the proposed development:

- Ground conditions and Geotechnical Model of the site.
- Lifts pit excavation conditions and indicative geotechnical design parameters.
- Lift footing options and indicative geotechnical design parameters
- Soil aggressivity for buried structures; and
- Potential for soil contamination and a preliminary (i.e., indicative) waste classification for excavated soils.

2 Site Description

The Moores Wharf Building is located on the shoreline of Walsh Bay, and comprises a three-level sandstone block warehouse/stores building originally built in the 1830's. In 1978 this building was dismantled and moved from Darling Harbour to its present location. From the supplied Dismantling and Re-erection drawings, we understand that the building may now be founded on 13m deep piled to bedrock.

The current Moores Wharf Building and proposed new lift location in the building carpark is shown in Plate 1 below. The carpark was surfaced with interlocking pavers.

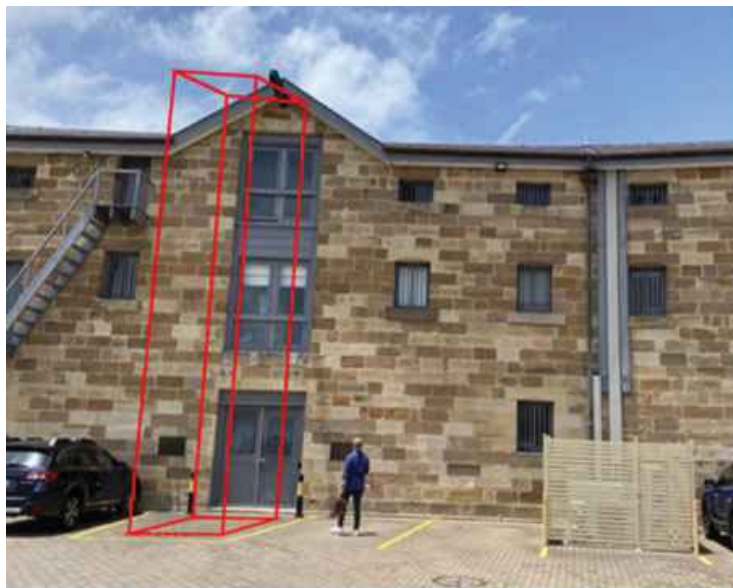


Plate 1 – Current building and proposed external lift location

3 Method of Investigation

The D&N site investigation comprised the following:

- Drilling one borehole at the proposed lift site to a depth of 10.5m.
- Opportunistic soil sampling and laboratory chemistry/contaminant testing of samples for a broad range of potential contamination.

A D&N geotechnical engineer observed the borehole drilling, logged the encountered materials, recorded test results and collected soil samples. The attached Figure 1 shows the approximate borehole location.

The borehole was drilled with a small Comacchio Geo 205 track mounted drill rig using solid flight augers, fitted with a Tungsten Carbide (TC) drill bit above the groundwater table, and washbore drilling methods below the water table. Standard Penetration Testing (SPT) was undertaken at regular intervals for the collection of samples and assessment of soil strengths. Additionally, Hand Penetrometer strength tests were also carried out on clayey samples recovered from the SPT sampler. On completion of drilling, the borehole was cement grout backfilled up to ground surface.

The resulting borehole log is attached as Appendix A, together with D&N's Soil and Rock Description Explanation Sheets that describe the symbols and terminology used on the borehole logs.

Soil samples for environmental testing were collected at regular intervals down the soil profile with gloved hands (disposable nitrile gloves, changed between samples) from either the driven SPT split tube sampler, or directly off the auger when auger drilling. Prior to drilling works the drilling rods/augers/bits and SPT sampler were decontaminated by washing the equipment in a solution of potable water and a phosphate-free detergent (Liquinox™) and rinsed with potable water. Additionally, the SPT sampler was also similarly decontaminated between each sampled depth interval.

Each soil sample was placed into laboratory prepared and supplied glass jars with Teflon lined lid seals to limit possible volatile loss. Additional soil samples were collected for asbestos (in soil) testing, with these samples placed in laboratory-supplied zip lock bags. All environmental soil samples were placed in a chilled esky for storage on-site and for transit to the analysing laboratory (under chain of custody (CoC) procedures.

A sub-sample of each environmental sample was also placed in a plastic zip-loc bag for field screening for Volatile Organic Compounds [VOC] using a Photoionisation Detector (PID) equipped with a 10.6 electron Volt (eV) lamp, calibrated with 100 part-per-million (ppm) isobutylene. The PID screening results are presented on the borehole log (in Appendix A).

Eleven (11) primary environmental soil samples and one (1) Quality Control (QC) intra-laboratory duplicate sample were delivered to Eurofins Environment Testing (Sydney). Soil samples were nominated for analysis of a broad range of Chemicals of Potential Concern (COPC) based upon field observation (i.e., obvious staining or detectable odours) and measurements (i.e., VOC). The environmental testing conducted included:

- Four (4) soil samples and the single QC sample (QC01) were submitted for a general suite of Chemicals of Potential Concern (COPC), comprising:
 - Metals (Arsenic, Cadmium, Chromium[total], Copper, Mercury, Nickel, Lead, Zinc).
 - Petroleum hydrocarbons, including Total Petroleum Hydrocarbons (TPH)/Total Recoverable Hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylenes, and naphthalene (BTEXN), Polycyclic Aromatic Hydrocarbons (PAH) and Phenols.
 - Pesticides (organochlorine [OCP] and organophosphorus [OPP]); and
 - Polychlorinated Biphenyls (PCB).

- One (1) soil sample, BH01_0.5-0.7, was subject to extraction using the Toxicity Characteristic Leaching Procedure (TCLP) with the leached extract analysed for metals and PAHs.
- Two (2) soil samples were submitted for qualitative analysis for Asbestos (per AS4964:2004).
- Two (2) soil samples, were submitted for a soil aggressivity suite, including soil pH, electrical conductivity, resistivity, sulfate and chlorides.

Eurofins are National Association of Testing Authorities (NATA) accredited for the testing performed. Laboratory test reports, including laboratory quality control information, are attached as Appendix B.

4 Results of Investigation

4.1 Local Geology

The NSW Geoscience 'MinView' geological mapping viewer indicates that the site is underlain by man-made fill with Hawkesbury Sandstone outcropping immediately to the south of the site.

We understand that the current site landform was constructed with reclamation fill along the shoreline in the early 20th Century to form the Sydney Port commercial wharves and ship berths that previously occupied the site.

The 1:25,000 scale Prospect/Parramatta River Acid Sulfate Soils Risk Map show that the site is in an area of disturbed terrain, i.e. has been filled.

4.2 Observed Ground Conditions

For specific details on ground conditions, reference should be made to the borehole log in Appendix A.

In summary the observed ground conditions comprised land reclamation Fill to a depth of 6.8 m, over approximately 2 m of Estuarine silts and sands, with then sandstone bedrock at a depth of approximately 8.9 m below current ground surface levels.

The Fill consisted of predominantly sand, with varying secondary constituents of sandstone gravel, cobbles, and boulders. The SPT results indicated that the Fill is of variable compaction/density, particularly the upper layers where a low SPT N value of 3 was observed.

Underlying the fill, at a depth of 6.8 m, was a 2 m thick layer of natural Estuarine Clayey Silt and Sands with shell fragments.

Sandstone bedrock was encountered at a depth of 8.9 m below site ground surface levels. With reference to the SPT test results and recovered samples, the sandstone was assessed to be of very low strength.

During auger drilling, groundwater seepage was observed at a depth of 2.7 m, it is expected that this is reflective of average harbour water levels at the time of drilling.

4.3 Laboratory Testing

4.3.1 Data Adequacy

A total of four (4) primary soil samples were analysed by the primary laboratory in one (1) batch; batch 1141087 (received by the laboratory 19 September 2024). One (1) QC (intra-laboratory) sample (QC01) was analysed. Environmental samples were delivered, extracted and analysed within the relevant nominated holding times.

The frequency of intra-laboratory duplicate soil samples analysed was 25%. No inter-laboratory duplicate soil samples were analysed. This frequency exceeds the recommended 10% quality control analysis frequency set forth in the ASC NEPM (1999, amended 2013).

Table C1 (in Appendix C) presents a summary of the analytical results for duplicate soil samples, along with calculated Relative Percentage Difference (RPD) as compared to the analytical results for corresponding parent samples. For analytes with detected analyte concentrations, RPDs were within acceptable ranges with the following exceptions:

- Concentrations of the metals Lead, Mercury and Zinc in the primary (parent) sample BH01_0.5-0.7 were 340 mg/kg, 2.4 mg/kg and 480 mg/kg respectively, whilst the concentrations of the same metals in the intra-laboratory duplicate sample QC01 were consistently lower (240 mg/kg, 0.8 mg/kg and 270 mg/kg respectively).
- The concentration of the organochlorine pesticide DDT in primary (parent) sample BH01_0.5-0.7 (0.11 mg/kg) was lower than the concentration of the same COPC in the intra-laboratory duplicate sample QC01 (1.2 mg/kg; and
- Concentrations of PAHs, benzo(a)anthracene, Benzo(b+j)fluoranthene, Fluoranthene and Pyrene (6.9 mg/kg, 4.2 mg/kg, 13 mg/kg and 14 mg/kg respectively) were consistently recorded higher in the intra-laboratory duplicate sample QC01 than the primary (parent) sample (3.1 mg/kg, 1.3 mg/kg, 6.8 mg/kg and 6.3 mg/kg respectively). The corresponding Total PAH¹ and benzo(a)pyrene Toxicity Equivalent Quotient (TEQ²) also displayed RPD greater than the generally accepted limits (refer Table C1 footer).

This difference may be attributed to inherent soil sample heterogeneity which was collected in granular fill materials, and/or laboratory sub-sampling techniques. For the purpose of this assessment, the highest concentration has been considered. Therefore, the sampling and sample handling methodologies employed during this preliminary assessment are considered sufficient.

4.3.2 Analytical Results

Analytical tables are presented in Appendix C with the sections below presenting a summary of the analytical results for the analytical groups targeted during this investigation.

Metals

With the exception of Cadmium, detectable concentrations of Arsenic, Chromium (total), Copper, Lead, Mercury, Nickel and Zinc were recorded in the samples analysed, with:

- Arsenic concentrations in soil ranging between 3.8 mg/kg and 19 mg/kg with an average concentration of 7.7 mg/kg.
- Chromium (total) concentrations in soil ranging between 6 mg/kg and 17 mg/kg with an average concentration of 13 mg/kg.
- Copper concentrations in soil ranging between 11 mg/kg and 88 mg/kg with an average concentration of 42 mg/kg.
- Lead concentrations in soil ranging between 25 mg/kg and 400 mg/kg with an average concentration of 261 mg/kg; and
- Nickel concentrations in soil ranging between 8.2 mg/kg and 25 mg/kg with an average concentration of 14 mg/kg; and
- Zinc concentrations in soil ranging between 14 mg/kg and 480 mg/kg with an average concentration of 184 mg/kg.

Refer Tables C2 and C4 (in Appendix C) for a summary of metals analysis results.

¹ Total PAHs: based on the sum of the 16 PAHs most commonly reported for contaminated sites (WHO 1998).

² Carcinogenic PAHs: based on the 8 carcinogenic PAHs and their TEFs (potency relative to B(a)P) adopted by CCME 2008 (refer Schedule B7). The B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF



Petroleum Hydrocarbons

TPH in the C₁₅-C₂₆ and C₂₉-C₃₆ fractions were detected in shallow fill at 0.5 to 0.7 m BGL (230 mg/kg and 120 mg/kg respectively) with TPH in the C₁₅-C₂₆ fraction detected in the sample from fill materials between 4.3 to 4.8 m BGL. Concurrently, TRH in the F3 range³ was also detected in the shallow and deep fill materials. TPH/TRH were not detected in samples collected from fill materials at depths between 2.3 to 2.5 m BGL and 3.0 to 3.5 m BGL.

Various PAHs were detected in all samples, with Fluoranthene and Pyrene detected consistently down the sampled profile (to 4.3 to 4.8 m BGL). Total PAH concentrations were greatest in shallow fill materials (68 mg/kg) with concentrations decreasing to 2.3 mg/kg Total PAH in the sample collected from 3.0 to 3.5 m BGL. The concentration of Total PAH increased to 27 mg/kg in the sample collected from 4.3 to 4.8 m BGL, similar to the trend observed in TPH detections.

BTEXN, Phenols and Halogenated benzenes were not detected in any sample analysed.

Refer Tables C2 and C4 (in Appendix C) for a summary of petroleum hydrocarbon analysis results.

Pesticides, Herbicides and PCB

With the exception of detections of DDE + DDT in shallow fill samples (1.2 mg/kg), no other pesticides, herbicides or PCBs were detected in any of the samples analysed.

Refer Tables C2 and C4 (in Appendix C) for a summary of pesticides, herbicides and PCB analysis results.

Asbestos in Soil

Table C2 (in Appendix C) presents a summary of the asbestos analytical results.

Asbestos containing materials, fibrous asbestos or asbestos fines were not detected in any of the two (2) samples analysed.

Leachable Metals and PAH

Table C4 (in Appendix C) presents a summary of the leached metal and PAH analytical results.

Detectable concentrations of metals Lead (0.09 mg/L) and Zinc (0.38 mg/L) as well as detectable concentrations of PAHs Fluoranthene (1 µg/L), Phenanthrene (1 µg/L) and Pyrene (1 µg/L) were recorded.

Soil Aggressivity

The result of the laboratory soil aggressivity tests are summarised in Table 2 below.

Table 1 – Summary of Soil Aggressivity Results

Borehole/ depth (m)	Unit	pH	Chloride (mg/kg)	Sulphate (mg/kg)	Electrical Conductivity (µS/cm)	Resistivity (ohm.cm)
BH01 7.2-7.7m	Estuarine Soil	8.5	3300	370	2500	400
BH01 8.7-9.0	Estuarine Soil	9.1	2400	320	1700	580

³ TRH F3 - > C₁₆-C₃₄

5 Discussion and Recommendations

5.1 Geotechnical Model

Using the information from borehole drilling, the encountered strata can be characterised into the Geotechnical Units presented in Table 2 below.

Table 2: Inferred Geotechnical Units

Unit	Unit Name	Depth (below ground surface)	Description
1	Fill	0-6.8m	Sands with sandstone gravel, cobbles, and boulders. Considered to be uncontrolled fill placed for land reclamation purposes only.
2	Estuarine Soil	6.8-8.9m	Normally considered Clayey Silts and Sands with shell fragments, of relatively low strength.
3	Weathered Sandstone	>8.9m	Sandstone Bedrock, extremely to highly weathered, very low strength.
4	Groundwater	Observed at 2.7m depth but expected to be highly variable	Level expected to fluctuate with tidal/flood changes in harbour water level.

5.2 Lift Pit Excavation

We understand the lift pit excavation may be between 1.5 m to 2.4 m deep, and up to 3 m square depending on selected lift size. On this basis excavations are expected to be wholly within Unit 1 Fill materials.

The excavatability of the Unit 1 Fill would depend on both the size of the excavation footprint, and the type/size of excavation plant that can be used. Excavation contractors should review the attached borehole log to make their own assessment of excavation plant/equipment suitability and productivity. It is recommended that an allowance for the use of some 'hard rock' excavation techniques in a confined space may be necessary for the removal of any encountered sandstone boulders. Care will also be required with the use of hydraulic rock breakers, e.g. impact hammers, as the generated vibrations may impact the existing sandstone block building. Rotary rock saws or grinders can reduce both overbreak and excessive vibrations. Face excavation could also be undertaken using handheld rock saws, or impact breakers. We recommend that prior to the commencement of excavations, an assessment of the likely vibrations to be generated from the selected excavation methodology/plant and the potential effect on surrounding structures and/or need for vibration monitoring also be completed.

For construction where there is sufficient room on site, unsupported temporary batters should generally be cut no steeper than 1 Horizontal (H) to 1 Vertical (V), provided surcharge loads are kept well clear of batter crests. However, for shallow/short length excavation faces in the short term, and where no groundwater will be encountered, it may also be feasible to used vertical cuts in the Fill of up to 1.5m depth.

Some adjacent ground movement may occur due to excavations. As a guide, the extent of the horizontal movement behind the excavation face typically varies from 1.5 to 3 times the excavated height. The location, footing type, layout and founding depth for adjacent structures should be determined before excavation commences. The potential excavation zone of influence may be simplistically estimated by drawing a line at approximately 2H:1V from the base of the excavation up to the ground surface behind the



excavated face. Where adjacent structures are located within the zone of influence of the excavation foundation stratum, they may experience some horizontal and vertical movements from excavation induced ground movements. This should be assessed as part of excavation retention design.

Due to the proximity of the site to the waterfront it is expected that the lift pit will have to be a tanked structure, unless it can be demonstrated that harbour King Tide and/or flood levels will be lower than the base of the permanent structure. Consideration will also then need to be given for the potential impacts of hydrostatic uplift/buoyancy pressures on the tanked structures when the ground is saturated.

Design and analyses of the lift pits will need to consider soil loads, surcharges/footing loads from adjacent structures, and hydrostatic pressure. The relative stiffness of the walls will also determine the design earth pressure magnitude and distribution. Additionally, the earth pressure coefficients adopted for design will also depend on the analytical tools utilised in the design. It is recommended for design analysis of all these elements be undertaken to develop a cost-effective retention support system. As a guide, Table 3 below presents general geotechnical design parameters that may be adopted for initial retaining wall design.

Table 3 – Material Parameters and Earth Pressure Co-efficient for retaining wall design

Geotechnical Unit	Effective Cohesion C' (kPa)	Effective Friction Angle ϕ' (degrees)	Co-efficient of Earth pressure at rest, K_0^1	Elastic Modulus (MPa)	Bulk Density (kN/m ³)
Unit 1 Fill	0	30	0.5	15	20

Table 3 - Notes

1. These values assume that some wall movement and relaxation of horizontal stress will occur due to the excavation. Actual in-situ K_0 values may be higher.

5.3 Lift Footings

On the basis that the fill at the site has not been placed as Engineered Fill, and to reduce the potential for differential settlement between the new lift and the existing building, we recommend that the new lift be uniformly founded on pile footing down to the sandstone bedrock, to match the support to the current building.

It is expected that Continuous Flight Auger (CFA) piles would be best suited to both penetrate the Fill soils, and to form pile elements below groundwater levels in the saturated Fill and Estuarine Soils. Alternative pile types are not recommended due to the following:

- Bored piles would require casing through the Fill and Estuarine Soils,
- Screw piles would likely meet refusal within the fill.
- Driven piles may cause excessive vibrations for the existing building.

Indicative geotechnical footing design parameters for CFA/Bored pile footings to the sandstone bedrock are provided in Table 4 overleaf. We note that for final design the adopted geotechnical design parameters will also be a function of the adopted pile/footing type, method of design, and the designer’s experience.

Table 4 – Indicative geotechnical design parameters for footing on the Sandstone Bedrock

Geotechnical Unit	Serviceability End Bearing ^{1,5} (MPa)	Ultimate End Bearing ¹ (MPa)	Ultimate Shaft Adhesion ¹ (kPa)	Elastic Modulus ^{2,3} (MPa)
Unit 3 Sandstone	1.0	3.0	100	75

Table 4 Notes

1. Assumes a minimum embedment of at least 0.5 m, or two pile diameters (whichever is greater) into the relevant bearing stratum and roughness category R2 on the shaft sidewalls within rock.
2. Lateral stiffness may be taken as 70% of vertical stiffness.
3. limit state serviceability should be assessed using the modulus value to check that settlements are within tolerable limits.

For limit state design, a geotechnical reduction factor (ϕ_g) is to be applied to the ultimate geotechnical capacity to derive the geotechnical capacity. In AS2159-2009, ϕ_g is dependent on the assignment of an Average Risk Rating (ARR) which considers various geotechnical uncertainties, redundancy of the foundation system, construction supervision, and the quantity and type of pile testing. Therefore, the assessment of ϕ_g depends on the structural design of the foundation system as well as the design and construction method, and testing (if any) to be employed by the designer and piling contractor.

The use of limit state design also requires that serviceability performance of the foundation system be assessed, including pile group interaction effects for piles that are relatively close together. Such assessment should be carried out by experienced geotechnical professionals using well-established and soundly based methods. The modulus values given above may be adopted for initial assessments, but it should be recognised that the accuracy of settlement prediction is a function of construction methodology as well as the assessed values of material stiffness, both of which can involve uncertainty.

For uplift loads the tabulated serviceability shaft adhesion values should be multiplied by 0.7 in addition to the application of appropriate geotechnical; strength reduction factors. Uplift capacity of tension piles should also be checked for the inverted cone pull out mechanism using inclined angles of 60° for Unit 5 Sandstone, and 90° for Unit 4 Sandstone.

Higher allowable bearing pressures for CFA/bored pile footings into the Unit 4 Sandstone may be feasible but further site geotechnical investigation comprising the drilling of cored boreholes into the sandstone would be required to further assessed the sandstone strength and defects present.

5.4 Soil Aggressivity for Buried Structures

The results of the soil aggressivity testing were assessed with reference to the criteria in the Australian Standard AS2159-2009 Piling – “Design and Installation”. The test results indicate that the soil chemistry will be mildly to moderately aggressive for buried concrete, and severe for buried steel pile elements.

The groundwater is also expected to be saline, on this basis it is expected that additional protection measures for inground steel and concrete structures will be required, particularly below groundwater levels.

5.5 Potential for Soil Contamination

5.5.1 Adopted Site Assessment Criteria

The current land use is considered consistent with the “Commercial/industrial, includes premises such as shops, offices, factories and industrial sites” as described in Schedule B1 (Investigation Levels for Soil and Groundwater) of the ASC NEPM (1999, amended 2013). Following construction, which will include earthworks and soil disturbance for the lift pit, the current land use is expected to continue.

The media assessed was soil.

Sensitive receptors would include:

- Construction workers undertaking excavation and construction activities during the proposed redevelopment.
- Intrusive maintenance workers conducting incidental maintenance activities during the operational period.
- Administrative and operational (commercial) Staff; and
- Current and future itinerant visitors (stadium and sporting field spectators) during the operational period.

Noting the limited area to be affected by the proposed construction is attached to the existing building structure and the surrounding area is either paved or landscaped, risks to ecological receptors have not been assessed.

Based on the rationale above, to meet the characterisation requirements of this preliminary soil screening assessment, relevant investigation and screening levels have been adopted from the following guidelines:

- ASC NEPM (1999, amended 2013) National Environment Protection (Assessment of Site Contamination) Amendment Measure, National Environment Protection Council (NEPC):
 - Human health:
 - Table 1(A)1 Health Investigation Levels (HIL) for non-petroleum soil contaminants in a commercial/industrial setting (HIL-D).
 - Table 1(3) Soil Health Screening Levels (HSL) for vapour intrusion risks from petroleum hydrocarbon soil contaminants in a commercial/industrial setting (HSL-D).
 - Table 1(B)7 Management Limits for petroleum hydrocarbon TRH Fractions F1-F4 in soil a commercial/industrial setting (ML-D).
 - Table 7 Health screening levels for asbestos contamination in soil a commercial/industrial setting (HSL-D).

D&N note the “commercial/industrial” investigation and screening levels presented in the ASC NEPM (1999, amended 2013) do not provide adequate protection for intrusive maintenance and construction workers. Therefore, the guidance provided in Cooperative Research Council for Contamination Assessment and Remediation of the Environment (CRC-CARE) *Technical Report no. 10 – Health Screening Levels for petroleum hydrocarbons in soil and groundwater - Part 1: Technical Development Document* (2010) has been adopted, with the values presented in Table A4 – Soil Health Screening Levels for direct contact (intrusive maintenance worker) adopted for volatile and semi-volatile petroleum hydrocarbon COPC. No similar guidance is available for non-volatile COPC therefore the ASC NEPM (1999, amended 2013) criteria (nominated above) will be applied as screening criteria.

Adopted site assessment criteria are presented in Table C2 (in Appendix C).

5.5.2 Contamination Risks

Table C2 (in Appendix C) presents a summary of the chemical soil analytical results, compared against the relevant site assessment criteria.

Concentrations of targeted COPC did not exceed the adopted site assessment criteria.

Table C3 (in Appendix C) presents a summary of the asbestos in soil analytical results, compared against the adopted site assessment criteria.

Asbestos was not detected in the soil samples analysed.

5.6 Preliminary (indicative) Waste Classification for Excavated Soils

5.6.1 Adopted Waste Assessment Criteria

Waste classes in NSW are defined in the *Protection of the Environment Operations Act 1997* (POEO Act) with the NSW Waste Classification Guidelines (2014) providing a framework for assessing and classifying wastes. For the purpose of classifying fill material comprising the earthen mound, the guidance provided in Part 1 of the Waste Classification Guidelines is applicable.

Analytical results have compared to the guidelines values presented in the NSW DECC Waste Classification Guidelines Part 1: Classifying waste (2014), using the tiered assessment process, and relying on establishing Specific Contaminant Concentration (SCC) and TCLP values per Tables 1 and 2 in NSW DECC Waste Classification Guidelines Part 1: Classifying waste (2014) for waste classification in NSW.

5.6.2 Preliminary (indicative) waste Classification

Asbestos was not detected in the samples analysed therefore excavated soils are not expected to require pre-classification as special waste (asbestos waste).

Table C4 (in Appendix C) presents a summary of the chemical soil and leachate analytical results, compared against the relevant waste assessment criteria.

No total or leached analytical result exceeded the SCC or TCLP thresholds for general solid waste therefore the excavated soils are considered likely to be suitable for off-site disposal, to a licensed receiving facility, as General Solid Waste (non-putrescible).

6 Closure

D&N Geotechnical has prepared this report specifically for the Port Authority of NSW, and the purposes outlined within this report. It is not suitable for use or reliance in other projects, varied purposes, or by third parties. Any third party relying on this report beyond its intended use, without the written consent of D&N, does so at their own risk, and D&N holds no responsibility for any resulting loss or damage.

Subsurface conditions can be complex and vary over relatively short distances, and over time. The inferred geotechnical model and recommendations in this report are based on limited subsurface investigations at discrete locations. The engineering logs describe subsurface conditions only at the investigation locations at the time of the investigation.

D&N's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided may be limited by undetected variations in ground conditions between sampling locations, site accessibility or budget constraints.



The assessment of hazards arising from this advice is restricted to the geotechnical components set out in this report and are based on known project conditions and stated assumptions. Detailed safety in design assessments are outside the scope of a geotechnical investigation report.

Further investigations may be required to support detailed design if there are scope limitations or changes to the nature of the project.

The report must be read in its entirety without separation of individual pages or sections.

D&N cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation or conclusion given in this report.

The report may not be used as part of a project specification without review and agreement by D&N.



Information about your D&N Geotechnical Report

Subsurface conditions can change

Subsurface conditions arise from a combination of natural processes, the presence of flora and fauna, and human activities. It is crucial to note that this report reflects the conditions observed during our investigation, and decisions should not solely rely on its findings, as its accuracy may be influenced by the passage of time. It is essential to recognise that alterations to site conditions, such as the introduction of fill, may have occurred since our investigation. In such cases, D&N should be consulted to advise how these changes may have impacted the project.

Your report is based on project specific criteria

This report is based on project-specific requirements understood by D&N during proposal acceptance, including the project's nature, site size, location, infrastructure, and conditions at the time of investigation. If there are changes to the project's nature, consult with D&N to assess their impact on our recommendations. We cannot accept responsibility for issues arising from unconsulted changes in project factors.

Interpretation of factual data

Site investigations identify actual subsurface conditions at those discrete locations at the specific point-in-time of the investigation. Data derived from external data sources such as literature, maps and subsequent laboratory testing are interpreted by geologists, engineers, and scientists to provide their opinion on conditions, and likely impact to the project.

Conditions can change or differ from those that are inferred to exist. To reduce impacts associated with unexpected conditions, D&N should be consulted throughout the project to identify varying conditions, undertake additional work, and recommend alternative solutions.

Interpretation by other design professionals

To prevent misinterpretations of our report by other professionals, it is recommended to consult with D&N. This consultation will ensure a clear understanding of report implications and facilitate a thorough review of any plans, designs, or specifications that may be influenced by our findings.

Your report is prepared for specific persons

To avoid the misuse of information in this report, it is recommended that D&N are consulted before passing your report on to another person or organisation who may not be familiar with the background or purpose of the report.

Your report will only give preliminary recommendations

Your report is based on discrete sampling locations which are indicative of actual conditions across an area. This assumption will not be substantiated until the project has begun, and as such recommendations should be treated as preliminary. D&N is familiar with the project background needed to assess and validate preliminary recommendations throughout the project. Should another party implement the recommendations of this report, there is a risk of misinterpretation. D&N cannot be held responsible for such misinterpretation.

Data should not be separated from this report

The report comprehensively communicates the outcomes of the site assessment. It is crucial that the report remains intact and unaltered to prevent any misinterpretation of findings when taken out of context.

Geo-environmental

Your report will not likely relate any findings regarding hazardous materials on the site unless specifically required. Environmental science requires specialised techniques, equipment and testing, and suitably qualified and experienced personnel.

Standard of care

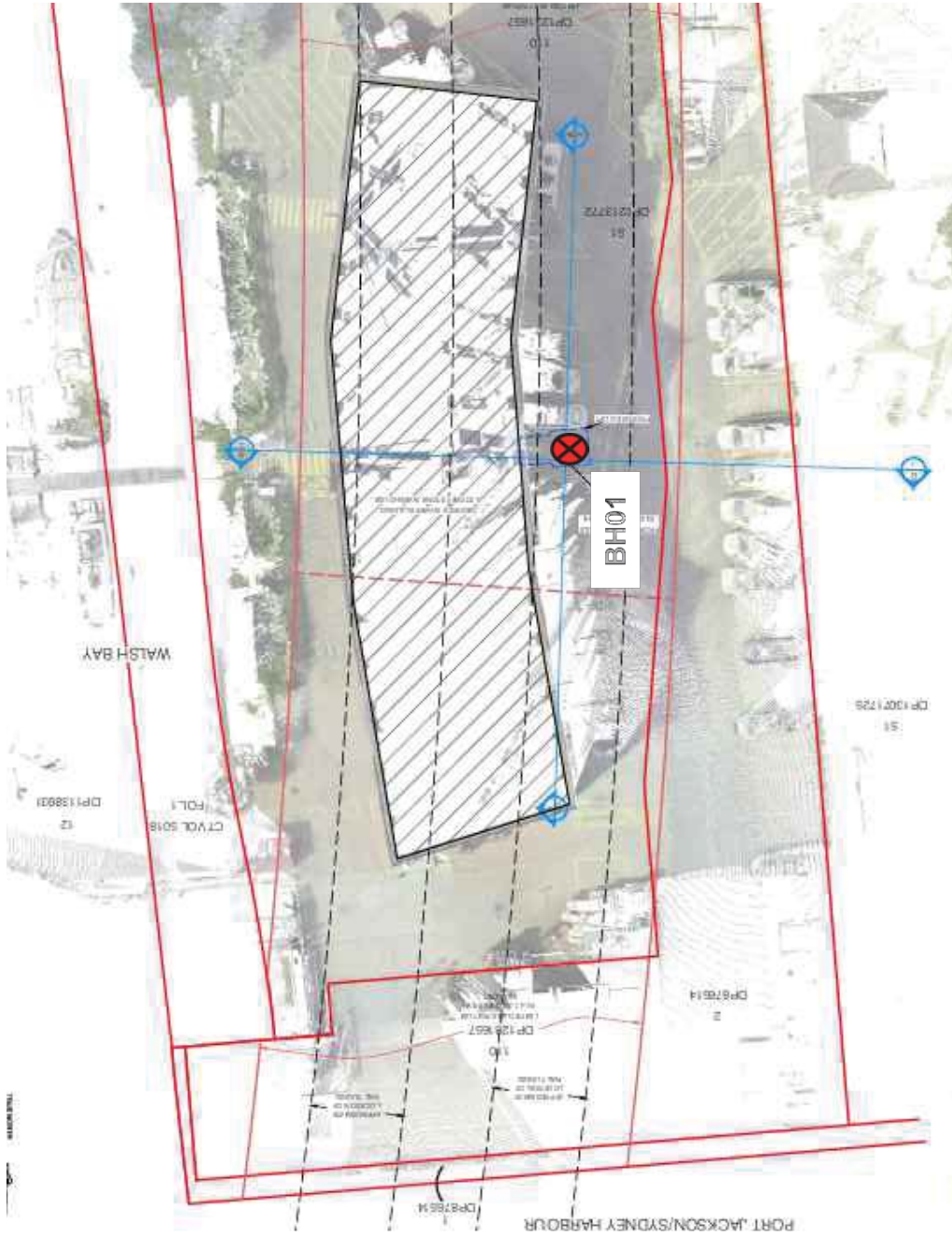
D&N conducted consulting services and generated this report in accordance with the Client's requirements, utilising available data and expertise. The findings reflect reasonable judgment, diligence, and adherence to professional standards within commission constraints. This report carries no expressed or implied warranty regarding the professional advice provided.


Additional assistance

Not all approaches may have been dealt with in your report. Should the project progress, D&N should be contacted to develop alternative approaches and methods that may benefit both timing and cost.

Figure

Figure 1 – Borehole Location Plan



drawn	STP			client:	Port Authority of NSW	
approved	-			project:	Moore's Wharf Building Refurbishment – New Lift 4 Towns Place, Walsh Bay, NSW	
date	08/10/24	scale	NTS	title:	Borehole Location Plan	
original size	A4	project no:	S-0159.00	figure no:	FIGURE 1	

Appendix A Borehole Log



Explanatory Notes

The techniques employed in this report to describe and classify soils and rocks are in general accordance with the Australian Standard AS1726-2017 Geotechnical Site Investigations. The material descriptions are derived from field observations and engineering assessments and may be supplemented or validated by in situ or laboratory testing. The accuracy of the information is dependent on the level of investigation, the extent of sampling and testing, and the inherent variability of the conditions encountered.

Method

Test Pitting: excavation/trench

BH	Backhoe bucket
EX	Excavator bucket
R	Ripper
H	Hydraulic Hammer
X	Existing excavation
N	Natural exposure

Manual drilling: hand operated tools

HA	Hand Auger
----	------------

Continuous sample drilling

PT	Push tube
PS	Percussion sampling
SON	Sonic drilling

Hammer drilling

AH	Air hammer
AT	Air track

Spiral flight auger drilling

AS	Auger screwing
AD/V	Continuous flight auger: V-bit
AD/T	Continuous spiral flight auger: TC-Bit
HFA	Continuous hollow flight auger

Rotary non-core drilling

WB	Washbore drilling
RR	Rock roller

Rotary core drilling

PQ	85 mm core (wire line core barrel)
HQ	63.5 mm core (wire line core barrel)
NMLC	51.94 mm core (conventional core barrel)
NQ	47.6 mm core (wire line core barrel)
DT	Diatube (concrete coring)

Sampling is conducted to facilitate further assessment of selected materials encountered.

Sampling method

Soil sampling

B	Bulk disturbed sample
D	Disturbed sample
C	Core sample
ES	Environmental soil sample
SPT	Standard Penetration Test sample
U	Thin wall tube 'undisturbed'

Water sampling

WS	Environmental water sample
----	----------------------------

Field testing

SPT	Standard Penetration Test
HP/PP	Hand/Pocket Penetrometer
Dynamic Penetrometers (blows per noted increment)	
DCP	Dynamic Cone Penetrometer
PSP	Perth Sand Penetrometer
VS	Vane Shear
PLT	Plate Load Test
PID	Photo Ionization Detector

If encountered, refusal (R), or hammer bouncing (HB) of penetrometers may be noted.

The quality of the rock can be assessed by the degree of natural defects/fractures and the following.

Rock quality description

TCR	Total Core Recovery (%) (length of core recovered divided by the length of core run)
RQD	Rock Quality Designation (%) (sum of axial lengths of core greater than 100 mm long divided by the length of core run)
SCR	Solid Core Recovery (%) (sum of axial lengths of core greater than the core diameter mm long divided by the length of core run)

Groundwater

Not Encountered Excavation is dry in the short term	
Not Observed	Water level observation not possible
Seepage	Water seeping into hole
Inflow	Water flowing/flooding into hole

The presence of perched groundwater can often lead to an incorrect estimation of the true depth to the water table. It is essential to consider that groundwater levels can fluctuate significantly based on a range of factors, such as climatic changes and site conditions. Therefore, any assessment of groundwater levels should be conducted with caution and verified through reliable testing methods.

Excavation conditions

Stable	No obvious short term instability noted
Spalling	Material falling into excavation (minor/major)
Unstable	Collapse of one or more face of the excavation



Explanatory Notes: General Soil Description

The methods of description and classification of soils used in this report are based on Australian Standard AS1726-2017 Geotechnical Site Investigations. A material is described as a soil if it can be remoulded by hand in its field condition or in water. The dominant component is shown in upper case, with secondary components in lower case. In general descriptions cover: soil type, plasticity or particle size/shape, colour, strength or density, moisture and inclusions.

In general, soil types are classified according to the dominant particle on the basis of the following particle sizes.

Soil Classification		Particle Size (mm)
CLAY		< 0.002
SILT		0.002 0.075
SAND	fine	0.075 to 0.21
	medium	0.21 to 0.6
	coarse	0.6 to 2.36
GRAVEL	fine	2.36 to 6.7
	medium	6.7 to 19
	coarse	19 to 63
COBBLES		63 to 200
BOULDERS		> 200

Soil types may be qualified by the presence of minor components on the basis of field examination methods and/or the soil grading.

In coarse grained soils		In fine soils	
Terminology	% fines	% coarse	% coarse
Trace	≤5	≤15	≤15
With	>5, ≤12	>15, ≤30	>15, ≤30

The strength of cohesive soils is classified by engineering assessment or field/lab testing as follows.

Strength	Symbol	Undrained shear strength
Very Soft	VS	≤12kPa
Soft	S	12kPa to ≤25kPa
Firm	F	25kPa to ≤50kPa
Stiff	St	50kPa to ≤100kPa
Very Stiff	VSt	100kPa to ≤200kPa
Hard	H	>200kPa

Cohesionless soils are classified on the basis of relative density as follows.

Relative Density	Symbol	Density Index
Very Loose	VL	<15%
Loose	L	15% to ≤35%
Medium Dense	MD	35% to ≤65%
Dense	D	65% to ≤85%
Very Dense	VD	>85%

The plasticity of cohesive soils is defined by the Liquid Limit (LL) as follows.

Plasticity	Silt LL	Clay LL
Low plasticity	≤ 35%	≤ 35%
Medium plasticity	N/A	> 35% ≤ 50%
High plasticity	> 50%	> 50%

The moisture condition of soil is described by appearance and feel and for cohesive soils may be described in relation to the Plastic Limit (PL) or Liquid Limit (LL).

Moisture condition and description

Dry	Cohesive soils: hard, friable, dry of plastic limit. Granular soils: cohesionless and free-running
Moist	Cool feel and darkened colour: Cohesive soils can be moulded. Granular soils tend to cohere
Wet	Cool feel and darkened colour: Cohesive soils usually weakened & free water forms. Granular soils tend to cohere

The structure of the soil may be described as follows.

Zoning	Description
Layer	Continuous across exposure or sample
Lens	Discontinuous layer (lenticular shape)
Pocket	Irregular inclusion of different material

Soil layers may exhibit various structural features such as softened zones, fissures, cracks, joints, and root-holes. In addition, coarse-grained soils can be described based on their degree of cementation, which can be classified as either strong or weak.

The soil origin may also be noted if possible to deduce.

Soil origin and description

Fill	Anthropogenic deposits or disturbed material
Topsoil	Zone of soil affected by roots and root fibres
Peat	Significantly organic soils
Colluvial	Transported down slopes by gravity/water
Aeolian	Transported and deposited by wind
Alluvial	Deposited by rivers
Estuarine	Deposited in coastal estuaries
Lacustrine	Deposited in freshwater lakes
Marine	Deposits in marine environments
Residual soil	Soil formed by in situ weathering of rock, with no structure/fabric of parent rock evident
Extremely weathered material	Formed by in situ weathering of geological formations, with the structure/fabric of parent rock intact but with soil strength properties

The origin of the soil generally cannot be deduced solely on the appearance of the material and the inference may be supplemented by further geological evidence or other field observation. Where there is doubt, the terms 'possibly' or 'probably' may be used.



Explanatory Notes: General Rock Description

If a material cannot be remoulded by hand in its field condition or in water, it is categorized as a rock. The description includes the rock type, grain size, structure, color, degree of weathering, strength, minor components or inclusions, and, where applicable, defect types, shape, roughness, and coating/infill. It is important to note that the origin of rocks cannot be determined solely by their appearance, and additional geological evidence or field observations may be necessary to make accurate inferences. If there is any uncertainty, the terms "possibly" or "probably" may be used to describe the rock.

To provide a comprehensive description of rock types, it is important to consider the predominant grain or crystal size. This can be achieved by grouping them into categories for each specific rock type. In doing so, the descriptions of the rocks can be more accurate and informative.

Rock type	Groups
Sedimentary	Deposited, carbonate (porous or non), volcanic ejection
Igneous	Felsic (much quartz, pale), Intermediate, or mafic (little quartz, dark)
Metamorphic	Foliated or non-foliated
Duricrust	Cementing mineralogy (iron oxides or hydroxides, silica, calcium carbonate, gypsum)

Reference should be made to AS1726 for details of the rock types and methods of classification.

The classification of rock weathering is described based on definitions in AS1726 and summarised as follows.

Term and symbol	Definition
Residual Soil RS	Soil developed on rock with the mass structure and substance of the parent rock no longer evident
Extremely weathered XW	Weathered to such an extent that the rock has 'soil-like' properties. Mass structure and substance still evident
Distinctly weathered DW	The strength is usually changed and may be highly discoloured. Porosity may be increased by leaching, or decreased due to deposition in pores. May be distinguished into MW (Moderately Weathered) and HW (Highly Weathered).
Slightly weathered SW	Slightly discoloured; little or no change of strength from fresh rock
Fresh Rock FR	The rock shows no sign of decomposition or staining

The rock material strength can be defined based on the point load index as follows.

Term and symbol	Point Load Index Is50 (MPa)
Very Low VL	0.03 to 0.1
Low L	0.1 to 0.3
Medium M	0.3 to 1.0
High H	1.0 to 3
Very High VH	3 to 10
Extremely High EH	> 10

It is important to note that the rock material strength as above is distinct from the rock mass strength which can be significantly weaker due to the effect of defects.

The field guide detailed in AS1726 may be used for a preliminary assessment of rock strength in situations where point load testing is not feasible.

The defect spacing measured normal to defects of the same set or bedding, is described as follows.

Definition	Defect Spacing (mm)
Thinly laminated	< 6
Laminated	6 to 20
Very thinly bedded	20 to 60
Thinly bedded	60 to 200
Medium bedded	200 to 600
Thickly bedded	600 to 2000
Very thickly bedded	> 2000

Terms for describing rock and defects are as follows.

Defect Terms			
Joint	J	Infilled Seam	IS
Bedding Parting	P	XW Seam	EW
Shear Surface	S	Drill Break	DB
Sheared Zone	SZ		
Sheared Seam	SS		
Crushed Seam	CS		

The shape and roughness of defects in the rock mass are described using the following terms.

Planarity		Roughness	
Planar	PR	Very Rough	VR
Curved	CU	Rough	RF
Undulating	UN	Smooth	SM
Irregular	IR	Slickensided	SL
Stepped	ST		

The coating or infill associated with defects in the rock mass are described as follows.

Infill and Coating			
Clean	CN		
Stained	SN		
Carbonaceous Minerals	X		
	MU	Unidentified mineral	
	MS	Secondary mineral	
	CA	Calcite	
	Fe	Iron Oxide	
	Qz	Quartz	
Veneer	VN	Thin or patchy coating	
Coating	CT	Infill up to 1mm	



Engineering Log - Borehole

Project No.: S-0159.00

Client: Port Authority of NSW	Commenced: 17/9/2024	
Project Name: Moores Wharf Building Refurbishment - New Lift	Completed: 18/9/2024	
Hole Location: 4 Towns Place, Walsh Bay NSW	Logged By: NB	
Hole Position:	Checked By: STP	
Drill Model and Mounting: Comacchio Geo 205	Inclination: -90°	RL Surface: 2.50 m
Hole Diameter: 150 mm	Bearing:	Datum: AHD
		Operator: Terratest

Drilling Information				Soil Description					Observations					
Method	Penetration	Support	Water	Samples & Field Tests	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
													100 200 300 400 500	
DT				0.10m ES						BRICK PAVERS (75MM THICKNESS).	D			FILL
				0.20m ES						FILL SAND.				0.10: PID = 0.2 ppm
				0.50m ES						FILL Gravelly SAND: fine to coarse grained, dark grey, mottled pale grey.				0.50: PID = 0.2 ppm
				0.70m ES										
				0.90m ES						FILL SAND: fine to coarse grained, red-brown, mottled brown, with fine to coarse sandstone gravel.				0.90: PID = 0.1 ppm
				1.00m ES		1.5	1							
AD/T				1.50m SPT 4.1,2 N=3						SANDSTONE COBBLES AND BOULDERS: brown, yellow-brown, with sand.				1.50: PID = 0.7 ppm
				1.95m		0.5	2				M			
				2.30m ES										2.30: PID = 0.2 ppm
				2.50m ES										
		C		3.00m SPT 2.13,7 N=20		-0.5	3			SANDSTONE COBBLES AND BOULDERS: brown, with Clayey Sand; trace glass fragments.	W			3.00: PID = 0.2 ppm
				3.45m										
RR				4.30m SPT 10.5,10 N=15		-1.5	4							4.30: PID = 0.4 ppm
				4.75m										
				5.70m SPT 4.2,4 N=6		-2.5	5			FILL SAND: fine to coarse grained, brown, dark grey, with Silt and Sandstone cobbles; trace sandstone gravel and charcoal.				5.00: Slight organic odour
				6.15m										5.70: PID = 0.8 ppm
WB				7.20m SPT 9.2,10 N=12		-4.5	7			Clayey SILT: low plasticity, dark grey, with sandy bands.	w>PL	St		ESTUARINE SOIL
				7.65m										7.00: Slight organic odour 7.20: PID = 0.2 ppm

Method AS - Auger Screwing ADV - Auger V Bit ADT - Auger Tungsten Carbide Bit RR - Rock Roller WB - Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test PP - Pocket Penetrometer	Moisture Condition D - Dry M - Moist W - Wet w - Moisture Content PL - Plastic Limit LL - Liquid Limit	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System				

D&N 1.02.0.LIB.GLB Log IS AU BOREHOLE 1.A S-0159.00 GINT DATABASE.GPJ --Drawingfile-- 8/10/2024 15:59 10:05:00.09 Dsigel Lab and In Situ Tool - DGD [Lib: D&N 1.02.0 2023-12-04 Proj: D&N 1.02.0 2023-12-04



Borehole No.
BH01
Page 2 of 2

Engineering Log - Borehole

Project No.: S-0159.00

Client: Port Authority of NSW	Commenced: 17/9/2024	
Project Name: Moores Wharf Building Refurbishment - New Lift	Completed: 18/9/2024	
Hole Location: 4 Towns Place, Walsh Bay NSW	Logged By: NB	
Hole Position:	Checked By: STP	
Drill Model and Mounting: Comacchio Geo 205	Inclination: -90°	RL Surface: 2.50 m
Hole Diameter: 150 mm	Bearing:	Datum: AHD
		Operator: Terratest

Drilling Information				Soil Description						Observations					
Method	Penetration	Support	Water	Samples & Field Tests	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
											w>PL	St		100 200 300 400 500	
WB							8.70m			SAND: fine to coarse grained, dark grey, with shell fragments; trace silt.	W	MD			ESTUARINE SOIL
				SPT 6.25,4/50mm N=R 9.05m		-6.5	9			SANDSTONE: medium to coarse grained, orange-brown, inferred to be highly weathered and of very low strength.					8.80: PID = 0.2 ppm ROCK
RR							10.20m								
				SPT 24,28 N=R 10.50m		-7.5	10								
							-8.5	11		Hole Terminated at 10.50 m					10.50: Borehole grout back filled
							-9.5	12							
							-10.5	13							
							-11.5	14							
							-12.5	15							

<p>Method</p> <p>AS - Auger Screwing ADV - Auger V Bit ADT - Auger Tungsten Carbide Bit RR - Rock Roller WB - Washbore</p> <p>Support</p> <p>C - Casing</p>	<p>Penetration</p> <p>No resistance ranging to refusal</p>	<p>Water</p> <p>Level (Date) Inflow Partial Loss Complete Loss</p>	<p>Samples and Tests</p> <p>U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test PP - Pocket Penetrometer</p>	<p>Moisture Condition</p> <p>D - Dry M - Moist W - Wet w - Moisture Content PL - Plastic Limit LL - Liquid Limit</p>	<p>Consistency/Relative Density</p> <p>VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense</p>
<p>Classification Symbols and Soil Descriptions</p> <p>Based on Unified Soil Classification System</p>					

D&N 1.02.0.LIB.GLB Log IS AU BOREHOLE 1.A S-0159.00 GINT DATABASE.GPJ --Drawingfile-- 8/10/2024 15:59 10:05:00.09 Diggle Lab and in Situ Tool - DGD [Lib: D&N 1.02.0 2023-12-04 Proj: D&N 1.02.0 2023-12-04

Appendix B Laboratory Test Reports



Environment Testing

Certificate of Analysis

D & N Geotechnical Pty Ltd
 Unit 11/22-38 Thynne St
 Bruce
 ACT 2617



NATA Accredited
 Accreditation Number 1261
 Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
 NATA is a signatory to the ILAC Mutual Recognition
 Arrangement for the mutual recognition of the
 equivalence of testing, medical testing, calibration,
 inspection, proficiency testing scheme providers and
 reference materials producers reports and certificates.

Attention: Sven Padina

Report 1141087-S
 Project name WALSH BAY LIFT PIT NSW
 Project ID S-0159.00
 Received Date Sep 19, 2024

Client Sample ID			BH01_0.5-0.7	BH01_2.3-2.5	BH01_3.0-3.5	BH01_4.3-4.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S24-Se0050334	S24-Se0050335	S24-Se0050336	S24-Se0050337
Date Sampled			Sep 17, 2024	Sep 17, 2024	Sep 17, 2024	Sep 17, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	230	< 50	< 50	74
TRH C29-C36	50	mg/kg	120	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	350	< 50	< 50	74
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{*N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	320	< 100	< 100	100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	320	< 100	< 100	100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	101	81	93	83
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	3.2	0.7	< 0.5	2.6
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	3.5	1.0	0.6	2.8
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	3.7	1.3	1.2	3.1
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	0.8	< 0.5	< 0.5	0.5
Anthracene	0.5	mg/kg	1.9	< 0.5	< 0.5	1.5
Benz(a)anthracene	0.5	mg/kg	3.1	0.6	< 0.5	2.4
Benzo(a)pyrene	0.5	mg/kg	2.4	0.6	< 0.5	1.9
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	1.3	< 0.5	< 0.5	1.1
Benzo(g,h,i)perylene	0.5	mg/kg	1.4	< 0.5	< 0.5	0.8
Benzo(k)fluoranthene	0.5	mg/kg	2.4	< 0.5	< 0.5	1.9
Chrysene	0.5	mg/kg	2.2	0.6	< 0.5	1.9



Environment Testing

Client Sample ID			BH01_0.5-0.7	BH01_2.3-2.5	BH01_3.0-3.5	BH01_4.3-4.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S24-Se0050334	S24-Se0050335	S24-Se0050336	S24-Se0050337
Date Sampled			Sep 17, 2024	Sep 17, 2024	Sep 17, 2024	Sep 17, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	6.8	1.0	1.0	5.6
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	1.2	< 0.5	< 0.5	0.9
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	4.4	< 0.5	0.6	3.5
Pyrene	0.5	mg/kg	6.3	1.1	0.7	4.6
Total PAH*	0.5	mg/kg	34	3.9	2.3	27
2-Fluorobiphenyl (surr.)	1	%	69	131	141	136
p-Terphenyl-d14 (surr.)	1	%	64	136	121	127
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	0.07	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	0.11	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	0.18	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	0.18	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	74	INT	123	INT
Tetrachloro-m-xylene (surr.)	1	%	61	141	124	129
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2



Environment Testing

Client Sample ID			BH01_0.5-0.7	BH01_2.3-2.5	BH01_3.0-3.5	BH01_4.3-4.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S24-Se0050334	S24-Se0050335	S24-Se0050336	S24-Se0050337
Date Sampled			Sep 17, 2024	Sep 17, 2024	Sep 17, 2024	Sep 17, 2024
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	61	112	120	123
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorodate (surr.)	1	%	74	INT	123	INT
Tetrachloro-m-xylene (surr.)	1	%	61	141	124	129
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2,4,6-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2,6-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1	< 1	< 1	< 1
Pentachlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
Tetrachlorophenols - Total	10	mg/kg	< 10	< 10	< 10	< 10
Total Halogenated Phenol*	1	mg/kg	< 1	< 1	< 1	< 1



Environment Testing

Client Sample ID			BH01_0.5-0.7	BH01_2.3-2.5	BH01_3.0-3.5	BH01_4.3-4.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S24-Se0050334	S24-Se0050335	S24-Se0050336	S24-Se0050337
Date Sampled			Sep 17, 2024	Sep 17, 2024	Sep 17, 2024	Sep 17, 2024
Test/Reference	LOR	Unit				
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	< 20	< 20	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
2-Nitrophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Total cresols*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
Dinoseb	20	mg/kg	< 20	< 20	< 20	< 20
Phenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenol-d6 (surr.)	1	%	58	119	114	120
Total Non-Halogenated Phenol*	20	mg/kg	< 20	< 20	< 20	< 20
Heavy Metals						
Arsenic	2	mg/kg	8.6	3.8	< 2	19
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	17	13	6.0	13
Copper	5	mg/kg	53	11	< 5	88
Lead	5	mg/kg	340	400	25	300
Mercury	0.1	mg/kg	2.4	0.3	0.2	0.5
Nickel	5	mg/kg	17	8.2	< 5	18
Zinc	5	mg/kg	480	56	14	100
Sample Properties						
% Moisture	1	%	10	12	17	21

Client Sample ID			BH01_7.2-7.7	BH01_8.8-9.0	G01_QC01
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S24-Se0050338	S24-Se0050339	S24-Se0050340
Date Sampled			Sep 17, 2024	Sep 17, 2024	Sep 17, 2024
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons					
TRH C6-C9	20	mg/kg	-	-	< 20
TRH C10-C14	20	mg/kg	-	-	< 20
TRH C15-C28	50	mg/kg	-	-	150
TRH C29-C36	50	mg/kg	-	-	82
TRH C10-C36 (Total)	50	mg/kg	-	-	232
TRH C6-C10	20	mg/kg	-	-	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	-	< 20
TRH >C10-C16	50	mg/kg	-	-	< 50
TRH >C10-C16 less Naphthalene (F2) ^{*N01}	50	mg/kg	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	210
TRH >C34-C40	100	mg/kg	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	210
BTEX					
Benzene	0.1	mg/kg	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2



Environment Testing

Client Sample ID			BH01_7.2-7.7	BH01_8.8-9.0	^{G01} QC01
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S24-Se0050338	S24-Se0050339	S24-Se0050340
Date Sampled			Sep 17, 2024	Sep 17, 2024	Sep 17, 2024
Test/Reference	LOR	Unit			
BTEX					
o-Xylene	0.1	mg/kg	-	-	< 0.1
Xylenes - Total*	0.3	mg/kg	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	67
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene ^{N02}	0.5	mg/kg	-	-	< 0.5
Polycyclic Aromatic Hydrocarbons					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	7.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	7.5
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	7.5
Acenaphthene	0.5	mg/kg	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	0.8
Anthracene	0.5	mg/kg	-	-	2.1
Benz(a)anthracene	0.5	mg/kg	-	-	6.9
Benzo(a)pyrene	0.5	mg/kg	-	-	4.8
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	-	4.2
Benzo(g,h,i)perylene	0.5	mg/kg	-	-	2.8
Benzo(k)fluoranthene	0.5	mg/kg	-	-	4.2
Chrysene	0.5	mg/kg	-	-	4.6
Dibenz(a,h)anthracene	0.5	mg/kg	-	-	0.8
Fluoranthene	0.5	mg/kg	-	-	13
Fluorene	0.5	mg/kg	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	2.7
Naphthalene	0.5	mg/kg	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	7.3
Pyrene	0.5	mg/kg	-	-	14
Total PAH*	0.5	mg/kg	-	-	68
2-Fluorobiphenyl (surr.)	1	%	-	-	118
p-Terphenyl-d14 (surr.)	1	%	-	-	107
Organochlorine Pesticides					
Chlordanes - Total	0.1	mg/kg	-	-	< 1
4.4'-DDD	0.05	mg/kg	-	-	< 0.5
4.4'-DDE	0.05	mg/kg	-	-	< 0.5
4.4'-DDT	0.05	mg/kg	-	-	1.2
a-HCH	0.05	mg/kg	-	-	< 0.5
Aldrin	0.05	mg/kg	-	-	< 0.5
b-HCH	0.05	mg/kg	-	-	< 0.5
d-HCH	0.05	mg/kg	-	-	< 0.5
Dieldrin	0.05	mg/kg	-	-	< 0.5
Endosulfan I	0.05	mg/kg	-	-	< 0.5
Endosulfan II	0.05	mg/kg	-	-	< 0.5
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.5
Endrin	0.05	mg/kg	-	-	< 0.5
Endrin aldehyde	0.05	mg/kg	-	-	< 0.5
Endrin ketone	0.05	mg/kg	-	-	< 0.5
g-HCH (Lindane)	0.05	mg/kg	-	-	< 0.5
Heptachlor	0.05	mg/kg	-	-	< 0.5
Heptachlor epoxide	0.05	mg/kg	-	-	< 0.5
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.5
Methoxychlor	0.05	mg/kg	-	-	< 0.5



Environment Testing

Client Sample ID			BH01_7.2-7.7	BH01_8.8-9.0	G01 QC01
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S24-Se0050338	S24-Se0050339	S24-Se0050340
Date Sampled			Sep 17, 2024	Sep 17, 2024	Sep 17, 2024
Test/Reference	LOR	Unit			
Organochlorine Pesticides					
Toxaphene	0.5	mg/kg	-	-	< 10
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	< 0.5
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	1.2
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	1.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	< 1
Dibutylchloroendate (surr.)	1	%	-	-	101
Tetrachloro-m-xylene (surr.)	1	%	-	-	121
Organophosphorus Pesticides					
Azinphos-methyl	0.2	mg/kg	-	-	< 0.5
Bolstar	0.2	mg/kg	-	-	< 0.5
Chlorfenvinphos	0.2	mg/kg	-	-	< 0.5
Chlorpyrifos	0.2	mg/kg	-	-	< 0.5
Chlorpyrifos-methyl	0.2	mg/kg	-	-	< 0.5
Coumaphos	2	mg/kg	-	-	< 5
Demeton-S	0.2	mg/kg	-	-	< 0.5
Demeton-O	0.2	mg/kg	-	-	< 0.5
Diazinon	0.2	mg/kg	-	-	< 0.5
Dichlorvos	0.2	mg/kg	-	-	< 0.5
Dimethoate	0.2	mg/kg	-	-	< 0.5
Disulfoton	0.2	mg/kg	-	-	< 0.5
EPN	0.2	mg/kg	-	-	< 0.5
Ethion	0.2	mg/kg	-	-	< 0.5
Ethoprop	0.2	mg/kg	-	-	< 0.5
Ethyl parathion	0.2	mg/kg	-	-	< 0.5
Fenitrothion	0.2	mg/kg	-	-	< 0.5
Fensulfothion	0.2	mg/kg	-	-	< 0.5
Fenthion	0.2	mg/kg	-	-	< 0.5
Malathion	0.2	mg/kg	-	-	< 0.5
Merphos	0.2	mg/kg	-	-	< 0.5
Methyl parathion	0.2	mg/kg	-	-	< 0.5
Mevinphos	0.2	mg/kg	-	-	< 0.5
Monocrotophos	2	mg/kg	-	-	< 5
Naled	0.2	mg/kg	-	-	< 0.5
Omethoate	2	mg/kg	-	-	< 5
Phorate	0.2	mg/kg	-	-	< 0.5
Pirimiphos-methyl	0.2	mg/kg	-	-	< 0.5
Pyrazophos	0.2	mg/kg	-	-	< 0.5
Ronnel	0.2	mg/kg	-	-	< 0.5
Terbufos	0.2	mg/kg	-	-	< 0.5
Tetrachlorvinphos	0.2	mg/kg	-	-	< 0.5
Tokuthion	0.2	mg/kg	-	-	< 0.5
Trichloronate	0.2	mg/kg	-	-	< 0.5
Triphenylphosphate (surr.)	1	%	-	-	113
Polychlorinated Biphenyls					
Aroclor-1016	0.1	mg/kg	-	-	< 1
Aroclor-1221	0.1	mg/kg	-	-	< 1
Aroclor-1232	0.1	mg/kg	-	-	< 1
Aroclor-1242	0.1	mg/kg	-	-	< 1
Aroclor-1248	0.1	mg/kg	-	-	< 1



Environment Testing

Client Sample ID			BH01_7.2-7.7	BH01_8.8-9.0	^{G01} QC01
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S24-Se0050338	S24-Se0050339	S24-Se0050340
Date Sampled			Sep 17, 2024	Sep 17, 2024	Sep 17, 2024
Test/Reference	LOR	Unit			
Polychlorinated Biphenyls					
Aroclor-1254	0.1	mg/kg	-	-	< 1
Aroclor-1260	0.1	mg/kg	-	-	< 1
Total PCB*	0.1	mg/kg	-	-	< 1
Dibutylchloredate (surr.)	1	%	-	-	101
Tetrachloro-m-xylene (surr.)	1	%	-	-	121
Phenols (Halogenated)					
2-Chlorophenol	0.5	mg/kg	-	-	< 0.5
2,4-Dichlorophenol	0.5	mg/kg	-	-	< 0.5
2,4,5-Trichlorophenol	1	mg/kg	-	-	< 1
2,4,6-Trichlorophenol	1	mg/kg	-	-	< 1
2,6-Dichlorophenol	0.5	mg/kg	-	-	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	-	-	< 1
Pentachlorophenol	1	mg/kg	-	-	< 1
Tetrachlorophenols - Total	10	mg/kg	-	-	< 10
Total Halogenated Phenol*	1	mg/kg	-	-	< 1
Phenols (non-Halogenated)					
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	-	-	< 20
2-Methyl-4,6-dinitrophenol	5	mg/kg	-	-	< 5
2-Nitrophenol	1	mg/kg	-	-	< 1
2,4-Dimethylphenol	0.5	mg/kg	-	-	< 0.5
2,4-Dinitrophenol	5	mg/kg	-	-	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	< 0.5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	< 1
Total cresols*	0.5	mg/kg	-	-	< 1
4-Nitrophenol	5	mg/kg	-	-	< 5
Dinoseb	20	mg/kg	-	-	< 20
Phenol	0.5	mg/kg	-	-	< 2
Phenol-d6 (surr.)	1	%	-	-	121
Total Non-Halogenated Phenol*	20	mg/kg	-	-	< 20
Heavy Metals					
Arsenic	2	mg/kg	-	-	6.3
Cadmium	0.4	mg/kg	-	-	< 0.4
Chromium	5	mg/kg	-	-	15
Copper	5	mg/kg	-	-	58
Lead	5	mg/kg	-	-	240
Mercury	0.1	mg/kg	-	-	0.8
Nickel	5	mg/kg	-	-	25
Zinc	5	mg/kg	-	-	270
Sample Properties					
% Moisture	1	%	23	15	10
Chloride	10	mg/kg	3300	2400	-
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	2500	1700	-
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	8.5	9.1	-
Resistivity*	0.5	ohm.m	4.0	5.8	-
Sulphate (as SO4)	10	mg/kg	370	320	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Sep 24, 2024	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Sep 24, 2024	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Sep 24, 2024	14 Days
BTEX - Method: LTM-ORG-2010 BTEX and Volatile TRH	Sydney	Sep 24, 2024	14 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Sep 24, 2024	14 Days
Phenols (Halogenated) - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Sep 24, 2024	14 Days
Phenols (non-Halogenated) - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Sep 24, 2024	14 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Sep 24, 2024	28 Days
Eurofins Suite B15			
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Sep 24, 2024	14 Days
Organophosphorus Pesticides - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS	Sydney	Sep 24, 2024	14 Days
Polychlorinated Biphenyls - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Sep 24, 2024	28 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Sep 19, 2024	14 Days
Chloride - Method: LTM-INO-4270 Anions by Ion Chromatography	Sydney	Sep 24, 2024	28 Days
Conductivity (1:5 aqueous extract at 25 °C as rec.) - Method: LTM-INO-4030 Conductivity	Sydney	Sep 24, 2024	7 Days
pH (1:5 Aqueous extract at 25 °C as rec.) - Method: LTM-GEN-7090 pH by ISE	Sydney	Sep 24, 2024	7 Days
Sulphate (as SO ₄) - Method: In-house method LTM-INO-4270 Sulphate by Ion Chromatograph	Sydney	Sep 24, 2024	28 Days



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Project Name: WALSH BAY LIFT P/T NSW
Project ID: S-0159.00

Order No.: S-0159.00
Report #: 1141087
Phone:
Fax:

Received: Sep 19, 2024 9:09 AM
Due: Sep 26, 2024
Priority: 5 Day
Contact Name: Sven Padina

Eurofins Analytical Services Manager : Ursula Long

Sample Detail

Sydney Laboratory - NATA # 1261 Site # 18217										
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	BH01_0.5-0.7	Sep 17, 2024		Soil	S24-Se0050334	X				X
2	BH01_2.3-2.5	Sep 17, 2024		Soil	S24-Se0050335	X				X
3	BH01_3.0-3.5	Sep 17, 2024		Soil	S24-Se0050336					X
4	BH01_4.3-4.8	Sep 17, 2024		Soil	S24-Se0050337					X
5	BH01_7.2-7.7	Sep 17, 2024		Soil	S24-Se0050338				X	X
6	BH01_8.8-9.0	Sep 17, 2024		Soil	S24-Se0050339				X	X
7	QC01	Sep 17, 2024		Soil	S24-Se0050340				X	X
8	BH01_0.5-0.7	Sep 17, 2024		US Leachate	S24-Se0050341			X		
9	BH01_0.1-0.2	Sep 17, 2024		Soil	S24-Se0050342		X			
10	BH01_0.9-1.0	Sep 17, 2024		Soil	S24-Se0050343		X			
11	BH01_1.5-2.1	Sep 17, 2024		Soil	S24-Se0050344		X			
12	BH01_5.7-6.2	Sep 17, 2024		Soil	S24-Se0050345		X			
Test Counts						2	4	1	1	5
Eurofins Suite B7A										
Moisture Set										7
Aggressivity Soil Set										2
Eurofins Suite B15										
Metals M8										1
USA Leaching Procedure										1
Polycyclic Aromatic Hydrocarbons									X	1
HOLD*										4
Asbestos - AS4964										2

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
- Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
- Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
- For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
- Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
- SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ppm: parts per million

µg/L: micrograms per litre

ppb: parts per billion

%: Percentage

org/100 mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100 mL: Most Probable Number of organisms per 100 millilitres

CFU: Colony Forming Unit

Colour: Pt-Co Units (CU)

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

- Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Total Recoverable Hydrocarbons						
TRH C6-C9	mg/kg	< 20		20	Pass	
TRH C6-C10	mg/kg	< 20		20	Pass	
Method Blank						
BTEX						
Benzene	mg/kg	< 0.1		0.1	Pass	
Toluene	mg/kg	< 0.1		0.1	Pass	
Ethylbenzene	mg/kg	< 0.1		0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2		0.2	Pass	
o-Xylene	mg/kg	< 0.1		0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3		0.3	Pass	
Method Blank						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	mg/kg	< 0.5		0.5	Pass	
Method Blank						
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	mg/kg	< 0.5		0.5	Pass	
Acenaphthylene	mg/kg	< 0.5		0.5	Pass	
Anthracene	mg/kg	< 0.5		0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5		0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5		0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5		0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5		0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5		0.5	Pass	
Chrysene	mg/kg	< 0.5		0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5		0.5	Pass	
Fluoranthene	mg/kg	< 0.5		0.5	Pass	
Fluorene	mg/kg	< 0.5		0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5		0.5	Pass	
Naphthalene	mg/kg	< 0.5		0.5	Pass	
Phenanthrene	mg/kg	< 0.5		0.5	Pass	
Pyrene	mg/kg	< 0.5		0.5	Pass	
Method Blank						
Organochlorine Pesticides						
Chlordanes - Total	mg/kg	< 0.1		0.1	Pass	
4.4'-DDD	mg/kg	< 0.05		0.05	Pass	
4.4'-DDE	mg/kg	< 0.05		0.05	Pass	
4.4'-DDT	mg/kg	< 0.05		0.05	Pass	
a-HCH	mg/kg	< 0.05		0.05	Pass	
Aldrin	mg/kg	< 0.05		0.05	Pass	
b-HCH	mg/kg	< 0.05		0.05	Pass	
d-HCH	mg/kg	< 0.05		0.05	Pass	
Dieldrin	mg/kg	< 0.05		0.05	Pass	
Endosulfan I	mg/kg	< 0.05		0.05	Pass	
Endosulfan II	mg/kg	< 0.05		0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05		0.05	Pass	
Endrin	mg/kg	< 0.05		0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05		0.05	Pass	
Endrin ketone	mg/kg	< 0.05		0.05	Pass	
g-HCH (Lindane)	mg/kg	< 0.05		0.05	Pass	
Heptachlor	mg/kg	< 0.05		0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	



Environment Testing

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
2,4,5-Trichlorophenol	mg/kg	< 1		1	Pass	
2,4,6-Trichlorophenol	mg/kg	< 1		1	Pass	
2,6-Dichlorophenol	mg/kg	< 0.5		0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1		1	Pass	
Pentachlorophenol	mg/kg	< 1		1	Pass	
Tetrachlorophenols - Total	mg/kg	< 10		10	Pass	
Method Blank						
Phenols (non-Halogenated)						
2-Cyclohexyl-4,6-dinitrophenol	mg/kg	< 20		20	Pass	
2-Methyl-4,6-dinitrophenol	mg/kg	< 5		5	Pass	
2-Nitrophenol	mg/kg	< 1		1	Pass	
2,4-Dimethylphenol	mg/kg	< 0.5		0.5	Pass	
2,4-Dinitrophenol	mg/kg	< 5		5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2		0.2	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4		0.4	Pass	
4-Nitrophenol	mg/kg	< 5		5	Pass	
Dinoseb	mg/kg	< 20		20	Pass	
Phenol	mg/kg	< 0.5		0.5	Pass	
Method Blank						
Total Recoverable Hydrocarbons						
TRH C10-C14	mg/kg	< 20		20	Pass	
TRH C15-C28	mg/kg	< 50		50	Pass	
TRH C29-C36	mg/kg	< 50		50	Pass	
TRH >C10-C16	mg/kg	< 50		50	Pass	
TRH >C16-C34	mg/kg	< 100		100	Pass	
TRH >C34-C40	mg/kg	< 100		100	Pass	
Method Blank						
Heavy Metals						
Arsenic	mg/kg	< 2		2	Pass	
Cadmium	mg/kg	< 0.4		0.4	Pass	
Chromium	mg/kg	< 5		5	Pass	
Copper	mg/kg	< 5		5	Pass	
Lead	mg/kg	< 5		5	Pass	
Mercury	mg/kg	< 0.1		0.1	Pass	
Nickel	mg/kg	< 5		5	Pass	
Zinc	mg/kg	< 5		5	Pass	
Method Blank						
Total Recoverable Hydrocarbons						
TRH C10-C14	mg/kg	< 20		20	Pass	
TRH C15-C28	mg/kg	< 50		50	Pass	
TRH C29-C36	mg/kg	< 50		50	Pass	
TRH >C10-C16	mg/kg	< 50		50	Pass	
TRH >C16-C34	mg/kg	< 100		100	Pass	
TRH >C34-C40	mg/kg	< 100		100	Pass	
Method Blank						
Heavy Metals						
Arsenic	mg/kg	< 2		2	Pass	
Cadmium	mg/kg	< 0.4		0.4	Pass	
Chromium	mg/kg	< 5		5	Pass	
Copper	mg/kg	< 5		5	Pass	
Lead	mg/kg	< 5		5	Pass	
Mercury	mg/kg	< 0.1		0.1	Pass	
Nickel	mg/kg	< 5		5	Pass	
Zinc	mg/kg	< 5		5	Pass	
Method Blank						

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Chloride	mg/kg	< 10		10	Pass	
Conductivity (1:5 aqueous extract at 25 °C as rec.)	uS/cm	< 10		10	Pass	
Sulphate (as SO4)	mg/kg	< 10		10	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons						
TRH C6-C9	%	87		70-130	Pass	
TRH C6-C10	%	85		70-130	Pass	
LCS - % Recovery						
BTEX						
Benzene	%	99		70-130	Pass	
Toluene	%	104		70-130	Pass	
Ethylbenzene	%	94		70-130	Pass	
m&p-Xylenes	%	90		70-130	Pass	
o-Xylene	%	95		70-130	Pass	
Xylenes - Total*	%	92		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	%	112		70-130	Pass	
LCS - % Recovery						
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	%	96		70-130	Pass	
Acenaphthylene	%	88		70-130	Pass	
Anthracene	%	103		70-130	Pass	
Benz(a)anthracene	%	90		70-130	Pass	
Benzo(a)pyrene	%	93		70-130	Pass	
Benzo(b&j)fluoranthene	%	83		70-130	Pass	
Benzo(g,h,i)perylene	%	84		70-130	Pass	
Benzo(k)fluoranthene	%	90		70-130	Pass	
Chrysene	%	101		70-130	Pass	
Dibenz(a,h)anthracene	%	84		70-130	Pass	
Fluoranthene	%	97		70-130	Pass	
Fluorene	%	100		70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	86		70-130	Pass	
Naphthalene	%	92		70-130	Pass	
Phenanthrene	%	88		70-130	Pass	
Pyrene	%	100		70-130	Pass	
LCS - % Recovery						
Organochlorine Pesticides						
Chlordanes - Total	%	108		70-130	Pass	
4,4'-DDD	%	104		70-130	Pass	
4,4'-DDE	%	112		70-130	Pass	
4,4'-DDT	%	108		70-130	Pass	
a-HCH	%	105		70-130	Pass	
Aldrin	%	104		70-130	Pass	
b-HCH	%	111		70-130	Pass	
d-HCH	%	106		70-130	Pass	
Dieldrin	%	118		70-130	Pass	
Endosulfan I	%	118		70-130	Pass	
Endosulfan II	%	116		70-130	Pass	
Endosulfan sulphate	%	105		70-130	Pass	
Endrin	%	101		70-130	Pass	
Endrin aldehyde	%	108		70-130	Pass	
Endrin ketone	%	100		70-130	Pass	
g-HCH (Lindane)	%	114		70-130	Pass	



Environment Testing

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor	%	106		70-130	Pass	
Heptachlor epoxide	%	94		70-130	Pass	
Hexachlorobenzene	%	101		70-130	Pass	
Methoxychlor	%	111		70-130	Pass	
LCS - % Recovery						
Organophosphorus Pesticides						
Diazinon	%	92		70-130	Pass	
Dimethoate	%	91		70-130	Pass	
Ethion	%	76		70-130	Pass	
Methyl parathion	%	78		70-130	Pass	
Mevinphos	%	76		70-130	Pass	
LCS - % Recovery						
Polychlorinated Biphenyls						
Aroclor-1016	%	109		70-130	Pass	
Aroclor-1260	%	103		70-130	Pass	
LCS - % Recovery						
Phenols (Halogenated)						
2-Chlorophenol	%	92		25-140	Pass	
2,4-Dichlorophenol	%	89		25-140	Pass	
2,4,5-Trichlorophenol	%	85		25-140	Pass	
2,4,6-Trichlorophenol	%	70		25-140	Pass	
2,6-Dichlorophenol	%	96		25-140	Pass	
4-Chloro-3-methylphenol	%	93		25-140	Pass	
Pentachlorophenol	%	97		25-140	Pass	
Tetrachlorophenols - Total	%	94		25-140	Pass	
LCS - % Recovery						
Phenols (non-Halogenated)						
2-Cyclohexyl-4,6-dinitrophenol	%	99		25-140	Pass	
2-Methyl-4,6-dinitrophenol	%	100		25-140	Pass	
2-Nitrophenol	%	101		25-140	Pass	
2,4-Dimethylphenol	%	97		25-140	Pass	
2,4-Dinitrophenol	%	107		25-140	Pass	
2-Methylphenol (o-Cresol)	%	96		25-140	Pass	
3&4-Methylphenol (m&p-Cresol)	%	93		25-140	Pass	
4-Nitrophenol	%	83		25-140	Pass	
Dinoseb	%	105		25-140	Pass	
Phenol	%	90		25-140	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons						
TRH C10-C14	%	73		70-130	Pass	
TRH >C10-C16	%	73		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Arsenic	%	95		80-120	Pass	
Cadmium	%	97		80-120	Pass	
Chromium	%	104		80-120	Pass	
Copper	%	101		80-120	Pass	
Lead	%	92		80-120	Pass	
Mercury	%	106		80-120	Pass	
Nickel	%	104		80-120	Pass	
Zinc	%	100		80-120	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons						
TRH C10-C14	%	93		70-130	Pass	



Environment Testing

Test				Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
TRH >C10-C16				%	92		70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic				%	93		80-120	Pass	
Cadmium				%	93		80-120	Pass	
Chromium				%	101		80-120	Pass	
Copper				%	100		80-120	Pass	
Lead				%	91		80-120	Pass	
Mercury				%	102		80-120	Pass	
Nickel				%	102		80-120	Pass	
Zinc				%	98		80-120	Pass	
LCS - % Recovery									
Conductivity (1:5 aqueous extract at 25 °C as rec.)				%	99		70-130	Pass	
Resistivity*				%	99		70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons					Result 1				
TRH C6-C9	S24-Se0048474	NCP	%	89			70-130	Pass	
TRH C10-C14	R24-Se0059452	NCP	%	86			70-130	Pass	
TRH C6-C10	S24-Se0048474	NCP	%	89			70-130	Pass	
TRH >C10-C16	R24-Se0059452	NCP	%	87			70-130	Pass	
Spike - % Recovery									
BTEX					Result 1				
Benzene	S24-Se0048474	NCP	%	77			70-130	Pass	
Toluene	S24-Se0048474	NCP	%	104			70-130	Pass	
Ethylbenzene	S24-Se0048474	NCP	%	80			70-130	Pass	
m&p-Xylenes	S24-Se0048474	NCP	%	84			70-130	Pass	
o-Xylene	S24-Se0048474	NCP	%	78			70-130	Pass	
Xylenes - Total*	S24-Se0048474	NCP	%	82			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					Result 1				
Naphthalene	S24-Se0048474	NCP	%	96			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides					Result 1				
Chlordanes - Total	S24-Se0058716	NCP	%	70			70-130	Pass	
4.4'-DDD	S24-Se0046144	NCP	%	112			70-130	Pass	
4.4'-DDE	S24-Se0058716	NCP	%	78			70-130	Pass	
4.4'-DDT	S24-Se0046144	NCP	%	98			70-130	Pass	
a-HCH	S24-Se0058716	NCP	%	75			70-130	Pass	
Aldrin	S24-Se0058716	NCP	%	80			70-130	Pass	
b-HCH	S24-Se0058716	NCP	%	77			70-130	Pass	
d-HCH	S24-Se0046144	NCP	%	108			70-130	Pass	
Dieldrin	S24-Se0058716	NCP	%	83			70-130	Pass	
Endosulfan I	S24-Se0058716	NCP	%	80			70-130	Pass	
Endosulfan II	S24-Se0058716	NCP	%	77			70-130	Pass	
Endosulfan sulphate	S24-Se0046144	NCP	%	99			70-130	Pass	
Endrin	S24-Se0046144	NCP	%	109			70-130	Pass	
Endrin aldehyde	S24-Se0058716	NCP	%	88			70-130	Pass	
Endrin ketone	S24-Se0046144	NCP	%	85			70-130	Pass	
g-HCH (Lindane)	S24-Se0058716	NCP	%	80			70-130	Pass	
Heptachlor	S24-Se0046144	NCP	%	132			70-130	Fail	Q08
Heptachlor epoxide	S24-Se0046144	NCP	%	114			70-130	Pass	
Hexachlorobenzene	S24-Se0046144	NCP	%	119			70-130	Pass	
Methoxychlor	S24-Se0046144	NCP	%	111			70-130	Pass	



Environment Testing

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S24-Se0058716	NCP	%	82			70-130	Pass	
Aroclor-1260	S24-Se0058716	NCP	%	80			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Lead	S24-Se0050623	NCP	%	96			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S24-Se0050335	CP	%	101			75-125	Pass	
Cadmium	S24-Se0050335	CP	%	100			75-125	Pass	
Chromium	S24-Se0050335	CP	%	105			75-125	Pass	
Copper	S24-Se0050335	CP	%	106			75-125	Pass	
Mercury	S24-Se0050335	CP	%	112			75-125	Pass	
Nickel	S24-Se0050335	CP	%	104			75-125	Pass	
Zinc	S24-Se0050335	CP	%	115			75-125	Pass	
Spike - % Recovery									
				Result 1					
Chloride	S24-Se0050338	CP	%	70			70-130	Pass	
Sulphate (as SO4)	S24-Se0050338	CP	%	97			70-130	Pass	
Spike - % Recovery									
Organophosphorus Pesticides				Result 1					
Dimethoate	N24-Se0059900	NCP	%	111			70-130	Pass	
Ethion	N24-Se0059900	NCP	%	125			70-130	Pass	
Fenitrothion	N24-Se0059900	NCP	%	91			70-130	Pass	
Methyl parathion	N24-Se0059900	NCP	%	119			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S24-Se0048456	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S24-Se0058892	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S24-Se0058892	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S24-Se0058892	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C6-C10	S24-Se0048456	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S24-Se0058892	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S24-Se0058892	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S24-Se0058892	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S24-Se0060868	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S24-Se0060868	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S24-Se0060868	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S24-Se0060868	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S24-Se0060868	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S24-Se0060868	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S24-Se0060868	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Benzo(a)pyrene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S24-Se0061869	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-HCH	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-HCH	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-HCH	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-HCH (Lindane)	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S24-Se0061869	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Toxaphene	S24-Se0061869	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Bolstar	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorfenvinphos	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos-methyl	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Coumaphos	S24-Se0061869	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Demeton-S	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Demeton-O	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Diazinon	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dichlorvos	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dimethoate	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Disulfoton	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
EPN	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethion	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethoprop	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethyl parathion	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenitrothion	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass

Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Fensulfothion	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenthion	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Malathion	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Merphos	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methyl parathion	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Mevinphos	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Monocrotophos	S24-Se0061869	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Naled	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Omethoate	S24-Se0061869	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Phorate	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pirimiphos-methyl	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pyrazophos	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ronnel	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Terbufos	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tetrachlorvinphos	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tokuthion	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Trichloronate	S24-Se0061869	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	S24-Se0061869	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1221	S24-Se0061869	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	S24-Se0061869	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1242	S24-Se0061869	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1248	S24-Se0061869	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1254	S24-Se0061869	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1260	S24-Se0061869	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Total PCB*	S24-Se0061869	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	N24-Se0056633	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dichlorophenol	N24-Se0056633	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-Trichlorophenol	N24-Se0056633	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4,6-Trichlorophenol	N24-Se0056633	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,6-Dichlorophenol	N24-Se0056633	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chloro-3-methylphenol	N24-Se0056633	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Pentachlorophenol	N24-Se0056633	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Tetrachlorophenols - Total	N24-Se0056633	NCP	mg/kg	< 10	< 10	<1	30%	Pass
Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	N24-Se0056633	NCP	mg/kg	< 20	< 20	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	N24-Se0056633	NCP	mg/kg	< 5	< 5	<1	30%	Pass
2-Nitrophenol	N24-Se0056633	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4-Dimethylphenol	N24-Se0056633	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dinitrophenol	N24-Se0056633	NCP	mg/kg	< 5	< 5	<1	30%	Pass
2-Methylphenol (o-Cresol)	N24-Se0056633	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	N24-Se0056633	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
4-Nitrophenol	N24-Se0056633	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Dinoseb	N24-Se0056633	NCP	mg/kg	< 20	< 20	<1	30%	Pass
Phenol	N24-Se0056633	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass



Environment Testing

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S24-Se0050635	NCP	mg/kg	2.8	2.9	4.0	30%	Pass
Cadmium	S24-Se0050635	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S24-Se0050635	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Copper	S24-Se0050635	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	S24-Se0050635	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Mercury	S24-Se0050635	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	S24-Se0050635	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Zinc	S24-Se0050635	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Duplicate								
Sample Properties				Result 1	Result 2	RPD		
% Moisture	S24-Se0050335	CP	%	12	12	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	N24-Se0045269	NCP	mg/kg	23	23	1.0	30%	Pass
Conductivity (1:5 aqueous extract at 25 °C as rec.)	S24-Se0050338	CP	uS/cm	2500	1900	26	30%	Pass
pH (1:5 Aqueous extract at 25 °C as rec.)	S24-Se0050338	CP	pH Units	8.5	8.6	<1	30%	Pass
Resistivity*	S24-Se0050338	CP	ohm.m	4.0	5.2	26	30%	Pass
Sulphate (as SO4)	N24-Se0045269	NCP	mg/kg	64	66	3.0	30%	Pass



Environment Testing

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.

Authorised by:

Bonnie Pu	Analytical Services Manager
Chamath JHM Annakkage	Senior Analyst-Asbestos
Dilani Samarakoon	Senior Analyst-Inorganic
Mickael Ros	Senior Analyst-Metal
Roopesh Rangarajan	Senior Analyst-Organic
Roopesh Rangarajan	Senior Analyst-Sample Properties
Roopesh Rangarajan	Senior Analyst-Volatile
Ryan Phillips	Senior Analyst-Inorganic

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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D & N Geotechnical Pty Ltd
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Bruce
ACT 2617



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025-Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: Sven Padina
Report 1141087-AID
Project Name WALSH BAY LIFT PIT NSW
Project ID S-0159.00
Received Date Sep 19, 2024
Date Reported Sep 26, 2024

Methodology:

Asbestos Fibre
Identification

Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.

NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.

Unknown Mineral
Fibres

Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity.

NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.

Subsampling Soil
Samples

The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed.

NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.

Bonded asbestos-
containing material
(ACM)

The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 4964 - 2004.

NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.

Limit of Reporting

The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w).

The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk).

NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.



Environment Testing

Project Name WALSH BAY LIFT PIT NSW
Project ID S-0159.00
Date Sampled Sep 17, 2024
Report 1141087-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH01_0.5-0.7	24-Se0050334	Sep 17, 2024	Approximate Sample 188g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH01_2.3-2.5	24-Se0050335	Sep 17, 2024	Approximate Sample 153g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.



Environment Testing

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Sep 19, 2024	Indefinite



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 VIC 3175
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 Site# 1254

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 Grovedale
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 NATA# 1261
 Site# 29403

Sydney
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 Girraween
 NSW 2145
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 NATA# 1261
 Site# 18217

Camberra
 Unit 1, 2 Dacre Street
 Mitchell
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 NATA# 1261
 Site# 29466

Brisbane
 1/21 Smallwood Place
 Murrarie
 QLD 4172
 T: +61 7 9902 4600
 NATA# 1261
 Site# 20794 & 2780

Newcastle
 1/2 Frost Drive
 Mayfield West
 NSW 2304
 +61 2 4968 8448
 NATA# 1261
 Site# 29079

Company Name: D & N Geotechnical Pty Ltd
Address: Unit 11/22-38 Thymne St
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 ACT 2617

Project Name: WALSH BAY LIFT PITT NSW
Project ID: S-0159.00

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 Site# 2370

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 IANZF# 1308

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 IANZF# 1290

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 1277 Cameron Road,
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 IANZF# 1402

Order No.: S-0159.00
Report #: 1141087
Phone:
Fax:

Received: Sep 19, 2024 9:09 AM
Due: Sep 26, 2024
Priority: 5 Day
Contact Name: Sven Padina

Eurofins Analytical Services Manager : Ursula Long

Sample Detail

Sydney Laboratory - NATA # 1261 Site # 18217										
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	BH01_0.5-0.7	Sep 17, 2024		Soil	S24-So050334	X			X	
2	BH01_2.3-2.5	Sep 17, 2024		Soil	S24-So050335	X			X	
3	BH01_3.0-3.5	Sep 17, 2024		Soil	S24-So050336				X	
4	BH01_4.3-4.8	Sep 17, 2024		Soil	S24-So050337				X	
5	BH01_7.2-7.7	Sep 17, 2024		Soil	S24-So050338			X	X	
6	BH01_8.8-9.0	Sep 17, 2024		Soil	S24-So050339			X	X	
7	QC01	Sep 17, 2024		Soil	S24-So050340			X	X	
8	BH01_0.5-0.7	Sep 17, 2024		US Leachate	S24-So050341		X			
9	BH01_0.1-0.2	Sep 17, 2024		Soil	S24-So050342		X			
10	BH01_0.9-1.0	Sep 17, 2024		Soil	S24-So050343		X			
11	BH01_1.5-2.1	Sep 17, 2024		Soil	S24-So050344		X			
12	BH01_5.7-6.2	Sep 17, 2024		Soil	S24-So050345		X			
Test Counts						2	4	1	1	5
Eurofins Suite B7A										5
Moisture Set										7
Aggressivity Soil Set										2
Eurofins Suite B15										5
Metals M8										1
USA Leaching Procedure										1
Polycyclic Aromatic Hydrocarbons								X		1
HOLD*										4
Asbestos - AS4964										2

Internal Quality Control Review and Glossary General

- QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).

Units

% w/w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (% w/w)
F/field	Airborne fibre filter loading as Fibres (N) per Fields counted (n)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (C)
g, kg	Mass, e.g. of whole sample (M) or asbestos-containing find within the sample (m)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (V = r x t)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (r)
min	Time (t), e.g. of air sample collection period

Calculations

$$\text{Airborne Fibre Concentration: } C = \left(\frac{A}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{t}\right) \times \left(\frac{1}{V}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{V}\right)$$

$$\text{Asbestos Content (as asbestos): } \% w/w = \frac{(m \times P_A)}{M}$$

$$\text{Weighted Average (of asbestos): } \% w_A = \frac{\sum (m \times P_A)_x}{x}$$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix may be derived from knowledge or experience of the material, informed by HSG264 <i>Appendix 2</i> , else assumed to be 15% in accordance with WA DOH <i>Appendix 2 (PA)</i> . This estimate is not NATA-accredited.
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to "non-bonded / friable".
AFM	Airborne Fibre Monitoring, e.g., by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total %w/w asbestos content in asbestos-containing finds in a soil sample (% w/w).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004..
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004..
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos-containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to distinguish visibly and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004.. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory's remit to assess the degree of friability.
HSG248	UK HSE HSG248, <i>Asbestos: The Analysts Guide</i> , 2 nd Edition (2021), ISBN: 9780616667079.
HSG264	UK HSE HSG264, <i>Asbestos: The Survey Guide</i> (2012), ISBN: 9780717665020
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (K) as derived from the effective filter area of the given AFM membrane used for collecting the sample (A) and the projected eyepiece graticule area of the specific microscope used for the analysis (a).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, <i>Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres</i> , 2nd Edition [NOHSC:3003(2005)].
MMVF	Man-Made Vitreous Fibre - exhibiting isotropic characteristics, including glass fibres, glass wool, rock wool, slag wool, ceramic fibres and "bio-soluble fibres. NOTE: previously known as "synthetic mineral fibre" (SMF).
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004..
PCM	Phase Contrast Microscopy. This is used for fibre counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004..
Sampling	Unless otherwise stated, Eurofins are not responsible for sampling equipment or the sampling process.
SRA	Sample Receipt Advice.
Trace Analysis	An analytical procedure is used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according to AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004.. It may include (but is not limited to) actinolite, anthophyllite, or tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, <i>Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia</i> (updated 2021), including Appendix Four: <i>Laboratory analysis</i>
Weighted Average	Combined average %w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (%w _A).



Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Asbestos Counter/Identifier:

Sayeed Abu Senior Analyst-Asbestos

Authorised by:

Chamath JHM Annakkage Senior Analyst-Asbestos

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Environment Testing

Certificate of Analysis

D & N Geotechnical Pty Ltd
 Unit 11/22-38 Thynne St
 Bruce
 ACT 2617



NATA Accredited
 Accreditation Number 1261
 Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
 NATA is a signatory to the ILAC Mutual Recognition
 Arrangement for the mutual recognition of the
 equivalence of testing, medical testing, calibration,
 inspection, proficiency testing scheme providers and
 reference materials producers reports and certificates.

Attention: Sven Padina

Report 1141087-L
 Project name WALSH BAY LIFT PIT NSW
 Project ID S-0159.00
 Received Date Sep 19, 2024

Client Sample ID			BH01_0.5-0.7
Sample Matrix			US Leachate
Eurofins Sample No.			S24-Se0050341
Date Sampled			Sep 17, 2024
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.01
Anthracene	0.001	mg/L	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	0.001
Fluorene	0.001	mg/L	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001
Naphthalene	0.001	mg/L	< 0.01
Phenanthrene	0.001	mg/L	0.001
Pyrene	0.001	mg/L	0.001
Total PAH*	0.001	mg/L	< 0.01
2-Fluorobiphenyl (surr.)	1	%	INT
p-Terphenyl-d14 (surr.)	1	%	69
Heavy Metals			
Arsenic	0.01	mg/L	< 0.01
Cadmium	0.005	mg/L	< 0.005
Chromium	0.05	mg/L	< 0.05
Copper	0.05	mg/L	< 0.05
Lead	0.01	mg/L	0.09
Mercury	0.001	mg/L	< 0.001
Nickel	0.01	mg/L	< 0.01
Zinc	0.05	mg/L	0.38
USA Leaching Procedure			
Leachate Fluid ^{*C01}		comment	1.0
pH (initial)	0.1	pH Units	9.2
pH (off)*	0.1	pH Units	6.4
pH (USA HCl addition)*	0.1	pH Units	1.5



Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Sep 24, 2024	7 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Sep 24, 2024	28 Days
USA Leaching Procedure - Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes	Sydney	Sep 24, 2024	14 Days



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 Site# 1254

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 NATA# 1261
 Site# 29403

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 NATA# 1261
 Site# 18217

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 Site# 23466

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 NATA# 1261
 Site# 20794 & 2780

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 NATA# 1261
 Site# 29079

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 NATA# 2377
 Site# 2370

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Eurofins Environment Testing NZ Ltd

Company Name: D & N Geotechnical Pty Ltd
Address: Unit 11/22-38 Thymne St
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Project Name: WALSH BAY LIFT P/T NSW
Project ID: S-0159.00

Order No.: S-0159.00
Report #: 1141087
Phone:
Fax:

Received: Sep 19, 2024 9:09 AM
Due: Sep 26, 2024
Priority: 5 Day
Contact Name: Sven Padina

Eurofins Analytical Services Manager : Ursula Long

Sample Detail

Sydney Laboratory - NATA # 1261 Site # 18217						
External Laboratory						
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
1	BH01_0.5-0.7	Sep 17, 2024		Soil	S24-So050334	X
2	BH01_2.3-2.5	Sep 17, 2024		Soil	S24-So050335	X
3	BH01_3.0-3.5	Sep 17, 2024		Soil	S24-So050336	X
4	BH01_4.3-4.8	Sep 17, 2024		Soil	S24-So050337	X
5	BH01_7.2-7.7	Sep 17, 2024		Soil	S24-So050338	X
6	BH01_8.8-9.0	Sep 17, 2024		Soil	S24-So050339	X
7	QC01	Sep 17, 2024		Soil	S24-So050340	X
8	BH01_0.5-0.7	Sep 17, 2024		US Leachate	S24-So050341	X
9	BH01_0.1-0.2	Sep 17, 2024		Soil	S24-So050342	X
10	BH01_0.9-1.0	Sep 17, 2024		Soil	S24-So050343	X
11	BH01_1.5-2.1	Sep 17, 2024		Soil	S24-So050344	X
12	BH01_5.7-6.2	Sep 17, 2024		Soil	S24-So050345	X
Test Counts						
Asbestos - AS4964						2
HOLD*						4
Polycyclic Aromatic Hydrocarbons						1
USA Leaching Procedure						1
Metals M8						1
Eurofins Suite B15						5
Aggressivity Soil Set						2
Moisture Set						7
Eurofins Suite B7A						5

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
- Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
- Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
- For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
- Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
- SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ppm: parts per million

µg/L: micrograms per litre

ppb: parts per billion

%: Percentage

org/100 mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100 mL: Most Probable Number of organisms per 100 millilitres

CFU: Colony Forming Unit

Colour: Pt-Co Units (CU)

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

- Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.



Environment Testing

Quality Control Results

Test		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Method Blank									
Heavy Metals									
Arsenic		mg/L	< 0.01			0.01	Pass		
Cadmium		mg/L	< 0.005			0.005	Pass		
Chromium		mg/L	< 0.05			0.05	Pass		
Copper		mg/L	< 0.05			0.05	Pass		
Lead		mg/L	< 0.01			0.01	Pass		
Mercury		mg/L	< 0.001			0.001	Pass		
Nickel		mg/L	< 0.01			0.01	Pass		
Zinc		mg/L	< 0.05			0.05	Pass		
LCS - % Recovery									
Heavy Metals									
Arsenic		%	101			80-120	Pass		
Cadmium		%	101			80-120	Pass		
Chromium		%	103			80-120	Pass		
Copper		%	100			80-120	Pass		
Lead		%	85			80-120	Pass		
Mercury		%	103			80-120	Pass		
Nickel		%	101			80-120	Pass		
Zinc		%	104			80-120	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic		S24-Se0053833	NCP	%	106		75-125	Pass	
Cadmium		S24-Se0053833	NCP	%	99		75-125	Pass	
Chromium		S24-Se0053833	NCP	%	107		75-125	Pass	
Copper		S24-Se0053833	NCP	%	102		75-125	Pass	
Lead		S24-Se0053833	NCP	%	99		75-125	Pass	
Mercury		S24-Se0053833	NCP	%	104		75-125	Pass	
Nickel		S24-Se0053833	NCP	%	103		75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic		S24-Se0058567	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Cadmium		S24-Se0058567	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Chromium		S24-Se0058567	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Copper		S24-Se0058567	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead		S24-Se0058567	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Mercury		S24-Se0058567	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nickel		S24-Se0058567	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Zinc		S24-Se0058567	NCP	mg/L	0.11	0.13	15	30%	Pass



Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised by:

Bonnie Pu	Analytical Services Manager
Mickael Ros	Senior Analyst-Metal
Roopesh Rangarajan	Senior Analyst-Organic
Roopesh Rangarajan	Senior Analyst-Sample Properties

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CHAIN OF CUSTODY RECORD

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Company	D&N Geotechnical Pty Ltd	Project No	S-0159.00	Project Manager	Sven Pedhna	Sample(s)	NB
Address	Unit 11, Block C Trevor Pearcey House, 28-34 Thymne Street, Bruce ACT 2617	Project Name	Walsh Bay LIR PIR, NSW	EDD Format	ES&M, EQL&S, ITC	Handed over by	Nigel Baker
Contact Name	Nigel Baker					Email for Invoice	nigel@dngeotechnical.com
Phone No	0480 354 191					Email for Results	nigel@dngeotechnical.com; sven@dngeotechnical.com
Special Directions						Containers	Change container type & size if necessary.
Purchase Order	S-0159.00					500mL PFAS Bottle	Required Turnaround Time (TAT) Default will be 5 days if not stated.
Quote ID No						40mL VOA vial	Overnight (reporting by 9am) <input type="checkbox"/>
						200mL Amber Glass	Same day <input type="checkbox"/>
						125mL Plastic	2 days <input type="checkbox"/>
						250mL Plastic	3 days <input type="checkbox"/>
						500mL Plastic	5 days (Standard) <input checked="" type="checkbox"/>
							Other () <input type="checkbox"/>
							*Storage will apply
							Other (Asbestos AS4984, WA Guidelines)
							Jar (Glass or HDPE)
							1

No	Client Sample ID	Sampled Date/Time	Matrix	Method	Count	Signature	Date	Time	Temperature	Report No
1	CC01	17/09/24	S							
2										
3										
4										
5										
6										
7										
8										
9										
10										
Total Counts					1					

Method of Shipment	<input type="checkbox"/> Courier (#)	<input type="checkbox"/> Hand Delivered	Signature	Date	Time
Laboratory Use Only	Received By	Signature	Date	Time	Temperature
	Received By	Signature	Date	Time	Report No

EnviroS Environment Testing Australia Pty Ltd EnviroS@enviroS.com
Submission of samples to the laboratory will be deemed as acceptance of EnviroS | Environment Testing Standard Terms and Conditions unless agreed otherwise. A copy is available on request.



Eurofins Environment Testing Australia Pty Ltd

Eurofins ARL Pty Ltd

Eurofins ProMicro Pty Ltd

Eurofins Environment Testing NZ Ltd

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ABN: 91 05 0159 898

ABN: 47 009 120 549

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Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle	Perth	Perth ProMicro	Auckland	Auckland (Focus)	Christchurch	Tauranga
6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794 & 2780	1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079	46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370	46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2561 Site# 2554	35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Sample Receipt Advice

Company name: D & N Geotechnical Pty Ltd
Contact name: Sven Padina
Project name: WALSH BAY LIFT PIT NSW
Project ID: S-0159.00
Turnaround time: 5 Day
Date/Time received: Sep 19, 2024 9:09 AM
Eurofins reference: 1141087

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Ursula Long on phone : or by email: UrsulaLong@eurofins.com

Results will be delivered electronically via email to Sven Padina - sven@dngotechnical.com.

Note: A copy of these results will also be delivered to the general D & N Geotechnical Pty Ltd email address.

Appendix C Environmental Testing Tables



Field or Interlab Duplicates

Lab Report Number	Field ID	Matrix Type	Date	BTEX						TRH						Phenols						
				Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	CG-C10 Fraction (F1)	CG-C10 (F1 minus BTEX)	CG-C10-C16 Fraction (F2)	CG-C10-C16 Fraction (F2 minus Naphthalene)	CG-C16-C34 Fraction (F3)	CG-C40-C40 Fraction (F4)	CG-C10-C40 Fraction (Sum)	3&4-Methylphenol (m&p-cresol)	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.5	0.1	0.1	0.1	0.2	0.1	0.3	20	20	50	50	100	100	100	0.4	1	1	1	0.5
1141087	BH01_0.5-0.7	Soil	17 Sep 2024	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	<50	<50	320	<100	320	<0.4	<1	<1	<1	<0.5
1141087	QC01	Soil	17 Sep 2024	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	<50	<50	210	<100	210	<1	<1	<1	<1	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	42	0	42	0	0	0	0	0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL
 **Elevated RPDs are highlighted as per OACQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 8:1 (1 - 10x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory



Field or Interlab Duplicates

Lab Report Number	Field ID	Matrix Type	Date	2,4-Dimethylphenol mg/kg	2,4-Dinitrophenol mg/kg	2,6-Dichlorophenol mg/kg	2-Chlorophenol mg/kg	2-Methylphenol mg/kg	2-Nitrophenol mg/kg	4,6-Dinitro-2-methylphenol mg/kg	4,6-Dinitro-o-cyclohexyl phenol mg/kg	4-chloro-3-methylphenol mg/kg	4-Nitrophenol mg/kg	Cresol Total mg/kg	Pentachlorophenol mg/kg	Tetrachlorophenols mg/kg	Phenol mg/kg	Phenols (Total Halogenated) mg/kg	Phenols (Total Non Halogenated) mg/kg	Halogenated Benzenes mg/kg
EQL				0.5	5	0.5	0.5	0.2	1	5	20	1	5	0.5	1	10	0.5	1	20	0.05
1141087	BH01_0.5-0.7	Soil	17 Sep 2024	<0.5	<5	<0.5	<0.5	<0.2	<1	<5	<20	<1	<5	<0.5	<1	<10	<0.5	<1	<20	<0.05
1141087	QC01	Soil	17 Sep 2024	<0.5	<5	<0.5	<0.5	<0.5	<1	<5	<20	<1	<5	<1	<1	<10	<2	<1	<20	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL
 **Elevated RPDs are highlighted as per OACQC Profile settings (Acceptable RPDs for each EQL multiplier
 range are: 8:1 (1 - 10x EQL); 30 (10 - 30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any
 methods in the row header relate to those used in the primary laboratory



ECL	Metals										BTEX					TPH				
	Arsenic mg/kg	Cadmium mg/kg	Chromium (III-VI) mg/kg	Copper mg/kg	Lead mg/kg	Mercury mg/kg	Nickel mg/kg	Trinc mg/kg	Naphthalene (VOC) mg/kg	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylene (m & p) mg/kg	Xylene (o) mg/kg	Xylene Total mg/kg	6-C9 Fraction mg/kg	11-0-14 Fraction mg/kg	11-5-28 Fraction mg/kg	29-36 Fraction mg/kg	11-36 Fraction (Sum) mg/kg
CR Care HS-DC Commercial / Industrial CR Care Intrusive Maintenance CR Care 2011, CR Care Intrusive Maintenance Worker CR Care 2013, CR Care Intrusive Maintenance Worker NEMM 2013 Table A4(1) Commercial/Ind Soil HS (for Vapor Intrusion), Sand NEMM 2013 Table A4(1) HS Comm/Ind D Soil	3,000	900	240,000	1,500	730	6,000	400,000	11,000	450	89,000	27,000	81,000	81,000	130,000	230					
FIELD ID	Location Code																			
BH01_05-07	17 Sep 2024																			
BH01	17 Sep 2024																			
BH01_3-2-3-5	17 Sep 2024																			
BH01_3-0-3-5	17 Sep 2024																			
BH01_4-3-4-8	17 Sep 2024																			
Statistics																				
Number of Results	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Concentration	8.6	<0.4	17	53	340	2.4	17	480	<0.5	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	<20	230	120	350
Minimum Detect	0.3	<0.4	13	35	240	0.8	25	270	<0.3	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	<20	150	82	212
Average Concentration *	<0.3	<0.4	6.0	<0.2	25	0.3	<0.2	14	<0.3	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	<20	<20	<20	<20
Minimum Concentration	19	<0.4	13	88	300	0.5	18	100	<0.3	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	<20	74	<20	74
Maximum Detect	19	ND	17	88	400	2.4	25	480	<0.5	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	<20	230	120	350
Average Concentration *	7.7	0.2	13	42	261	0.84	14	184	0.25	0.05	0.05	0.1	0.05	0.15	10	10	10	101	55	141

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
CR Care: 2011, CR Care HS-DC Commercial / Industrial
CR Care: 2011, CR Care Intrusive Maintenance Worker
CR Care: 2013, CR Care Intrusive Maintenance Worker
2013, NEMM 2013 Table A4(1) Commercial/Ind Soil HS (for Vapor Intrusion), Sand
2013, NEMM 2013 Table A4(1) HS Comm/Ind D Soil



Field or Interlab Duplicates

EQCL	Herbicides		Inorganics		Metals								Organochlorine Pesticides					
	Dinoseb mg/kg		Moisture Content (dried @ 103°C) %	Arsenic mg/kg	Cadmium mg/kg	Chromium (III+VI) mg/kg	Copper mg/kg	Lead mg/kg	Mercury mg/kg	Nickel mg/kg	Zinc mg/kg	Organochlorine pesticides EPAV/C	Other organochlorine pesticides EPAV/C	4,4-DDE mg/kg	B-HHC mg/kg	Aldrin mg/kg	Aldrin + Dieldrin mg/kg	B-HHC mg/kg
	20		1	2	0.4	5	5	5	5	5	5	0.1	0.1	0.05	0.05	0.05	0.05	0.05
	<20		10	8.6	<0.4	17	53	340	2.4	17	480	0.18	<0.1	0.07	<0.05	<0.05	<0.05	<0.05
	<20		10	6.3	<0.4	15	58	240	0.8	25	270	1.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	0		0	31	0	12	9	34	100	38	56	1.48	0	0	0	0	0	0

Lab Report Number	Field ID	Matrix Type	Date
1141087	BH01_0.5-0.7	Soil	17 Sep 2024
1141087	QC01	Soil	17 Sep 2024
RPD			

*RPDs have only been considered where a concentration is greater than 1 times the EQL
 **Elevated RPDs are highlighted as per OACG Profile settings (Acceptable RPDs for each EQL multiplier range are: 8:1 (1 - 10x EQL); 30 (10 - 30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory



Field or Interlab Duplicates

		Organochlorine Pesticides																			
Lab Report Number	Field ID	Matrix Type	Date	Chlordane	d-BHC	DD	DDT	DDE+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	γ-BHC (Lindane)	Hepachlor	Hepachlor epoxide	Methoxychlor	Toxaphene	
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.5

1141087	BH01_0.5-0.7	Soil	17 Sep 2024	<0.1	<0.05	<0.05	0.11	0.18	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5
1141087	QC01	Soil	17 Sep 2024	<1	<0.5	<0.5	1.2	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
RPD				0	0	0	166	148	0	0	0	0	0	0	0	0	0	0	0	0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL
 **Elevated RPDs are highlighted as per OACG Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10x EQL); 30 (10 - 30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory



Field or Interlab Duplicates

		Organophosphorous Pesticides																					
Lab Report Number	Field ID	Matrix Type	Date	Toxthion	Azinphos methyl	Polstar (sulprofos)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Cumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Duslufoton	Ethion	Ethoprop	Fenitrothion	Fenitrothion	Fenitrothion	Fenitrothion	
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
1141087	BH01_0.5-0.7	Soil	17 Sep 2024	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1141087	QC01	Soil	17 Sep 2024	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL
 **Elevated RPDs are highlighted as per OACQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 8:1 (1 - 10x EQL); 30 (10 - 30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory



Field or Interlab Duplicates

Lab Report Number	Field ID	Matrix Type	Date	Benzo(a) pyrene	Benzo(b+g)fluoranthene	Benzo(e,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of total)	Archlor 1016	Archlor 1221
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1
				2.4	1.3	1.4	2.4	2.2	<0.5	6.8	<0.5	1.2	<0.5	4.4	6.3	3.5	3.7	3.2	34	<0.1	<0.1
				4.8	4.2	2.8	4.2	4.6	0.8	13	<0.5	2.7	<0.5	7.3	14	7.5	7.5	7.5	68	<1	<1
RPD				67	105	67	55	71	46	63	0	77	0	50	76	73	68	80	67	0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL
 **Elevated RPDs are highlighted as per OACQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory



Field or Interlab Duplicates

EQL	PCBs						Pesticides		TPH				
	Archlor 1232 mg/kg 0.1	Archlor 1242 mg/kg 0.1	Archlor 1248 mg/kg 0.1	Archlor 1254 mg/kg 0.1	Archlor 1260 mg/kg 0.1	PCBs (Sum of total) mg/kg 0.1	Parathion mg/kg 0.2	Priniphos-methyl mg/kg 0.2	C6-C9 Fraction mg/kg 20	C10-C14 Fraction mg/kg 20	C15-C28 Fraction mg/kg 50	C29-C36 Fraction mg/kg 50	C10-C36 Fraction (Sum) mg/kg 50
Lab Report Number	Field ID						Matrix Type		Date				
1141087	BH01_0.5-0.7						Soil		17 Sep 2024				
1141087	QC01						Soil		17 Sep 2024				
RPD	0	0	0	0	0	<0.1	<0.2	<0.2	<20	<20	230	120	350
	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<20	<20	150	82	232
	0	0	0	0	0	0	0	0	0	42	38	41	

*RPDs have only been considered where a concentration is greater than 1 times the EQL
 **Elevated RPDs are highlighted as per OACG Profile settings (Acceptable RPDs for each EQL multiplier range are: 8:1 (1 - 10x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory



EOL		Asbestos				Mass					
NEPM 2013 Table 7 Comm/Ind HSL for Asbestos in Soil	Comment	M-F Comment	Bonded Asbestos %w/w	A-Comment	Triable Asbestos (FA & AF) %w/w	Organic Fibres - Comment	Approximate Sample Mass g	Mass Asbestos in ACM g	Mass Asbestos in AF g	Mass Asbestos in FA g	Mass Asbestos in FA & AF g
			0.05		0.001						
Field ID	Date										
BH01_0.5-0.7	17 Sep 2024	No asbestos detected at the reporting limit of 0.01% w/w.	0	No trace asbestos detected.	0	Organic fibre detected.	188	0	0	0	0
BH01_2.3-2.5	17 Sep 2024	No asbestos detected at the reporting limit of 0.01% w/w.	0	No trace asbestos detected.	0	Organic fibre detected.	153	0	0	0	0
Statistics											
Number of Results		2	2	2	2	2	2	2	2	2	2
Number of Detects		0	0	0	0	2	0	0	0	0	0

Environmental Standards
NEPM, 2013, NEPM 2013, Table 7 Comm/Ind HSL for Asbestos in Soil

Leaching Preparation	Metals																		
	PH (Final)	PH (Initial)	Arsenic	Cadmium	Chromium (III+V)	Copper	Lead	Mercury	Nickel	Zinc	Ni+Cu								
	mg/kg	mg/L	mg/kg	mg/L	mg/L	mg/kg	mg/L	mg/L	mg/kg	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L				
NSW 2014 General Solid Waste SCC1 (with leached)	0.1	0.1	2	0.01	0.4	0.005	5	0.05	5	0.05	5	0.01	0.1	0.001	5	0.01	5	0.05	
NSW 2014 General Solid Waste TCLP1 (leached)			500	5	100	1	1,500	50	0.2	1,050	2	5	50	0.2	200	8	5	0.05	
NSW 2014 Restricted Solid Waste SCC2 (with leached)			2,000	20	400	4	6,000	20	0.8	4,200	8	20	200	0.8	20	8	20	0.05	
NSW 2014 Restricted Solid Waste TCLP2 (leached)																			
Field ID	Location Code	Date																	
BH01_0.5-0.7	BH01	17 Sep 2024	8.6	<0.4	<0.4	<0.4	17	53	340	2.4	1.7	5	2.4	1.7	5	1.7	480	5	1
CC01	BH01	17 Sep 2024	6.3	<0.4	15	240	25	58	240	0.8	25	5	0.8	25	5	0.8	270	5	1
BH01_0.5-0.7	BH01	17 Sep 2024	9.2	<0.01	<0.005	<0.05	13	11	400	0.3	<0.001	<0.05	0.3	8.2	<0.01	<0.01	56	14	0.38
BH01_2.3-2.5	BH01	17 Sep 2024	3.8	<0.4	6.0	<0.4	25	<5	25	0.2	<5	<5	0.2	<5	<5	<5	14	14	
BH01_3.0-3.5	BH01	17 Sep 2024	19	<0.4	13	88	300	88	300	0.5	18	100	0.5	18	100	18	100	100	100
BH01_4.3-4.8	BH01	17 Sep 2024																	
Statistics			1	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5
Number of Results			1	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Detects			6.4	9.2	<2	<0.01	<0.005	6	<0.05	25	0.09	0.2	<0.001	<0.001	<5	<0.01	<5	14	0.38
Minimum Concentration			6.4	9.2	3.8	ND	ND	6	ND	11	ND	25	0.09	0.2	ND	8.2	ND	14	0.38
Minimum Detect			6.4	9.2	19	<0.01	<0.005	17	<0.05	88	<0.05	400	0.09	2.4	<0.001	25	<0.01	480	0.38
Maximum Concentration			6.4	9.2	19	ND	ND	17	ND	88	ND	25	0.09	2.4	ND	25	ND	480	0.38
Maximum Detect			6.4	9.2	19	ND	ND	17	ND	88	ND	25	0.09	2.4	ND	25	ND	480	0.38
Average Concentration *					7.7	0.2	13	42	261	0.84	14	184	0.84	14	184	14	184	184	184

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

- NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
- NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)
- NSW EPA, November 2014, NSW 2014 Restricted Solid Waste SCC2 (with leached)
- NSW EPA, November 2014, NSW 2014 Restricted Solid Waste TCLP2 (leached)

Field ID	Location Code	Date	BTEX						TPH						TRH					
			Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylenes (m & p) mg/kg	Xylenes (o) mg/kg	Xylenes Total mg/kg	6-C9 Fraction mg/kg	10-C14 Fraction mg/kg	C15-C28 Fraction mg/kg	C29-C36 Fraction mg/kg	10-C36 Fraction (Sum) mg/kg	6-C10 Fraction (F1) mg/kg	6-C10 (F1 minus BTEX) mg/kg	C10-C16 Fraction (F2) mg/kg	C10-C16 Fraction (F2 minus Naphthalene) mg/kg	C16-C34 Fraction (F3) mg/kg	C34-C40 Fraction (F4) mg/kg	C10-C40 Fraction (Sum) mg/kg
GC1	NSW 2014 General Solid Waste SCC1 (with leached)	17 Sep 2024	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	20	20	20	20	20	100	100	100	
GC2	NSW 2014 General Solid Waste TCLP1 (leached)	17 Sep 2024	18	518	1,080	0.2	0.1	1,800	650	20	50	50	50	50	10,000	50	100	100	100	
GC3	NSW 2014 Restricted Solid Waste SCC2 (with leached)	17 Sep 2024	72	2,073	4,320	0.1	0.1	7,200	2,600	20	20	20	20	20	40,000	20	20	20	20	
GC4	NSW 2014 Restricted Solid Waste TCLP2 (leached)	17 Sep 2024	<0.5	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	<20	<20	<20	<20	350	<20	<20	<20	<20	
BH01_0.5-0.7	BH01	17 Sep 2024	<0.5	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	230	120	350	<20	<20	<50	320	<100	320	
CC01	BH01	17 Sep 2024	<0.5	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	150	82	232	<20	<20	<50	210	<100	210	
BH01_0.5-0.7	BH01	17 Sep 2024	<0.5	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	<20	<20	<50	<20	<50	<50	<100	<100	<100	
BH01_2.3-2.5	BH01	17 Sep 2024	<0.5	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	<20	<20	<50	<20	<50	<50	<100	<100	<100	
BH01_3.0-3.5	BH01	17 Sep 2024	<0.5	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	<20	<20	<50	<20	<50	<50	<100	<100	<100	
BH01_4.3-4.8	BH01	17 Sep 2024	<0.5	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	74	50	74	<20	<20	<50	100	<100	100	
Statistics			5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
Number of Detects			0	0	0	0	0	0	0	0	3	2	3	0	0	0	3	0	3	
Minimum Concentration			<0.5	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	<50	<50	<50	<20	<20	<50	100	<100	100	
Maximum Concentration			ND	ND	ND	ND	ND	ND	ND	74	82	74	ND	ND	ND	ND	100	ND	100	
Average Concentration *			ND	<0.1	<0.1	<0.2	<0.1	<0.3	<20	<20	230	120	350	<20	<20	<50	320	<100	320	
Average Concentration *			0.25	0.05	0.05	0.1	0.05	0.15	10	10	101	55	141	10	10	25	25	146	50	146

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

- NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
- NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)
- NSW EPA, November 2014, NSW 2014 Restricted Solid Waste SCC2 (with leached)
- NSW EPA, November 2014, NSW 2014 Restricted Solid Waste TCLP2 (leached)

Field ID	Location Code	Date	PAH															
			Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benz(a)pyrene	Benz(b)fluoranthene	Benz(e,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene						
mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	
GC1	NSW 2014 General Solid Waste SCC1 (with leached)	17 Sep 2024	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1
	NSW 2014 General Solid Waste TCLP1 (leached)	17 Sep 2024																
	NSW 2014 Restricted Solid Waste SCC2 (with leached)	17 Sep 2024																
	NSW 2014 Restricted Solid Waste TCLP2 (leached)	17 Sep 2024																
BH01_0.5-0.7	BH01	17 Sep 2024	<0.5		1.9	3.1	2.4	1.3	1.4	2.4	2.4	2.2	2.4	2.2	<0.5			
CC01	BH01	17 Sep 2024	<0.5	0.8	2.1	6.9	4.8	4.2	2.8	4.2	4.2	4.6	4.2	4.6	0.8			
BH01_0.5-0.7	BH01	17 Sep 2024	<0.5	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH01_2.3-2.5	BH01	17 Sep 2024	<0.5	<0.5	<0.5	0.6	0.6	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	0.6	<0.5	<0.5	<0.5	<0.5
BH01_3.0-3.5	BH01	17 Sep 2024	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH01_4.3-4.8	BH01	17 Sep 2024	<0.5	0.5	1.5	2.4	1.9	1.1	0.8	1.9	1.9	1.9	1.9	1.9	<0.5	<0.5	<0.5	<0.5
Statistics																		
Number of Results	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1
Number of Detects	0	0	3	0	4	0	0	3	0	3	0	3	0	3	0	4	0	1
Minimum Concentration	<0.5	<1	0.5	<10	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<1
Minimum Detect	ND	ND	0.5	ND	1.5	ND	0.6	1.1	ND	0.8	1.1	ND	1.9	ND	0.6	ND	0.8	ND
Maximum Concentration	<0.5	<1	0.8	<10	2.1	<1	6.9	4.2	2.8	4.8	4.2	4.6	4.2	4.6	0.8	4.6	0.8	<1
Maximum Detect	ND	ND	0.8	ND	2.1	ND	6.9	4.2	2.8	4.8	4.2	4.6	4.2	4.6	0.8	4.6	0.8	ND
Average Concentration *	0.35		0.52		1.2	2.6	2.4	1.4	1.1	2	1.4	1.9	1.8	1.9	0.36			

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
 NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)
 NSW EPA, November 2014, NSW 2014 Restricted Solid Waste SCC2 (with leached)
 NSW EPA, November 2014, NSW 2014 Restricted Solid Waste TCLP2 (leached)

Field ID	Location Code	Date	Phenols												Halogenated Benzenes									
			4-Chlorophenol mg/kg	4-Dimethylphenol mg/kg	2,4-Dinitrophenol mg/kg	2,6-Dichlorophenol mg/kg	Chlorophenol mg/kg	N-Methylphenol mg/kg	N-Nitrophenol mg/kg	4,6-Dinitro-2-methylphenol mg/kg	4,6-Dinitro-o-cyclohexyl phenol mg/kg	4-chloro-3-methylphenol mg/kg	4-Nitrophenol mg/kg	resol Total mg/kg	Pentachlorophenol mg/kg	Tetrachlorophenols mg/kg	phenol mg/kg	Phenols (Total Non Halogenated) mg/kg	Hexachlorobenzene mg/kg					
GC1			<0.5	<0.5	5	0.5	<0.5	0.5	<0.5	0.2	7,200	1	5	20	1	10	0.5	7,200	1	10	518	1	20	0.05
			<0.5	<0.5	5	0.5	<0.5	0.5	<0.5	28,800	7,200	1	5	20	1	10	0.5	28,800	1	10	2,073	1	20	0.05
BH01_0.5-0.7	BH01	17 Sep 2024	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<0.2	<5	<1	<5	<20	<1	<10	<0.5	<0.5	<1	<10	<0.5	<1	<20	<0.05
CC01	BH01	17 Sep 2024	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<1	<5	<20	<1	<10	<0.5	<0.5	<1	<10	<2	<1	<20	<0.5
BH01_0.5-0.7	BH01	17 Sep 2024	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<0.2	<5	<1	<5	<20	<1	<10	<0.5	<0.5	<1	<10	<0.5	<1	<20	<0.05
BH01_2.3-2.5	BH01	17 Sep 2024	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<0.2	<5	<1	<5	<20	<1	<10	<0.5	<0.5	<1	<10	<0.5	<1	<20	<0.05
BH01_3.0-3.5	BH01	17 Sep 2024	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<0.2	<5	<1	<5	<20	<1	<10	<0.5	<0.5	<1	<10	<0.5	<1	<20	<0.05
BH01_4.3-4.8	BH01	17 Sep 2024	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<0.2	<5	<1	<5	<20	<1	<10	<0.5	<0.5	<1	<10	<0.5	<1	<20	<0.05
Statistics			5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Number of Detects			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration			<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<0.2	<1	<1	<5	<20	<1	<10	<0.5	<0.5	<1	<10	<0.5	<1	<20	<0.05
Maximum Concentration			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *			0.35	0.25	2.5	0.25	0.25	0.13	0.13	0.5	0.5	2.5	10	10	0.5	0.5	5	0.3	0.3	0.5	0.4	0.5	10	0.07

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

- NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
- NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)
- NSW EPA, November 2014, NSW 2014 Restricted Solid Waste SCC2 (with leached)
- NSW EPA, November 2014, NSW 2014 Restricted Solid Waste TCLP2 (leached)

Field ID	Location Code	Date	Organochlorine Pesticides																				
			Organochlorine pesticides mg/kg	EPAVic mg/kg	Other organochlorine pesticides EPAVic mg/kg	4,4'-DDE mg/kg	p-BHC mg/kg	α-BHC mg/kg	γ-BHC mg/kg	Chlordane mg/kg	δ-BHC mg/kg	DDD mg/kg	DDT mg/kg	DDE+DDE+DDD mg/kg	Dieldrin mg/kg	Endosulfan I mg/kg	Endosulfan II mg/kg	Endosulfan sulphate mg/kg	Endrin mg/kg	Endrin aldehyde mg/kg	Endrin ketone mg/kg	γ-BHC (Lindane) mg/kg	
CC01	BH01	17 Sep 2024	0.18	<0.1	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	0.18	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH01_0.5-0.7	BH01	17 Sep 2024	1.2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	1.2	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH01_0.5-0.7	BH01	17 Sep 2024	<0.1	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH01_2.3-2.5	BH01	17 Sep 2024	<0.1	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH01_3.0-3.5	BH01	17 Sep 2024	<0.1	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH01_4.3-4.8	BH01	17 Sep 2024	<0.1	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Statistics			5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Number of Results			2	0	0	1	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
Number of Detects			<0.1	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Minimum Concentration			0.18	ND	ND	0.07	ND	ND	ND	ND	ND	0.11	0.18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration			1.2	<1	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	1.2	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Maximum Detect			1.2	ND	ND	0.07	ND	ND	ND	ND	ND	1.2	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *			0.31	0.14	0.079	0.07	0.07	0.14	0.07	0.07	0.28	0.29	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
 NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
 NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)
 NSW EPA, November 2014, NSW 2014 Restricted Solid Waste SCC2 (with leached)
 NSW EPA, November 2014, NSW 2014 Restricted Solid Waste TCLP2 (leached)

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Catherine Blaine

cblaine@portauthoritynsw.com.au

General Manager, Projects - Assets & Development

Port Authority of NSW

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Matthew Butt

mbutt@portauthoritynsw.com.au

Deputy General Counsel

Port Authority of NSW

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