

Cockatoo Island Wharf Upgrade Submissions report

February 2017



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Roads and Maritime Services

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February 2017

Prepared by Roads and Maritime Services

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Approval and authorisation

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Accepted on behalf of Roads and Maritime NSW by	Bob Rimac – Senior Project Manager
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Executive summary

This submissions report relates to the Review of Environmental Factors (REF) prepared for the Cockatoo Island Wharf Upgrade, and should be read in conjunction with that document.

Cockatoo Island Wharf Upgrade is one of the projects within the Ferry Wharf Upgrade Program (FWUP) being delivered as part of the Transport for New South Wales (TfNSW) Transport Access Program. The proposal involves the replacement of the existing Cockatoo Island Wharf with a structure which can provide access for people with a disability, meeting the standards of the Disability Discrimination Act (1992). The new wharf would also increase capacity through the provision of two berthing faces, and meet key project objectives to improve efficiency of boarding and disembarking.

The existing Cockatoo Island Wharf is situated on both Commonwealth and State land. The Sydney Harbour Federation Trust (the Trust) is the Approval Authority under the *Environment Protection and Biodiversity Conservation 1999 Act* (EPBC Act) for the portion of the proposal located on Commonwealth land. Roads and Maritime is the determining authority under the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the portion of the proposal located on State land.

As part of the planning process Roads and Maritime submitted the REF to the Trust who placed the document on public display for 28 days between Wednesday 23 November and Wednesday 21 December 2016. During and following display, eleven submissions relating to the proposal and REF were received, with submissions either received directly by Roads and Maritime or via the Trust. One submission was withdrawn prior to the end of the display period and is therefore not considered within this Submissions Report.

The issues raised in the submissions can be categorised into two main areas:

1. The heritage impact of the proposal, including a request to revise the Statement of Heritage Impact (SOHI) to assess the significance of the existing wharf for heritage value and a request to install interpretive heritage devices at the wharf.

Summary response: The SOHI, which previously confirmed the proposal would have no impact from a heritage perspective, was updated in response to the heritage issues raised. The revised report confirms no items of the original fabric of the pre 2004 wharf exist. An additional safeguard has been included in the REF for the Sydney Harbour Federation Trust to investigate the installation of heritage interpretation devices at the wharf.

2. The construction of the proposal, including methodology and impacts on the local and wider community through changes to water transport, and potential wash impact due to these changes, and noise during construction

In response to this issue the Submissions Report refers to information provided in the REF to confirm the methodology of the proposal and impact on water transport. To mitigate concerns raised with potential wash impact an additional safeguard has been included within this Submissions Report to reduce the speed of ferries travelling across the south face of Cockatoo Island, removing the potential issue. Details of noise management processes are provided in the Submissions Report, using the Noise and Vibration Impact Assessment previously provided as an Appendix to the REF, and existing safeguards have been revised to include placement of an additional noise logger in the Birchgrove area during periods of high noise activity.

As a result of the submissions received, additional information has been provided in the Appendix of this Submissions Report, including an updated version of the Statement of Heritage Impact previously displayed as an appendix to the REF.

An updated summary of safeguards and mitigation measures is detailed in Chapter 4.2 of this report for ease of reference.

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Appendix A - Statement of Heritage Impact – Cockatoo Island Wharf Upgrade Version 6.0 updated January 2017

Appendix B – Cockatoo Island Wharf Upgrade Fender Design Drawing

1 Introduction and background

1.1 The proposal

The main elements of the proposal for the Cockatoo Island Wharf Upgrade include:

- demolition and removal of the existing uncovered gangway and pontoon, including removal of piles from the riverbed.
- construction of a new uncovered gangway, and covered pontoon to be supported and held in position by new piles. The new pontoon would include an appropriate waiting area with appropriate seating and shelter.
- the existing connection between Cockatoo Island and the wharf would be maintained, with the new structure accessed via the Bundy Office (Building 26).
- the new wharf would enable efficient berthing for ferries and private water users, providing two faces for dual berthing.
- an ancillary site, including a temporary construction compound would be required during construction of the proposal.
- during construction of the proposal the existing Cockatoo Island Wharf would be closed to the public, with public ferry services diverted to the Camber Wharf at the south of the island.

The existing Cockatoo Wharf is shown in relation to Sydney Harbour and the surrounding suburbs of Woolwich, Greenwich and Balmain in Figure 1 below, with Figure 2 showing the existing wharf in relation to items on Cockatoo Island, including the Camber Wharf to the south.

The existing Cockatoo Island Wharf is situated on both Commonwealth and State land. The Commonwealth land is owned by the Sydney Harbour Federation Trust (the Trust), who own, maintain and operate Cockatoo Island to the low water mark. The State land is owned by Roads and Maritime Services (Roads and Maritime) and is located past the low water mark into the Sydney Harbour.

The Sydney Harbour Federation Trust (the Trust) is the Approval Authority under the *Environment Protection and Biodiversity Conservation 1999 Act* (EPBC Act) for the portion of the proposal located on Commonwealth land. Roads and Maritime is the determining authority under the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the portion of the proposal located on State land.

A more detailed description of the Cockatoo Island Wharf Upgrade is found in the Cockatoo Island Wharf Upgrade Review of Environmental Factors (REF) prepared by Roads and Maritime for the Trust review and approval in November 2016.



Figure 1 Cockatoo Island Wharf in relation to Sydney Harbour taken from REF



Figure 2 Cockatoo Island Wharf in relation to Cockatoo Island taken from REF

1.2 REF display

Roads and Maritime prepared a REF to assess the environmental impacts of the proposed work which was submitted to the Trust for review and approval. The Trust placed the REF on public display for 28 days between Wednesday 23 November and Wednesday 21 December 2016. Hard copies of the document were displayed at twelve locations as detailed in Table 1.1. The REF was also placed on the Roads and Maritime project website and made available for download. The display locations and website link were advertised in the Inner West Courier, Northern District Times and North Shore Times.

In addition to the above public display, an invitation to comment and copy of the REF was sent directly to about 50 stakeholders including local clubs, businesses and water user groups.

A community update detailing locations of the REF display and invitation to comment was distributed to around 3,400 residents and businesses.

Table 1.1: Display locations

Location	Address
Roads and Maritime Office	20-44 Ennis Road, Milsons Point
Sydney Harbour Federation Trust Office	Building 28, Best Avenue (off Suakin Drive), Mosman
Cockatoo Island Visitor Centre	Building 164, Cockatoo Island, Sydney Harbour
Hunter's Hill Council	22 Alexandra Street, Hunters Hill
Gladesville Library	6 Pittwater Road, Gladesville
Lane Cove Council Civic Centre	48 Longueville Road, Lane Cove
Lane Cove Library	Library Walk, Lane Cove
Greenwich Library	48 Greenwich Road, Greenwich
Inner West Municipal Council	7-15 Wetherill Street, Leichardt
Balmain Library	370 Darling Street
Canada Bay Civic Centre	1A Marlborough Street, Drummoyne
Five Dock Library	4-12 Garfield Street, Five Dock
Sydney Harbour Federation Trust website	www.harbourtrust.gov.au/planning-projects/public-comment
Roads and Maritime website	www.rms.nsw.gov.au/cockatoo-island-wharf

1.3 Purpose of the report

This submissions report relates to the REF prepared for the Cockatoo Island Wharf Upgrade, and should be read in conjunction with that document.

The REF was placed on public display and submissions relating to the proposal and the REF were received by Roads and Maritime, either directly or via the Trust. This submissions report

summarises the issues raised and provides responses to each issue (Chapter 2). It details investigations carried out since finalisation of the REF (Chapter 3) and identifies new or revised environmental management measures (Chapter 4).

As a result of the submissions received, additional information has been provided in the Appendix of this Submissions Report, including an updated version of the Statement of Heritage Impact (SOHI) previously displayed as an appendix to the REF.

An updated summary of safeguards and mitigation measures are detailed in Chapter 4.2 of this report for ease of reference.

2 Response to issues

Eleven submissions were received in response to public display, with submissions accepted up until the 24 December 2016. Table 2.1 lists the respondents and each respondent's allocated submission number. The table also indicates where the issues from each submission have been addressed in Chapter 3 of this report, and whether responses have been issued via RMS or the Trust, depending on the issues raised.

Although eleven submissions were received in total, one submission was withdrawn prior to the end of the display period, and has therefore not considered further within this submissions report.

Table 2.1: Respondents

Respondent	Submission No.	Section number where issues are addressed	Relevant Authority Providing Response
Undisclosed	1	Submission Withdrawn	N/A
Individual 1	2	2.2.1	Roads and Maritime
Individual 2	3	2.3.1	Roads and Maritime
Business 1	4	2.4.1	Roads and Maritime
Government 1	5	2.1.1	Roads and Maritime
Government 2	6	2.1.1	Roads and Maritime
Government 3	7	2.1.1, 2.4.3	Roads and Maritime
Individual 3	8	2.4.2, 2.4.3	Roads and Maritime The Trust
Individual 4	9	2.3.2, 2.4.1	Roads and Maritime
Business 2	10	2.4.1	Roads and Maritime
Government 4	11	2.1.1, 2.2.1, 2.2.2	Roads and Maritime The Trust

2.1 Overview of issues raised

A total of eleven submissions were received in response to the display of the REF. This included submissions from four government agencies and seven submissions from the community. One submission was withdrawn prior to the end of the display period.

Each submission has been examined individually to understand the issues being raised. The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The issues raised and Roads and Maritime and the Trust response to these issues form the basis of this chapter.

Of the ten submissions considered within this report, three were generally supportive of the proposal, with one submission objecting and two confirming proposal compliance with relevant legislation requirements. Other submissions did not provide a general position on the proposal, but raised issues about specific aspects of the proposal.

The issues raised in the submissions can be categorised into the following two main areas:

1. The design of the proposal, and how this would impact on the existing heritage values of Cockatoo Island
2. The construction of the proposal, including methodology and impacts on the local and wider community through changes to water transport, and potential wash impact due to these changes, and noise during construction

2.1.1 Government submissions

The project received submissions from the following Government agencies:

- NSW Department of Primary Industries – Fisheries
- Port Authority of NSW
- Inner West Council
- Office of Environment and Heritage

NSW Department of Primary Industries – Fisheries

DPI Fisheries stated no issues with the proposal.

Port Authority of NSW

Port Authority of NSW confirmed that approval of a Form Z will be required from Harbourmaster prior to construction commencing.

Inner West Council

Inner West Council provided general support for the proposal but made further recommendations for minimising the impact of construction noise including a request for a noise logger to be located in the Birchgrove area. Refer to Chapter 2.4.3 for a response.

Office of Environment and Heritage (OEH)

OEH confirmed general support for the proposal but requested the Statement of Heritage Impact, provided as an Appendix to the REF document, was revised to consider the following issues:

- colour and material of the proposal and impact this may have on the aesthetic values of Cockatoo Island
- the significance of the existing wharf in terms of whether any elements of the pre-2004 wharf remain (by undertaking an investigation for the original fabric and assessing the impact of removal)
- impact of the proposal on existing views

The OEH submission supported the safeguards and management measures included in the REF to date and recommended wayfinding signage proposed was kept consistent with current signage. A final recommendation was provided requesting opportunities be sought for the provision of suitable interpretation devices at the wharf.

2.2 Heritage Impacts

2.2.1 Design

Submission numbers

2, 11

Issue description

Submissions received raised the following comments with regards to impacts of the design on the existing structure and wider heritage values:

- design is inappropriate from a heritage perspective, given the heritage significance of Cockatoo Island

- design is appropriate for the island's character, but further consideration of the colour and material of the proposal, visual impact of the proposal and wayfinding signage should be included within the Statement of Heritage Impact.

Response

Cockatoo Island forms part of a UNESCO World Heritage listing and is considered a nationally significant item. A Statement of Heritage Impact (SOHI) report was produced for the proposal which assesses the impact of the proposal on existing heritage items (refer to Appendix G of the REF for SOHI).

The SOHI confirms that the demolition of the existing wharf, and construction of a new wharf with bridge gangway and pontoon, are situated beyond the heritage curtilage for Cockatoo Island, and concludes that the existing Cockatoo Island Wharf is amenable to change owing to its position in relation to the heritage curtilage, recent construction of the existing structure (pre-2004), and continued use of this location as a ferry wharf.

The proposal components constructed within the Cockatoo Island heritage curtilage include affixing the new gangway to an existing jetty, maintaining the existing access point to the wharf, and replacing existing wayfinding signage on the jetty. The SOHI concluded that the proposal is not anticipated to damage either the fabric or significance of individual items on Cockatoo Island or the Island as a whole.

The colour and materials used in the wharf were assessed in the Landscape Character and Visual Impact Assessment (LCVIA) (refer to Appendix E of the REF), which concluded the selection of these materials and paint colours respond to the surrounding palette, are low in reflectivity and complement the surrounding elements of the wharf precinct and river landscape through neutral tones. The LCVIA also undertook an assessment of the visual impact of the proposal from various heritage viewpoints around Cockatoo, concluding that visual impact of the proposal was considered moderate to low.

In response to the submission from the OEH the SOHI was revised to further include consideration of materials and colours to be used in the proposal and visual impact of the proposal from a heritage significance perspective. The revised SOHI uses information from the LCVIA to conclude the overall visual impact from a heritage perspective is considered moderate to low, with Roads and Maritime's chosen material palette of non-reflective material and neutral colours mitigating visual impact. This mitigation also aided by the other heritage buildings adjacent to the wharf, which generally obstruct views from the lower foreshore level of the island to the proposed wharf location.

The revised SOHI also assessed the wayfinding design for the wharf, and confirms wayfinding signage is consistent with existing signage, noting signs proposed within the curtilage area are unobtrusive and utilitarian.

A copy of the revised SOHI is provided in Appendix A of this Submissions Report. Heritage impacts during construction and operation of the wharf will be further managed through the revised list of safeguards provided in Chapter 4.2 of this Submissions Report

2.2.2 Existing Wharf Structure

Submission number

11

Issue description

The submission received raised the following comments with regards to proposal impact on the existing wharf structure and overall heritage value:

- SOHI should be revised to assess the significance of the existing wharf in terms of whether any elements of the pre-2004 wharf remain
- as part of the proposal opportunities should be sought for the provision of suitable interpretation devices at the wharf.

Response

The SOHI for Cockatoo Island Wharf Upgrade has been revised with a copy provided in Appendix A of the Submissions Report.

The revised report confirms no items of original fabric from the original wharf, or previous wharf structures exist. The current wharf was most recently upgraded post-2001 by the Trust.

Owing to the loss of previous wharf structures and the absence of any original fabric, the SOHI recommends that Sydney Harbour Federation Trust investigate the potential for the installation of interpretation devices at the wharf. The safeguards and management measures have been updated to include this.

A revised list of safeguards can be found in Chapter 4.2 of this Submissions Report.

2.3 Design

2.3.1 Weather Protection

Submission number

3

Issue description

The submission received noted a preference for more weather protection to be provided in the proposal, however noted there may be other considerations.

Response

The preferred design for the proposal meets the objectives for the Ferry Wharf Upgrade Program, by providing a wharf accessible to people with a disability in accordance with the Disability Discrimination Act 1992 (DDA), Building Code of Australia Standards (BCA) and Disability Standards for Accessible Public Transport 2002 (DSAPT) and providing potential to increase ferry efficiency and travel times through provision of a second boarding face.

To minimise the visual impact of the proposal, the design included provision of an uncovered gangway and utilised an existing building on the Island for the storage of wharf equipment.

The new pontoon would include a canopy shelter to accommodate a waiting area with seating and information. Further weather protection would also be provided through the installation of glass screens on the pontoon which would provide shelter from weather events such as high wind.

Further details on the preferred design for Cockatoo Island are explored in Chapters 2.5 and 3.1 of the REF, with design drawings provided in Appendix A of the REF.

2.3.2 Recreational berthing

Submission number

9

Issue description

Submissions received questioned what allowances for recreational berthing had been made in the proposal.

Response

Flat-faced fenders with chamfered edges and a height of 1600mm above deck level would be installed as part of the proposal. These fenders have been installed throughout the Ferry Wharf Upgrade Program, with recreational berthing available at many other upgraded wharves and are therefore confirmed as suitable for recreational berthing.

Details of the fendering system were not previously included in REF documentation, however in response to this submission a detailed drawing for the fender design has been provided in Appendix B of this Submissions Report.

2.4 Construction

2.4.1 Wash impact

Submission numbers

4, 9, 10

Issue description

Submissions received raised the following comments with regards to alternative transport arrangements proposed during construction:

- alternative transport of proposal would change ferry routes and may cause potential wash to existing marinas situated close to the south side of Cockatoo Island.

Response

Construction of the proposal would require the closure of the existing Cockatoo Island Wharf, to enable a new structure to be constructed in the same area. To minimise the impact of the wharf closure to visitors to the Island, the public ferries would use the western face of the Camber Wharf pontoon, situated on the south face of Cockatoo Island (see Chapter 6.12 of the REF for details).

Following concerns raised regarding the potential for ferry wash to impact on existing marinas situated between the south side of Cockatoo Island and Balmain/Birchgrove mainland; Roads and Maritime have discussed with Harbour City Ferries that ferry operators travelling between the south-eastern and south-western extents of Cockatoo Island will treat this area as a "minimal wash zone" which would involve vessels travelling at 4-6 knots within the area. The safeguards and management measures have been updated to include this.

It should be noted that this "minimal wash zone" would only apply to Harbour City Ferries, as operator of the public ferry network. Other watercraft is considered unrelated to the proposal and outside the scope of the REF and Submissions Report. Other watercraft would continue to use public waterways in accordance with Marine Safety Regulations (2016).

A revised list of safeguards can be found in Chapter 4.2 of this Submissions Report.

2.4.2 Use of Clarke's Point and Hunters Hill Sailing Club Ramp

Submission number

8

Issue description

The submission received raised the following comments with regards to impacts of construction on the existing waterways and land surrounding Cockatoo Island:

- questions whether proposal will involve the use of existing parking at Clarke's Point and use of the existing Hunters Hill Sailing Club ramp.

Response

As confirmed in Chapter 6.10 of the REF the proposal would not involve the use of the Trust-owned ramp at Hunters Hill Sailing Club or carpark at Clarke's Point.

2.4.3 Construction hours and noise

Submission numbers

7, 8

Issue description

The submission received raised the following comments with regards to construction hours and noise impacts associated with the proposal:

- due to the potential noise impacts of the proposal the REF should detail how community consultation during noisy periods would be managed in advance
- due to the potential noise impacts of the proposal a noise logger should be placed at Louisa Road to record background noise levels
- construction of the proposal over the weekend has not considered impact on existing sailing club situated close to the island.

Response

The REF provides details of construction hours and the duration of the proposal, noting that construction would be limited to standard construction hours as far as possible, to minimise the impact of construction on the wider community. Although standard construction hours include between 8am to 1pm on Saturdays the project team would only work Saturdays where required to further minimise the impact of construction on the community.

Chapter 3.3.2 of the REF provides details of construction hours for the proposal, with Chapter 6.8.1 confirming conservative "worst-case" scenarios were considered while assessing the environmental impact of the proposal, including conservative estimates of construction times.

The construction of the proposal would also involve piling activities which would need to be carried out outside of standard construction hours due to the requirement for calm water conditions for pile installation.

To assess and minimise the impact of working outside of standard construction hours, a Noise and Vibration Impact Assessment was produced for the REF (refer to Appendix D), which details how community consultation of noisy activities would be undertaken in advance, with notification of all potentially affected residents undertaken at least five business days prior to any night-work.

Letter drops would be carried out for residents within the red area shown in Figure 3 below, with direct contact made with residents located with the yellow area shown in Figure 4 to inform about commencement of construction, advise of upcoming night and early morning work and detail what to expect during construction.

Additional individual contact details (e.g. email addresses) for updates would be identified during doorknock or any contact during construction.

A Council request to provide an additional noise logger to monitor actual noise levels south of the Cockatoo Island wharf has been included within this Submissions Report, with an additional safeguard included. A noise logger will be installed on Louisa Road to record noise levels during demolition of the existing structure and installation of piles. A revised list of safeguards can be found in Chapter 4.2 of this Submissions Report.

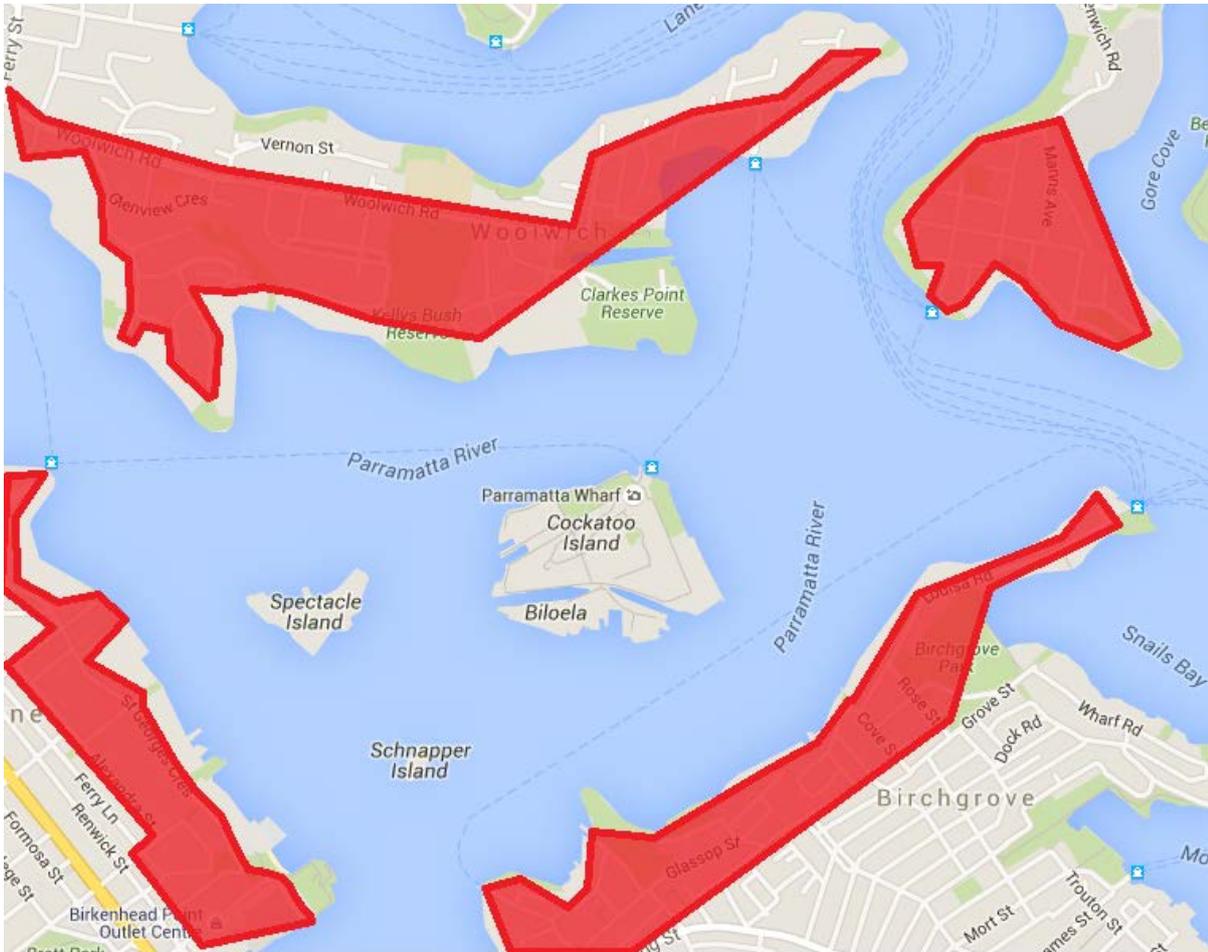


Figure 3 Letter drop area (as shown in Chapter 6.5 of REF)

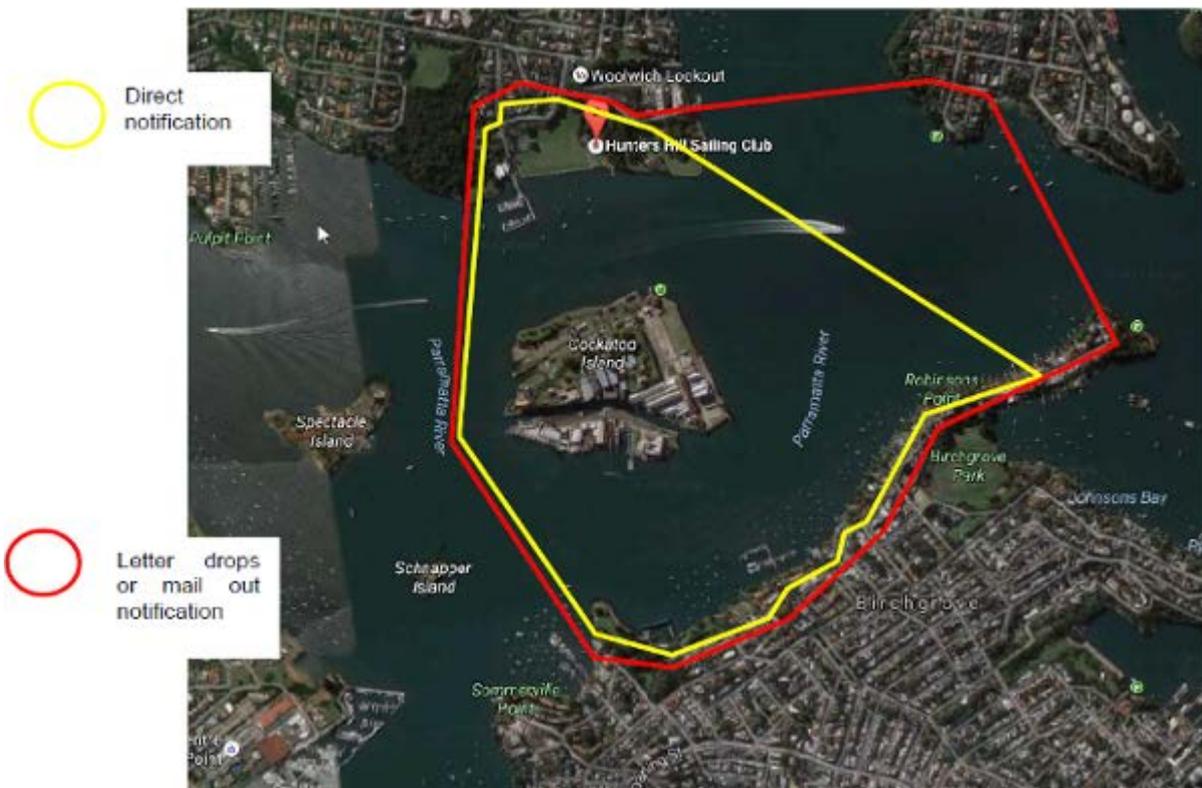


Figure 4 Direct notification area (as shown in Chapter 6.5 of REF)

3 Additional assessment

3.1 Revised Statement of Heritage Impacts

3.1.1 Summary

In response to this submission the SOHI for Cockatoo Island Wharf Upgrade has been revised to include recommendations from the OEH, with a copy provided in Appendix A of the Submissions Report.

The revised SOHI uses information from the LCVIA to conclude the overall visual impact from a heritage perspective is considered moderate to low, with Roads and Maritime's chosen material palette of non-reflective material and neutral colours mitigating visual impact. This mitigation also aided by the other heritage buildings adjacent to the wharf, which generally obstruct views from the lower foreshore level of the island to the proposed wharf location.

A copy of the wayfinding design has been included within the Appendix of the revised SOHI, confirming wayfinding signage is consistent with existing signage and not considered significant from a heritage perspective.

The revised report confirms no items of original fabric from previous wharf structures exist, with the wharf most recently upgraded post-2001 by the Trust.

The report also notes that due to the loss of previous wharf structures and the absence of any original fabric, it is recommended that Sydney Harbour Federation Trust investigate the potential for the installation of interpretation devices at the wharf.

3.1.2 Additional management and mitigation measures

Table 3-1: Additional management and mitigation measures

Impact	Environmental safeguard	Responsibility	Timing
Heritage Impact	<ul style="list-style-type: none">Sydney Harbour Federation Trust to investigate the potential for the installation of interpretation devices at the original location of the wharf	Sydney Harbour Federation Trust	Construction

4 Environmental management

The REF for the Cockatoo Island Wharf Upgrade identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (Chapter 7.2 of the REF).

After consideration of the issues raised in the public submissions, the safeguard and management measures have been revised in the following ways:

- inclusion of safeguards to comply with recommendations made by the OEH in the SOHI, as detailed in Chapter 3.1.2
- inclusion of a safeguard to reduce the speed of public ferries using the Camber Wharf during construction, minimising potential for wash
- inclusion of a safeguard to comply with recommendations made by Inner West Council to install an additional noise logger at Louisa Road, Birchgrove.

Should the proposal proceed, environmental management would be guided by the framework and measures outlined below.

4.1 Environmental management plans (or system)

A number of safeguards and management measures have been identified in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. Should the proposal proceed, these management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

A Construction Environmental Management Plan (CEMP) would be prepared to describe safeguards and management measures identified. The CEMP would provide a framework for establishing how these measures would be implemented and who would be responsible for their implementation.

The CEMP would be prepared prior to construction of the proposal and must be reviewed and certified by Roads and Maritime, prior to the commencement of any on-site work. The CEMP would be a working document, subject to ongoing change and updated as necessary to respond to specific requirements.

4.2 Summary of safeguards and management measures

The REF for the Cockatoo Island Wharf Upgrade identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the project (refer to Chapter 7.2 of the REF) have been revised. Should the project proceed, the environmental management measures in Table 4.1 would guide the subsequent phases of the Cockatoo Island Wharf Upgrade development. Additional and/or modified environmental safeguards and management measures to those presented in the REF have been underlined.

Table 4.1: Summary of environmental safeguards and management measures

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
GEN1	General - minimise environmental impacts during construction	<p>A CEMP will be prepared and submitted for review and endorsement of the Roads and Maritime Environment Manager prior to commencement of the activity.</p> <p>As a minimum, the CEMP will address the following:</p> <ul style="list-style-type: none"> • any requirements associated with statutory approvals • details of how the project will implement the identified safeguards outlined in the REF • issue-specific environmental management plans • roles and responsibilities • communication requirements • induction and training requirements • procedures for monitoring and evaluating environmental performance, and for corrective action • reporting requirements and record-keeping • procedures for emergency and incident management • procedures for audit and review. <p>The endorsed CEMP will be implemented during the undertaking of the activity.</p>	Contractor / Roads and Maritime Project Manager	Pre-construction / detailed design
GEN2	General - notification	All businesses, residential properties and other key stakeholders (e.g. schools, local councils) affected by the activity will be notified at least five business days prior to commencement of the activity.	Contractor / Roads and Maritime Project Manager	Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
GEN3	General - environmental awareness	<p>All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the project. This will include up-front site induction and regular "toolbox" style briefings.</p> <p>Site-specific training will be provided to personnel engaged in activities or areas of higher risk. These include:</p> <ul style="list-style-type: none"> • heritage sensitivity of Cockatoo Island • known contamination and management measures • noise management measures for affected sensitive receivers. 	Contractor / Roads and Maritime Project Manager	Pre-construction / detailed design
4	Land and water based land surface	A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction.	Contractor	Detailed design / Pre-construction
5	Land and water based land surface	A site specific Erosion and Sediment Control Plan will be implemented as part of the SWMP. The plan will include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.	Contractor	Detailed design / Pre-construction
6	Land and water based land surface	Silt and sediment controls will be established prior to any disturbances of the land surface. Controls will be in accordance with edition 4 of 'Managing Urban Stormwater, Soils and Construction' (NSW Government, 2004) (the blue book).	Contractor	Pre-Construction
7	Water based land surface	A silt curtain, extending from a minimum of 100 millimetres above the water line and extending to less than 2.5m to below sea level will be installed around the entire redevelopment work area within the waterway prior to commencement of work that disturb the seafloor.	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
8	Water based land surface	<p>Inspection of the silt curtain or boom device should be undertaken on a daily basis after ebbing tides, with additional inspection be carried following storm events.</p> <p>If excessive turbidity of the water is observed during removal of the first few piles, a second, moveable silt curtain will be installed around the piles being removed during each day of operation.</p> <p>Results of observations of the integrity of the silt curtain/boom device are required to be recorded in a site notebook maintained specifically for the purpose. The notebook is required to be kept on the site and to be available for inspection by persons authorised by Roads and Maritime</p>	Contractor	Construction
9	Water based	Any excavated sediments that require disposal will be sampled, tested and classified in accordance with the <i>EPA's Waste Classification Guidelines: Part 1 Classifying Waste</i> (EPA 2014) prior to being disposed of at a waste facility licensed to accept the relevant class of waste. Any materials classified as Hazardous Waste may require treatment or an immobilisation approach in accordance with Part 10 of the <i>Protection of the Environment Operations (Waste) Regulation 2014</i> prior to off-site disposal.	Contractor	Construction
10	Land Surface	Dial Before You Dig (DBYD) investigations would be carried out during the detailed design phase. If any relocation of services is required further assessment would be carried out in accordance with Roads and Maritime Environment Branch requirements and the appropriate utility providers would be consulted.	Contractor	Pre-construction
11	Land surface	Following completion of landside activities and the removal of the temporary compound, the area will be restored with all land surfaces rehabilitated.	Contractor	Construction
12	Land Surface	Any work proposed to be undertaken near where capping has occurred are to be communicated with the Trust prior to ground disturbance.	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
13	Hydrology	Weather forecasts will be checked regularly during construction and where flooding is forecast, all equipment and materials will be removed from the compound site and wharf construction area or appropriately secured.	Contractor	Construction
14	Water quality	Erosion and sediment measures would be checked prior to forecasted rainfall and following periods of rainfall.	Contractor	Construction
15	Water quality	<p>Emergency spill kits will be kept onsite at all times and maintained throughout the construction work.</p> <p>The spill kit must be appropriately sized for the volume of substances at the work site. A spill kit will be kept on each barge and at the temporary compound site.</p> <p>All staff will be made aware of the location of the spill kits and trained in their use. If a spill occurs, the Roads and Maritime contract manager will be notified as soon as practicable and the Roads and Maritime Incident Procedure will be followed.</p>	Contractor	Construction
16	Water quality	Equipment barges carrying plant or machinery will be fitted with bunding around equipment which contain chemicals to prevent chemical spills or leakages from entering the water.	Contractor	Construction
17	Water quality	All equipment, materials and wastes transported between an appropriately approved and licensed facility, and the construction work site will be secured to avoid spills during transportation.	Contractor	Construction
18	Water quality	Vehicles, vessels and plant will be properly maintained and regularly inspected for fluid leaks.	Contractor	Construction
19	Water quality	Emergency contacts will be kept in an easily accessible location on the construction work site and on all construction vessels. All construction workers will be advised of these contact details and procedures.	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
20	Water quality	Any chemicals or fuels stored at the temporary compound will be within double bunded areas.	Contractor	Construction
21	Water quality	No vehicle or vessel will be washed down or refuelled while on-site.	Contractor	Construction
22	Water quality	Daily clean-up of site to be undertaken to ensure no materials could enter the water.	Contractor	Construction
23	Water quality	Any debris that enters the water must be retrieved as soon as possible. Floating debris to be retrieved by scoop. Sinking debris to be removed by diver.	Contractor	Construction
24	Water quality	In an event of a spill during operation, the incident emergency plan will be implemented in accordance with Sydney Ports Corporation's response to shipping incidents and emergencies outlined in the ' <i>NSW State Waters Marine Oil and Chemical Spill Contingency Plan</i> ' (Maritime, 2008).	Operator	Operation
25	Waste Management	Waste disposed of off-site shall be classified in accordance with the Waste Classification Guidelines: Part 1 Classifying Waste (DECCW 2009) prior to disposal and shall be disposed of at an appropriately licenced facility for that waste. Where necessary, this shall include sampling and analysis.	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
26	Air quality	<p>Measures to address air quality impacts will be incorporated into the CEMP and implemented throughout the construction period. As a minimum, the following measures will be included:</p> <ul style="list-style-type: none"> • covering of all loaded trucks and vessels • machinery to be turned off rather than left to idle when not in use • maintenance of all vehicles, including trucks and vessels entering and leaving the site in accordance with the manufacturers specifications to comply with all relevant legislation • maintenance of all plant and equipment to ensure good operating conditions and exhaust emissions comply with the <i>Protection of the Environment Operations Act 1997</i> • maintaining the work site in a condition that minimises fugitive emissions such as minor dust • dust control for any excavation work • appropriate sediment and erosion controls for any exposed earth or stockpiled waste. 	Contractor	Pre-construction and construction
27	Noise and Vibration	<ul style="list-style-type: none"> • Notification of all potentially affected residents will be undertaken at least five business days prior to the proposed night time work • Properties where noise management levels may be exceeded will receive indirect notification through a letter drop and residences that may be highly noise affected will receive direct notification through a door knock. • These notifications will include the timing and nature of work as well as the expected noise levels, duration and impacts prior to the commencement of construction • Contact details to lodge noise complaints or receive updates would also be provided at this time. 	Contractor	Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
28	Noise and Vibration	<ul style="list-style-type: none"> A Noise and Vibration Management Plan will be prepared and incorporated within the CEMP. The management plan will include but not be limited to: <ul style="list-style-type: none"> reasonable and feasible noise control measures to reduce noise levels taking into account the control methods specified in the noise and vibration impact assessment for the proposal identification of nearby sensitive noise receivers a construction noise assessment in accordance with EPA <i>Interim Construction Noise Guidelines</i> for qualitative noise assessment and Roads and Maritime Noise and Vibration Guidelines details of the assessed hours of work and work to be undertaken. Behavioural practices or other management measures to be implemented to minimise noise.	Contractor	Pre-construction
29	Noise and Vibration	Work will be carried out during the recommended standard construction hours identified in the Interim Construction Noise Guideline (DECC, 2009a) unless RMS approval has been provided.	Project Manager	Pre-construction
30	Noise and Vibration	Preparation and movement of material will be maximised prior to noisy work commencing so that it can be limited during the extended hours period.	Project Manager	Pre-construction
31	Noise and Vibration	Temporary hoarding will be erected around the compound site.	Project Manager	Construction
32	Noise and Vibration	Construction personnel will be informed of the location of sensitive receivers, and the need to minimise noise and vibration from the work, through the site induction and regular toolbox talks.	Project Manager	Construction
33	Noise and Vibration	The use of portable radios, public address systems or other methods of site communication that may impact on residents unnecessarily will be avoided.	Project Manager	Construction
34	Noise and Vibration	Non-tonal alarms to be used at night.	Project Manager	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
35	Noise and Vibration	Plant and equipment will be inspected fortnightly to ensure they are in good working order and not emitting excessive noise levels.	Project Manager	Construction
36	Noise and Vibration	Quieter plant and equipment will be selected based on the optimal power and size to most efficiently perform the required task.	Project Manager	Construction
37	Noise and Vibration	Noise monitoring using a hand held metering device will be undertaken at the site from time to time during the high noise periods including piling. The results of monitoring will be used to devise further control methods where required.	Project Manager	Construction
38	Noise and Vibration	A photographic record will be provided for existing seawalls, concrete aprons and piers, Muster Station and Administration Building to establish condition.	Contractor	Pre-Construction
39	Noise and Vibration	A noise logger will be provided to take noise readings for Louisa Road, Birchgrove area during the following construction activities: <ul style="list-style-type: none"> • demolition of the existing wharf • installation of piles (drilling and hammering). 	Contractor	Construction
40	Landscape character and visual impact	Urban design principles will be integrated throughout the detailed design and construction of the proposal.	Contractor	Preconstruction and construction
41	Landscape character and visual impact	The detailed design is to incorporate the “suite” of structure, fixtures and furniture developed for the wharf upgrade program, ensuring wharf identity and ease of maintenance.	Contractor	Preconstruction and construction
42	Landscape character and visual impact	The compound site and work area would be kept clean and clear of rubbish.	Contractor	Construction
43	Biodiversity	A spill management plan will be developed and communicated to all staff working on site.	Contractor	Pre-construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
44	Biodiversity	<p>The construction work site area used will be the minimum size necessary to safely undertake the proposal</p> <p><input type="checkbox"/> Exclusion zones will be established to identify the work area and prevent damage to marine habitats outside the work area</p> <p><input type="checkbox"/> Should the construction work area identified at Figure 3-1 be expanded further environmental assessment would be required.</p>	RMS and Contractor	Pre-construction and Construction
45	Biodiversity	<p>To minimise wash and prevent bottom scouring of the marine sediments, vessels will not use excessive power when manoeuvring barges into place over the coarse sand and rock rubble habitat.</p> <p>Scouring damage will also be minimised by ‘working the wind and tides’, by only moving floating plant into place on high tides and under favourable or no-wind conditions, where practicable.</p>	Contractor	Construction
46	Biodiversity	<p>All staff working on site will be advised of the location of rock rubble habitats. No vessel anchors will be placed in identified rocky reef or marine vegetation habitats.</p> <p>Anchor cables must be suitably buoyed prior to laying, and kept buoyed once laid, to prevent cable drag and cable swing damage (scalping) to marine vegetation and rock rubble habitat areas. Where this is impractical, contractors will use floating rope.</p>	Contractor	Construction
47	Biodiversity	<p>All construction related equipment that comes in contact with the seabed (including mooring tackle, cables, ropes and anchors), must be inspected for attached fragments of the declared pest algae species <i>Caluierpa taxifolia</i> and any fragments found must be collected and disposed of into plastic bags then placed into garbage bins on shore in the NSW Control Plan for the Noxious Marine Algae <i>Caulerpa Taxifolia</i> (Department of Industry and Investment, 2009).</p>	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
48	Biodiversity	<p>A specialist marine/aquatic ecologist would undertake a pre-construction inspection of the piles for syngnathids (seahorses and pipefish)</p> <p><input type="checkbox"/> In the case that any syngnathids (seahorses and pipefish) are observed on the piles, the specialist marine/aquatic ecologist would re-locate these to an adjacent suitable rocky reef habitat away from the construction work site</p> <p><input type="checkbox"/> The marine/aquatic ecologist must hold the appropriate permit under section 37 of the FM Act to undertake the handling and relocation of <i>Syngnathiformes</i>. This would be obtained prior to the commencement of pile removal</p> <p><input type="checkbox"/> All personnel working within the waters of the construction site would be informed of the potential to encounter syngnathids (seahorses and pipefish).</p>	Contractor	Pre-construction
49	Biodiversity	In the case that any unexpected threatened species are observed in the construction area, work will cease and Roads and Maritime will be informed to guide further action.	Contractor	Construction
50	Social and Economic	The Trust and surrounding local communities to be kept informed about details of the work, construction progress, wharf closure, changes to public transport and other impacts throughout the construction period.	RMS	Preconstruction and construction
51	Social and Economic	An internet site and free call phone number for proposal enquiries will be established for the duration of the work. Contact details will be clearly displayed at the site throughout the construction period. Directions will be provided on how to make an enquiry or register a complaint regarding the work.	RMS	Preconstruction and construction
52	Social and Economic	An enquiry and complaint tracking system will be established. Any enquiries or complains will be acknowledged within 24 hours of being received.	RMS	Preconstruction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
53	Social and Economic	All operational wharf lighting and signage is to comply with the DSAPT 2002.	Contractor	Construction
54	Social and Economic	The construction site will be lit at night when night work is occurring for safety. Lights will be positioned so that light is not directed towards nearby residences.	Contractor	Construction
55	Land transport and parking	A traffic control plan will be prepared in accordance with the 'Traffic control at work sites manual' (RTA, 2010a) and Australian Standard 1742.3 (Manual of uniform traffic control devices) and will include such things as appropriate wayfinding signage to be installed advising of alternative transport options (i.e. use of Camber Wharf).	Contractor	Pre-construction
56	Land transport and parking	The following matters will be developed in consultation with the Trust prior to work commencing: <ul style="list-style-type: none"> • traffic management plan • pedestrian access from Camber Wharf. • operation vehicles on the island. 	Contractor	Pre-construction
57	Water transport	Commercial, recreational operators and private services that use the existing wharf will be advised of the wharf closure at least two weeks prior to closure.	RMS	Pre-
58	Water transport	The water-based construction zone will be clearly delineated and marked to prevent non-construction vessels from entering the construction site.	Contractor	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
59	Water transport	<ul style="list-style-type: none"> • A Marine Traffic Management Plan will be prepared and implemented during water based construction work, in consultation with NSW Maritime and approved by the Harbourmaster. • The proposed work will not interfere with the movement of seagoing ships unless agreed in advance with the Harbourmaster • Buoys will not be laid in or adjacent to shipping channels unless agreed in advance with the Harbourmaster • All buoys will be fitted with lights • All vessels associated with the work are to have Response Plans for emergencies and spills • At least one vessel is to be fitted with an Automatic Identification System (AIS). • The applicant is to consult with NSW Maritime and Harbourmaster regarding any navigation lights placed on the structure • Any marine spill (whether spill occurs on water on land and subsequently enters the water) is to be immediately reported to Sydney Ports VTS and VHF Channel 13 • Any material associated with the construction of the development that enters the water is to be immediately retrieved. Should material not be retrieved, the Port Authority will organise for its removal and recover costs from the Applicant <p>The Applicant is to prepare a Communications Plan for implementation during the work which must include 24/7 contact details, protocols for enquiries, complaints and emergencies.</p>	Contractor	Pre-Construction and Construction
60	Water transport	<p>Ferry operators to be briefed to observe a “minimal wash zone” between the south-eastern and south-western extents of Cockatoo Island and to travel at 4-6 knots within the area.</p>	Roads and Maritime	Pre-construction and construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
61	Aboriginal heritage	If Aboriginal heritage items are uncovered during the work, all work in the vicinity of the find must cease and the Roads and Maritime' Aboriginal cultural heritage advisor and the senior regional environmental officer contacted immediately. Steps in the Roads and Maritime Standard Management Procedure: Unexpected Archaeological Finds must be followed.	Contractor	Construction
62	Non-Aboriginal heritage	In accordance with Schedule 1, Section 3.4 (c) of the Bilateral Agreement made under Section 45 of the <i>Environment Protection and Diversity Conservation Act 1999</i> Relating to Environmental Assessment made between the Commonwealth of Australia and the State of New South Wales a copy of this assessment should be provided to the Minister of the Federal Department of Environment.	Roads and Maritime	Prior construction
63	Non-Aboriginal heritage	All policies contained in the <i>Sydney Harbour Federation Trust Management Plan - Cockatoo Island of 2010</i> should be followed during all phases of the wharf upgrade.	Contractor	During construction
64	Non-Aboriginal heritage	All relevant staff, contractors and subcontractors will be made aware of their statutory obligations for heritage under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> , through the site induction and toolbox talks.	Contractor	Prior construction
65	Non-Aboriginal heritage	All construction staff will be inducted in the Roads and Maritime Services <i>Standard Management Procedure - Unexpected Heritage Items Procedure (2015)</i> and will implement this procedure where necessary.	Contractor	Prior and during construction
66	Non-Aboriginal heritage	A reconnaissance dive will be undertaken by a suitably qualified maritime archaeologist prior to the commencement of work to confirm no maritime archaeological remains will be impacted.	Project Manager	Pre-Construction
67	Non-Aboriginal heritage	Sydney Harbour Federation Trust to investigate the potential for the installation of interpretation devices at the original location of the wharf.	Sydney Harbour Federation Trust	Construction

No.	Impact	Environmental safeguards and management measures	Responsibility	Timing
68	Hazards	A life preserving ring and appropriate first aid provisions will be located within the compound and on all barges during the construction period.	Contractor	Construction
69	Climate change	It is considered the potential for adverse impacts to and by climate change are effectively addressed by the design of the proposal.	Contractor and RMS	Pre-construction

4.3 Licensing and approvals

Table 4.2: Summary of licensing and approval required

Instrument	Requirement	Timing
Clause 65A and 67 of the <i>Management of Waters and Waterside Lands Regulations – NSW</i>	Approval from the Deputy Harbour Master for any work that disturb the seafloor.	Prior to the commencement of any work that disturb the seafloor
<i>Sydney Harbour Federation Trust Act 2001</i>	<p>The Sydney Harbour Federation Trust (the Trust) is the consent authority for the proposed actions on its land.</p> <p>Any conditions of approval, mitigation measures or recommendations provided by the Trust are to be implemented.</p>	<p>Prior to start of the activity.</p> <p>During construction.</p>

5 References

Jane Irwin Landscape Architecture 2016, *Cockatoo Island Wharf Interchange Landscape Character and Visual Impact Assessment*, Sydney.

RPS Australia East Pty Ltd 2016, *Ferry Wharves Upgrade Program – Cockatoo Island Wharf Upgrade Review of Environmental Factors*, Sydney.

RPS Australia East Pty Ltd 2016, *Ferry Wharves Upgrade Program – Statement of Heritage Impact*, Sydney.

Appendix A

Revised Statement of Heritage Impact – Cockatoo Island
Wharf Upgrade



Cockatoo Island Wharf Upgrade

Statement of Heritage Impact

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DOCUMENT STATUS

Version	Purpose of Document	Orig	Review	Review Date
1.0	Draft Statement of Heritage Impact for client review	Deborah Farina	Erin Williams	31/08/2016
2.0	Final following client comment	Deborah Farina	Erin Williams	6/10/2016
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6.0	Final following client comment	Deborah Farina	Erin Williams	06/02/2017
7.0	Final following client comment	Deborah Farina	Erin Williams	23/02/2017

APPROVAL FOR ISSUE

Name	Signature	Date
Katie Allchurch		23/02/2017

Executive summary

RPS has been engaged by Hansen Yuncken Pty Ltd on behalf of NSW Roads and Maritime Services (Roads and Maritime) and Transport for New South Wales (TfNSW) to prepare a Statement of Heritage Impact (SoHI) and Aboriginal due diligence assessment for the proposed redevelopment of the Cockatoo Island Ferry Wharf and landside facilities under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Environmental Planning and Assessment Act 1979* (EP&A Act). This SoHI has been completed as per the

Cockatoo Island is located approximately 3.5 kilometres north-west of the main ferry terminal at Circular Quay, Sydney. The Cockatoo Island Ferry Wharf Study Area (Study Area) includes two works areas, one at the north eastern side of Cockatoo Island including the existing Cockatoo Island Wharf (also known as Parramatta Wharf), and one at the southern side of the island including the existing Camber Wharf. The proposed works will involve upgrades to the existing Cockatoo Island Wharf as well as temporary changes at the Camber Wharf. Most of the proposed works are located within land controlled by the Sydney Harbour Federation Trust (SHFT) and as a Commonwealth entity is subject to the EPBC Act. In addition, the island is listed as a World Heritage item and consequently is also subject to the EPBC Act. A small portion of the existing Cockatoo Island Wharf pontoon falls within Roads and Maritime jurisdiction and that part is subject to state legislation. As State transport providers, the landside redevelopment is part of Transport for NSW's Transport Access Program (TAP), while the ferry upgrade portion of works is part of Roads and Maritime's Ferry Wharf Upgrade Project (FWUP).

Cockatoo Island Wharf was built relatively recently however the landside facilities and amenities to the low water mark are located within part of a World Heritage listed heritage item, known as "Australian Convict Sites". The entire island (to low water mark) is also listed as a National heritage item, and individual items within the island are listed on the Commonwealth Heritage List.

The proposal for the wharf upgrade includes the demolition of the current wharf structures and the construction of a new wharf comprising a bridge, gangway and covered pontoon containing seating (refer to Section 1.2 for detailed project description). The new wharf is to be constructed on the site of the existing Cockatoo Island Wharf. The proposal also includes the temporary use of the Camber Wharf.

The proposal for landside upgrade includes upgrading interchange facilities, improving customer amenity and facilities, improved security and signposting. In relation to the temporary use of the Camber Wharf, this will include the temporary relocation of Opal card readers and self-service machines. Further details regarding the wharf and landside works are contained at Section 1 below.

Both Aboriginal and non Aboriginal cultural heritage were considered during the course of this assessment. As this SoHI incorporates an Aboriginal due diligence assessment, a search of the Aboriginal Heritage Information Management System (AHIMS) for Cockatoo Island was conducted on 27 February 2015 by RPS Heritage Manager, Deborah Farina. The search indicated 24 Aboriginal sites within a one kilometre radius of Cockatoo Island. A new search undertaken on 31 August 2016 for the same coordinates returned the same results. Although Cockatoo Island was known to have been used by Aboriginal people prior to European settlement, none of these sites are located on Cockatoo Island, with the closest recorded site being a shelter with midden located approximately 350 metres to the north.

A site inspection was undertaken on 14 July 2015 by Deborah Farina and RPS Planner, Katie Allchurch. No previously unrecorded Aboriginal sites or non Aboriginal heritage items were identified in the vicinity of Cockatoo Island at the time of the site inspection. No fabric from any previous Cockatoo Island wharf was observed.

In accordance with the Burra Charter Practice Note (Australia ICOMOS 2013) 'Preparing Studies and Reports: Contractual and Ethical Issues', this report has considered the environmental, heritage and archaeological context of the Study Area, information gained during the site inspection; the significance of Cockatoo Island; the development proposal; potential heritage impacts; and mitigation measures in order to draw conclusions and provide recommendations intended to guide future decision-making.

A Landscape Character and Visual Impact Assessment (LCVIA) was prepared by Jane Irwin Landscape Architects (JILA), which considered the visual impact of the construction of the new Cockatoo Island wharf on the heritage and other viewpoints. That assessment concluded that two views – Cockatoo Island northern foreshore, view to the east and Cockatoo Island eastern foreshore, view to the west – would suffer a high visual impact. JILA recommended that RMS' choice of non reflective materials and neutral colours would mitigate this impact.

It is concluded that the project will not impact the significance of any of the heritage items listed at Cockatoo Island, therefore **no further heritage assessment will be required**. The following management recommendations have been formulated with consideration of all available information and have been prepared in accordance with the relevant legislation.

Recommendation 1

Owing to the loss of the original Cockatoo Island wharf and the absence of any fabric from previous wharves, it is recommended that the Sydney Harbour Federation Trust investigate the potential for the installation of interpretation devices at the original location of the wharf.

Recommendation 2

It is recommended that a reconnaissance dive be undertaken at Cockatoo Island Wharf by a suitably qualified maritime archaeologist prior to the commencement of works to confirm that no maritime archaeological remains will be impacted.

Recommendation 3

In accordance with Schedule 1, Section 3.4 (c) of the *Bilateral Agreement made under Section 45 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) Relating to Environmental Assessment* made between the Commonwealth of Australia and the State of New South Wales a copy of this assessment should be provided to the Minister of the Federal Department of Environment.

Recommendation 4

All policies contained in the *Sydney Harbour Federation Trust Management Plan – Cockatoo Island* of 2010 should be followed during all phases of the wharf upgrade.

Recommendation 5

Should any unexpected finds be uncovered during the course of construction, the mitigation and management measures set out in the RMS Standard Management Procedure – Unexpected Archaeological Finds should be followed.

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1 Introduction

RPS has been engaged by Hansen Yuncken Pty Ltd on behalf of NSW Roads and Maritime Services (Roads and Maritime) and Transport for New South Wales (TfNSW) to prepare a Statement of Heritage Impact (SoHI) and Aboriginal due diligence assessment for the proposed redevelopment of the Cockatoo Island Ferry Wharf and landside facilities under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.1 Study area

Cockatoo Island is located approximately 3.5 kilometres north-west of the main ferry terminal at Circular Quay, Sydney. The Cockatoo Island Ferry Wharf Study Area (Study Area) includes two works areas (refer Figure 1), one at the north eastern side of Cockatoo Island including the existing Cockatoo Island Wharf (also known as Parramatta Wharf), and one at the southern side of the island including the existing Camber Wharf (see Figure 1 and Plate 1). The proposed works will involve upgrades to the existing Cockatoo Island Wharf as well as temporary changes at the Camber Wharf. Most of the proposed works are located within land controlled by the Sydney Harbour Federation Trust (SHFT) under the EPBC Act. A small portion of the existing Cockatoo Island Wharf pontoon falls within Roads and Maritime jurisdiction. The landside redevelopment is part of Transport for NSW's Transport Access Program (TAP), while the ferry upgrade portion of works is part of Roads and Maritime's Ferry Wharf Upgrade Project (FWUP).

The current ramp and pontoon at Cockatoo Island Wharf was built relatively recently however the landside facilities and amenities to the low water mark are located within part of a World Heritage listed heritage item, known as "Australian Convict Sites". The fixed wharf portion of Cockatoo Island Wharf is thought to have been built prior to 1986.

The entire island (to low water mark) is also listed as a National heritage item, and individual items within the island are listed on the Commonwealth Heritage List (see Section 3 below).

Consistent with the SHFT Management Plan (2010), the island precincts are referred to throughout this report as the Southern, Northern and Eastern Aprons, and the Plateau (Plate 1). The former shipyards, dockyards and most industrial heritage are located on the southern, northern and eastern aprons, whilst the convict era and Biloela Reformatory buildings are located on the Plateau.

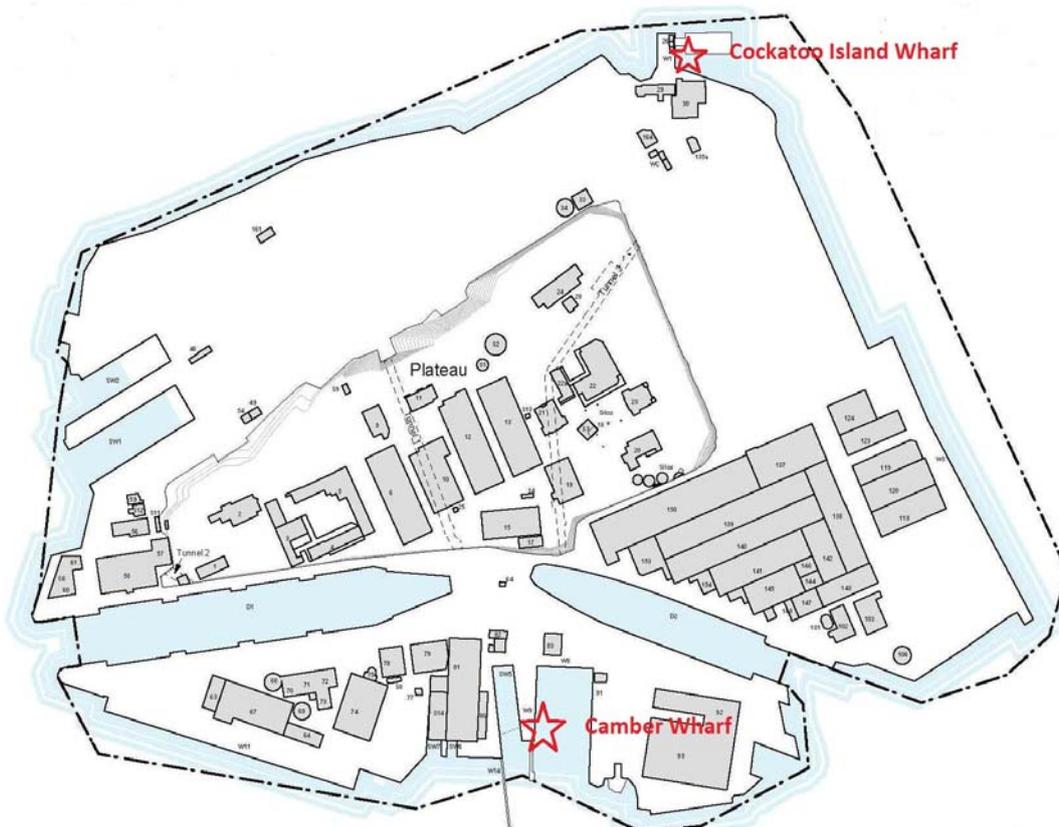


Plate 1 Precinct areas on Cockatoo Island (Courtesy SHFT Management Plan 2010).

1.2 Proposal description

The proposal would comprise the following elements:

Demolition of the existing gangway and pontoon

- The existing gangway and pontoon, including existing piles, would be removed using a barge with a mounted crane.

Construction of a new bridge, gangway and pontoon

- A new bridge about three metres wide and six metres long would be constructed from the fixed wharf. The bridge would be supported by about four piles and would be oriented at about 10 degrees to the land
- A new uncovered aluminium dual gangway (about 18 metres long and 6 metres wide) would connect to, and be supported by, the bridge and floating pontoon. The gangway would continue the same orientation as the bridge. The gradient of the gangway would vary according to the tides
- A new rectangular steel floating pontoon about 27 metres long and 12 metres wide would be constructed at the eastern end of the gangway. The pontoon would be covered by a curved zinc roof supported by steel columns and would have berthing faces on the northern and southern sides. The southern side of the western end of the berthing face would be allocated to recreational vessels. The pontoon would be oriented approximately 20 degrees to the ridge and gangway. The new pontoon would be held into location by the installation of 4 locating piles

- 3 protection piles on the southern side of the pontoon would be installed to prevent collision of moving vessels with the existing jetty area
- Installation of safety and security facilities including balustrades, seating, lighting, closed circuit television (CCTV), ladders to the water and a life ring on the pontoon, glass weather screen, and tactile floor treatments.
- Connection of electrical power to an existing supply to provide power to the wharf for lighting and security.
- Relocation of Opal readers and Ferry Operations and Customer Information System (FOCIS) screens and related equipment.
- The wharf would be constructed to be accessible to people with a disability except for the gangway which would only be accessible for no less than 80 per cent of the high and low tide levels listed in the standard tide charts.

Construction of landside infrastructure

- Bundy Office refurbishments including:
 - Provision of a level landing from Bundy Office to top of gangway
 - Relocation of existing rails/post supports to enable rails to match gangway paths of travel

Ancillary Facilities

- Installation of a temporary compound, with an associated lay-down and storage area. A shipping container may also be required for the storage for some tools, equipment and materials. The temporary compound would be operated for the duration of the works.
- Temporary relocation of existing Opal Readers and Self Service Machine from Cockatoo Island Wharf to Camber Wharf to enable this to be temporarily operational.
- Temporary wayfinding to/from Camber Wharf from the Cockatoo Island Visitors Centre.

Work methodology

Construction is expected to commence in the second quarter of 2017 and take up to about six months to complete.

The proposed construction activities for the proposal are identified below. This staging is indicative and is based on the current preliminary design and may change once the detailed design methodology is finalised.

The methodology is based on the current concept design and may need adjustment to meet the site conditions or the type/size of equipment used by the nominated contractor during the construction period in consultation with Roads and Maritime.

Any material changes to the construction methodology which could result in additional environmental impacts to those assessed in this REF would be subject to additional environmental assessment.

Site establishment and wharf closure

- Establishment of a temporary compound (erect hoarding, site offices, amenities and plan/material storage areas etc.) on the land. The temporary compound is anticipated to be about 75 square metres in area based on the size of site compounds used on the other recent wharf projects

- Establishment of a construction work area using floating booms to delineate this area. This would make allowance for the outward reach of the barge's four anchorage points, over which marine vessels may not cross for safety reasons. The anticipated size of the barges is up to about 20 metres by 30 metres in size
- Site entry and exit points would be established for the construction work site
- Traffic control measures (including watercraft, pedestrians and cyclists) would be established in accordance with the traffic management plan (TMP), which would be produced following the determination of the REF. Appropriate wayfinding signage would be installed advising of alternative transport options where necessary
- Environmental controls would be established in accordance with the construction environmental management plan (CEMP) for the proposal, which would be produced following the determination of the REF.
- Relevant equipment to be relocated to the Camber Wharf, enabling the closure of Cockatoo Island Wharf for upgrade.

Demolition and removal of the existing ferry wharf

- Prior to the construction of the new wharf, the existing wharf would be closed and site entry and exit points would be established for the construction work site in this location
- Up to three barges (about 20 metres by 30 metres in size) would travel to the site from the off-site facility. One barge would be fitted with a crane (about 12 metres high). When on-site it would be anchored by four points but would reposition around the site during the work as required
- The existing pontoon, gangway and associated infrastructure would be loaded onto a barge by crane and transported to an appropriately approved and licenced facility for reuse and/or disposal.

Removal of piles

- Steel (or timber) piles would be removed using a vibratory hammer to extract the piles from the bedrock. The hammer would be placed over the pile using a barge mounted crane. If the pile is unable to be pulled out, it would be cut level to the harbour bed to remain in situ. Divers would cut the pile at seabed level using appropriate underwater equipment
- Piles would be removed by barge to the off-site facility. The piles would be reused, where possible, or eventually removed to a licenced waste management facility for recycling or disposal

Installation of piles within the waterway

- Steel locator piles for the pontoon would be installed into bedrock. These piles would be transported by barge to the site from the off-site facility. There would be sufficient water to carry out piling operations for the locator piles. The installation of the bridge support piles would be carried out at or around high tide
- Constructing pile foundation systems in bedrock consists of three components:
 - **Phase 1** – drilling piles into rock in calm water
 - Drilling would take three to four hours per pile plus setup time and pack up time (with continuous noise from the diesel generator and large electric motors whilst drilling the pile).

- Each pile would be lifted from the barge and put into place using a barge-mounted crane. A drill rig mounted onto a barge would attach to the pile using a helmet fitting. The drill rig would screw the pile into the bedrock to a depth of up to about three metres.
- **Phase 2** – hammering piles to refusal in calm water
 - The piles are hammered (using a 30 tonne weight) to refusal. Hammering of piles would take place at least one day after drilling of piles. It is anticipated that each pile would be hammered for about one minute (about 10 hits with the hammer within one minute). For each pile this activity is likely to occur five times over a period of one hour.
- **Phase 3** – cutting, welding and plugging of piles with concrete
 - The steel piles would then be cut, welded and plugged with concrete.

Construction of the bridge, gangway and pontoon

- Following the piling activities, the bridge would be constructed and the gangway and pontoon would be installed. Most of the structures (e.g. beams, headstocks and roof) would be pre-fabricated/pre-cast and transported to site via water from the off-site facility. Temporary walkways would be installed down each side of the structure. In-situ works would likely include concrete pours to construct the bridge and to fill piles.
- Intricate lifting and placement of components of the new wharf would be carried out using a barge mounted crane. This activity needs to be undertaken during calm environmental conditions (e.g. still water and minimal wind)
- The new pontoon structure would be constructed at an off-site facility and floated to site by barge. The pontoon would be attached to the gangway
- Connection of services (e.g. electrical power lines to be connected to the existing electrical services cupboard).

Landside infrastructure

- Installation of new way-finding signage and lighting
- Relocation of existing hand railing within the Bundy office to match gangway layout and alignment.

Site clean-up and opening of the new wharf

- The site would be cleaned up and restored to its previous state
- Controls and temporary structures would be removed
- A safety assessment of the structure would be carried out to identify any risks and rectify any safety hazards resulting from construction before opening these areas to the public
- All construction fencing/hoarding and signage would be removed to re-open the wharf to the public.

Construction hours and duration

Roads and Maritime plan to carry out the proposal over a period of about six months (weather permitting) starting in the second quarter of 2017.

Construction would normally be limited to between the following standard work times:

- 7am to 6pm Monday to Friday
- 8am to 1pm Saturday.

Work activities outside of standard hours would be required in order to carry out piling activities and intricate lifts from the barge-mounted crane, due to requirements for still water. Activities that are likely to be undertaken outside of standard work hours are outlined below:

Intricate lifting activities

- There would be about 10 intricate lifts throughout the construction period. Intricate lifting and placement of components of the wharf would be carried out using barge-mounted crane. This activity needs to be undertaken during calm environmental conditions (still water and minimal wind).
- Each intricate lift and placement can take up to six hours. For lifting and placement to be completed while the environmental conditions are appropriate, intricate lifting and placement is expected to commence around 11pm and continue to about 7am.

Piling activities

- Piling work typically takes around three weeks to complete (about fifteen nights in total) toward the beginning of the construction period. Piling works are highly sporadic. There may be noise from hammering and drilling of a pile for around 10 minutes or so and then no substantial noise for 30 minutes or more.
- Installation of the piles would require calm environmental conditions (still water and minimal wind) so that the floating barge used for the piling can remain still for the piles to be installed accurately. Calm conditions are also required to provide safe conditions for the construction crew. The waterway is usually calmer early in the morning, with wind and wind chop increasing throughout the day. The conditions required for piling usually occur during this early morning period.

Summary of hours of night works for piling drilling activities:

- Setup for drilling from 12am to 1am
- Drilling of piles from 1am to 6am
- Pack up generally 6am to 7am.

Summary of hours of night work for piling hammering activities:

- Setup for hammering from 4am to 5am
- Hammering of piles from 5am to 7am.

Plant and equipment

The equipment to be used would be confirmed during the construction planning process. Typical plant and equipment likely to be used during construction would include:

- Generators
- Lighting tools
- Power hand tools
- Light vehicles
- Boats

- Barges
- Drill rigs
- Cranes (barge mounted)
- Water pumps
- Chainsaws
- Vibratory compactor
- Concrete trucks
- Hammer drills
- Concrete boom pumps
- Hand tools.

Earthworks

The proposal would involve the following minor landside works:

- Site preparation
- Installation of temporary Opal card readers and Self Service Machine at Camber Wharf.

The proposal does not require any major landside earthworks or excavation.

Source and quantity of materials

The proposal does not require the importation of fill material or disposal of materials from the seabed as no reclamation or filling is required.

Natural resources for construction include aggregate for use in concrete batching and bitumen and sand, aggregate and select material for the production of cement and glass. Manufactured items, including steel, pre-cast components and pipes and utilities would also be required.

Materials would be sourced from overseas and local commercial suppliers, using local suppliers wherever feasible and cost effective.

Traffic management and access

All construction plant, equipment, materials and personnel would travel to the site by barge or boat from the off-site compound.

Potential impacts on watercraft, pedestrians and bicycles would be managed in accordance with the management measures outlined in the Traffic Management Plan for the proposal, which would be produced following determination of the REF.

Ancillary facilities

A temporary compound would be established on Cockatoo Island, with location to be agreed with the Trust. It would be operated for the duration of the work. The compound would include site storage sheds for use as an office, mess and amenities as well as a lay-down and storage area and potentially a container for storage of some tools, equipment and materials.

The marshalling and storage of most waterside construction equipment, plant and materials, and the pre-fabrication of parts, pre-casting of headstocks and fit outs for the wharf, would be carried out by a contractor at an off-site facility. Associated construction materials and equipment would be delivered and removed from the site using barges. A majority of the waterside construction would be undertaken from barges on the water with only minor waterside works such as connection to services being undertaken from land. The operation of this off-site facility does not form part of this proposal but would have the necessary approvals in place for such activities to be undertaken.

The marshalling and storage of landside construction equipment, plant and materials, and the pre-fabrication of parts would be carried out by a contractor.



Plate 2 Cockatoo Island works areas

1.3 Legislative context

As discussed in Section 1.1 above, the Study Area includes land in Commonwealth and in State jurisdiction. The EPBC Act and *Sydney Harbour Federation Trust Act 2001* apply to Commonwealth land, while the EP&A Act and *Heritage Act 1977* apply to that part of the study area controlled by the State.

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides protection for heritage items of a Commonwealth, National and World significance (see Section 3.3 for further information regarding these categories). It also sets out the protocols for seeking permission to carry out works in or in the vicinity of World, National and/or Commonwealth Heritage items.

Subdivision A and AA of Part 3 of the EPBC Act set out the requirements for environmental approvals. The key trigger for approvals is whether an action will have a significant impact to the item. If, following an impact assessment of the proposed action, it is uncertain whether the action will have the requisite significant impact, the proponent may refer the matter to the relevant department for an opinion.

As this adds another layer of administration to approval process, s45 of the EPBC Act allows for the Federal Department of the Environment to enter into bilateral agreements with the States to make heritage and environmental management “One Stop Shops” provided they conform to the objects of the EPBC Act. Certain projects are then able to be assessed under the State assessment and approval process.

The Federal Government has entered into such an agreement with NSW. Under that agreement, actions that are not State significant development or complying development are assessed as they would be under Part 4 of the EP&A Act (see below). Actions that are State significant development or complying development would also be assessed as they would be under the EP&A Act.

Sydney Harbour Federation Trust Act 2001

The *Sydney Harbour Federation Trust Act 2001* is a federal legislative instrument that established the Sydney Harbour Federation Trust to manage seven sites within the Sydney Harbour region, including Cockatoo Island. The Act aims to ensure that land owned by the Trust enhances the amenity of the Sydney Harbour region and that any environmental and heritage values are protected.

Section 71 of the Act exempts the Trust and its lands from the operation of certain State laws, including town planning and environmental laws. This includes any State Environmental Planning Policies (SEPPs) and Regional Environmental Plans (REPs) prepared by the State Government, Local Environmental Plans (LEPs) prepared by councils and any other NSW law relating to the matters defined in Section 71(2).

Approval for an action (as defined in the EPBC Act to include a project, a development, an undertaking, an activity or series of activities) is required from the Trust for all works on its lands. The Trust is the consent authority for most actions proposed on its lands; therefore local councils and the NSW Government do not have an approval role for development on Trust land. However, a separate approval under NSW legislation may be required due to parts of the wharf being located outside of the Trust’s property boundary.

Notably SHFT has an overall comprehensive management plan for all lands within under control of the trust and site specific management plans, including one for Cockatoo Island (2010). This management plan, aims to provide a long-term vision and a framework for decision making to protect and enhance its heritage values.

Native Title Act 1993

The Commonwealth Government enacted the *Native Title Act 1993* to formally recognise and protect native title rights in Australia following the decision of the High Court of Australia in *Mabo & Ors v Queensland* (No. 2) (1992) 175 CLR 1 (“Mabo”).

Although there is a presumption of native title in any area where an Aboriginal community or group can establish a traditional or customary connection with that area, there are a number of ways that native title is

taken to have been extinguished. For example, land that was designated as having freehold title prior to 1 January 1994 extinguishes native title, as does any commercial, agricultural, pastoral or residential lease.

Land that has been utilised for the construction or establishment of public works also extinguishes any native title rights and interests for as long as they are used for that purpose. Other land tenure, such as mining leases, may be subject to native title, depending on when the lease was granted.

There are no active Native Title claims or title over Cockatoo Island.

Environmental Planning and Assessment Act 1974

The NSW EP&A Act and the NSW Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) provide the statutory planning context to govern land use planning, environmental assessment and approval in NSW.

Under the Act, if an environmental planning instrument provides that specified development may be carried out without the need for development consent, the development may be carried out in accordance with that instrument. Under State Environmental Planning Policy (Infrastructure) 2007 (ISEPP), development for a wharf or boating facility that is directly related to or ancillary to wharf infrastructure is permitted without consent.

Section 112 of the Act provides that an activity that can be carried out without development consent is likely to have a significant effect on the environment, an Environmental Impact Statement (EIS) must be prepared and approval be sought from the Minister for Planning and Environment.

Heritage Act 1977

Historical archaeological relics, buildings, structures, archaeological deposits and features are protected under the *Heritage Act 1977* and may be identified on the State Heritage Register (SHR) or by an active Interim Heritage Order.

The Heritage Council of NSW, constituted under the *Heritage Act 1977*, is appointed by the Minister and is responsible for heritage in NSW. The Council reflects a cross-section of community, government and conservation expertise with the NSW Heritage Division being the operational arm of the Council.

The Heritage Division provides guidelines for conducting assessments of heritage significance. The 1996 Heritage Manual includes specific criteria for addressing the significance of an item and this assessment has been completed in accordance with those guidelines.

National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) protects Aboriginal heritage (places, sites and objects) within NSW. Although there are other Acts protecting and managing cultural heritage in New South Wales, the due diligence procedure is only available to projects appropriate to this Act. Protection of Aboriginal heritage is outlined in s86 of the NPW Act, as follows:

- “A person must not harm or desecrate an object that the person knows is an Aboriginal object” s86(1).
- “A person must not harm an Aboriginal object” s86(2).
- “A person must not mark or desecrate an Aboriginal place” s86(4).

Penalties apply for harming an Aboriginal object or place. The penalty for knowingly harming an Aboriginal object (s86[1]) and/or an Aboriginal place (s86[4]) is up to \$550,000 for an individual and/or imprisonment for two years; and in the case of a corporation the penalty is up to \$1.1 million. The penalty for a strict liability offence (s86[2]) is up to \$110,000 for an individual and \$200,000 for a corporation.

Harm under the NPW Act is defined as any act that; destroys defaces or damages the object, moves the object from the land on which it has been situated, causes or permits the object to be harmed. However, it is a defence from prosecution if the proponent can demonstrate 1) that harm was authorised under an Aboriginal Heritage Impact Permit (AHIP) (and the permit was properly followed), or 2) that the proponent exercised due diligence in respect to Aboriginal heritage. The ‘due diligence’ defence (s87[2]), states that if a person or company has exercised due diligence to ascertain that no Aboriginal object was likely to be harmed as a result of the activities proposed for the Project Area (subject area of the proposed activity); then liability from prosecution under the NPW Act will be removed or mitigated if it later transpires that an Aboriginal object was harmed.

Under section 89A of the NPW Act Aboriginal objects (and sites) must be reported to the Director-General (now Chief Executive) of the Office of Environment and Heritage (OEH) within a reasonable time (unless it has previously been recorded and submitted to AHIMS). Penalties of \$11,000 for an individual and \$22,000 for a corporation may apply for each object not reported.

Relevant conservation policy

In 2004 the Government Architect’s Office of the then NSW Department of Commerce were engaged to prepare a Conservation Management Plan (CMP) for the Convict Buildings and Remains on Cockatoo Island. In the same year, Godden Mackay Logan was engaged to prepare a CMP for the dockyard and industrial aspects of the site. Its scope included the whole island as it related to the history of the dockyard and related uses.

In 2010 Sydney Harbour Federation Trust commissioned a Management Plan for Cockatoo Island. The Management Plan includes conservation policies relating to heritage on the island. These are broken into general policies, as well as specific policies relating to archaeology. Those relevant to this project are detailed below.

Table 1 Relevant policies from SHFT Management Plan (2010)

No.	Policies	Supporting policies
1	The National and Commonwealth heritage values and potential World Heritage values of Cockatoo Island and its elements are the basis for conserving and managing the fabric of the place	<ul style="list-style-type: none"> a. Consider the impact of any action of the National and Commonwealth Heritage values of the place. b. Use the <i>Significant Impact Guidelines 1.1 and 1.2, Department of Environment and Heritage, May 2006</i> to assist in reaching a decision about the level of impact
2	Carry out the future conservation and adaptation of the fabric of the place in accordance with the principles of the Australia ICOMOS Burra Charter...	<ul style="list-style-type: none"> a. Ensure the Burra Charter is observed in all future works carried out on the island.
5	When considering proposals for change analyse potential impacts on the tangible and intangible heritage values of the island. Wherever proposals are likely to impact on heritage values, a Heritage Impact Statement will be prepared, and where required referred under the EPBC Act	<ul style="list-style-type: none"> d. Heritage Impact Statements will be prepared by a relevant heritage professional.
7	Measures to upgrade buildings and structures to achieve BCA compliance and meet OHS standards are to minimise the removal or adaptation of the existing significant fabric	

No.	Policies	Supporting policies
8	Ensure that any new buildings, structures, facilities or change are sympathetic to or enhance the heritage values of the place	<p>a. Where new buildings, structures and facilities are appropriate their design must:</p> <ul style="list-style-type: none"> ▪ be sympathetic to the heritage values of the island, the character of the particular precinct and existing buildings and fixtures in the vicinity and their setting; ▪ assist with the interpretation of heritage buildings or fixtures that have previously been removed; ▪ retain the industrial scale and form of existing buildings in the maritime precinct, ▪ have a robust character and patina in keeping with the former industrial setting in which they are located.
15	Recognise and retain significant views to, from and within the island in its harbour setting; permitting easy recognition and interpretation of buildings, landscape features, and cranes.	<p>c. Consider the potential impact of works on:</p> <ul style="list-style-type: none"> ▪ Access to significant vantage points on the island; and ▪ Views of the island from the water and surrounding shorelines.
16	Protect and conserve all archaeological remains on Cockatoo Island	<p>b. Use archaeological sensitivity maps from the Conservation Management Plan as a guide when planning works on the island.</p>
20	Encourage public access to the island	<p>a. Encourage and improve ferry services to the island;</p> <p>c. Use the control of access to and through the site (eg retaining Cockatoo Island Wharf as the main point of entry) to help interpret the heritage values of the place.</p>
21	Access to the island is to be primarily by ferry/charter vessel and transport within Cockatoo Island is to be primarily pedestrian	<p>a. Provide a regular ferry service to the island, using a combination of public and private services.</p>
22	Implement measures to help secure Cockatoo Island against theft, vandalism and other disturbances	<p>c. Consider installation of closed circuit television to monitor significant buildings and thoroughfares on the island.</p>
41	Existing wharfage is to be retained and reused wherever possible	<p>a. Existing wharfage is to be retained and reused where practicable, given the physical requirements of intended use;</p> <p>b. Existing wharves may be added to and extended and new wharves may be re-established where former wharves existed.</p>

1.4 Authorship and acknowledgement

This report was written by RPS Heritage Manager Deborah Farina with assistance from RPS Senior GIS Analyst Hamid Karimi. The report was reviewed by RPS Senior Executive – Environment and Heritage Erin Williams.

The RPS team acknowledges the assistance of various organisations and individuals, including but not limited to:

Table 2 Acknowledgements

Name	Position	Organisation
Paul Blair	Senior Design Manager	Hansen Yuncken
Peter Mangels	REF Project Manager	RPS
Katie Allchurch	REF Project Manager	RPS
Barry Gunther	Senior Cultural Heritage Advisor	RMS



Figure 1: Proposal Area

LOCATION: Cockatoo Island Wharf	DATUM: GDA94 PROJECTION: MGA Zone 56
JOB NO.: PR119759	Data Sources: RPS OEH
PURPOSE: HERITAGE	
Technician: mark.durkan	Date: 1/09/2016

CLIENT: RMS
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2 Aboriginal heritage

In order to assess the potential for Aboriginal heritage, all available knowledge and information relating to the Aboriginal cultural heritage resources are considered. This includes reviewing the relevant environmental and heritage information to assist in identifying whether Aboriginal sites or places are, or could be present within the Study Area.

2.1 Local environment

Geology and soils

The geology of Cockatoo Island is similar to the surrounding foreshores in that it chiefly comprises Hawkesbury Sandstone. Hawkesbury Sandstone is made up of sandstone and shale, as well as quartz. The presence of sandstone in the Study Area is important for Aboriginal occupation of the area because certain types of silicified tuff and quartz have been used by Aboriginal people for manufacturing flaked stone tools; and sandstone was used for grinding grooves, as a form of shelter (if rock shelters present), and as a medium for engravings and art, amongst other uses.

The Study Area sits on a combination of disturbed terrain, located around the foreshores of the island, with the central portion of the island comprising the colluvial Hawkesbury soil landscape. This soil landscape features shallow soils associated with rock outcrops, earthy sands and yellow podzolic soils on the inside of benches and along joints and fractures, localised yellow and red podzolic soils associated with shale lenses and siliceous sands and secondary yellow earths along drainage lines. These soils are extreme soil erosion hazards, known for mass movement and low soil fertility. Given the extreme soil erosion, it is not expected that Aboriginal artefacts would be present in any clay subsoils and therefore potential archaeological deposits are likely to be limited to the upper 20-30 centimetres of this soil landscape, where it survives (Chapman G. A. & C.L. Murphy 1989:112).

Topography and hydrology

Cockatoo Island is a rocky island situated in a sheltered location with Woolwich peninsula to the north, Birchgrove peninsula to the south east, Drummoyne to the west and Greenwich Point to the north east. The island itself is extensively developed and surrounded by highly populated commercial and residential areas. It is also located in a busy waterway with ferries, cargo freighters and pleasure craft all passing it on a regular basis.

Topographically, the Study Area is characterised by undulating to rolling low hills with local reliefs of up to 25 metres (Chapman G. A. & C.L. Murphy 1989:58-59). The island is encircled by reclaimed land, with its centre being the natural portion of the island. This centre forms the highest point of the island, at approximately 25 metres AHD (Australian Height Datum). The reclaimed land area is flat, and elevation levels in the surrounding landscape do not exceed 20 metres AHD. There are no known natural watercourses or wells on the island, which may account for the lack of Aboriginal sites on the island, pointing to its occasional use rather for inhabitation.

Flora and fauna

The purpose of the following summary is to provide an indication of the types of flora and fauna which may have been available to Aboriginal people in the past for sustenance and raw material resources. This section does not replace more detailed ecological studies.

Marine resources played an important role in the diet of the people living in Sydney Harbour. These included a wide range of fish and shellfish, as well as crustacea and marine mammals, as evidenced in the numerous middens around Sydney Harbour (Attenbrow 2003:62).

Prior to European arrival the vegetation in the Study Area would have been characterised by the Sydney Coastal Dry Sclerophyll Forest vegetation community. The dry sclerophyll forests that grow on the Sydney sandstones are the most diverse and extensive in Australia, and collectively cover approximately 1.4 million hectares of land (Keith 2006:146). The Sydney Coastal Dry Sclerophyll Forest is the most diverse of the Sydney dry sclerophyll forests and encompasses a wide range of related forest and woodland communities. The species composition and structure of this community varies according to topography and soil moisture, with the open eucalypt canopy varying between 10 and 25 metres tall depending on associated landforms. Common tree species found within this community include the Sydney red gum, red bloodwood, Sydney peppermint, brown stringybark, various species of scribbly gum and the old man banksia. The community is also characterised by a shrub layer that features various species of wattle and banksia, as well as the mountain devil, flaky-barbed teatree, broad-leaved geebung and the grass tree. Typical grasses include wiry panic, oat speargrass, heath bog-rush and black bog-rush (Keith 2006:147).

This vegetation community would have provided habitats for a variety of animals, as well as potential food and raw material sources for Aboriginal people. Grass trees, for example, were used by Aboriginal people to manufacture spears and resin, and also as a food source (Nash 2004:5). Various banksia species were collected and used to manufacture needles for basket and mat weaving, while the fruit of the geebung was eaten and string and fishing lines were soaked in a geebung bark infusion to prevent fraying (Nash 2004:2, 4). Eucalyptus trees were a particularly important resource; leaves were crushed and soaked for medicinal purposes, bowls, dishes, and canoes were made from the bark, and spears, boomerangs and shields were crafted from the hard wood (Nash 2004:4-8).

A rich variety of marine resources would have been available to anyone on the island, including fish, shellfish and water birds. The bones and remains of animals have been recovered from Aboriginal sites excavated in the Sydney region suggesting that they were sources of food (Attenbrow 2003:70-76), although the hides, bones and teeth of some of the larger mammals may have been used for Aboriginal clothing, ornamentation, or other implements.

Previous land use and disturbance

The Study Area has been extensively impacted by prior land use practices. In particular, land reclamation, the construction of wharves, dry docks, factories and sea walls has obliterated the natural rock edge adjacent to the harbour, leaving no natural land surface visible. Both the Cockatoo Island Wharf and the Camber Wharf are located in this area of land reclamation (see map below, dotted blue line represents the approximate original shoreline). As the most common site types recorded in the area are those that would expect to be recorded along a natural rock ledge adjacent to water, this leaves almost little to no potential for in situ sites to exist in the vicinity of the wharf Study Area.



(From SHFT CMP 2010:40).

Synthesis of environmental context

The Study Area is located in the western reaches of Sydney Harbour, approximately 1.5 kilometres from the mouth of the Parramatta River and between Woolwich, Greenwich Point, Birchgrove and Drummoyne. The Study Area chiefly comprises Hawkesbury Sandstone and sits on the Hawkesbury soil landscape. The Study Area lies within the Sydney Coastal Dry Sclerophyll Forest vegetation community, which would have provided a variety of food and raw material sources for Aboriginal people. However, there are no known natural water courses or springs on the island, meaning it would not have been a suitable place for long term habitation. It may, however, have been used transitorily for resource collection.

The Study Area has been extensively impacted by prior land uses, leaving little natural land surface visible. As a result, there is little to no potential for in situ Aboriginal sites in the vicinity of the Study Area.

2.2 Archaeological context

Ethnographic context

Although placed between the northern and southern shores of Sydney Harbour, with the northern shore occupied by the Cammeraygal and the south by the Wangal clans, Cockatoo Island appears to have been the traditional lands of the Wangal clan. Their territory was the southern shores of Sydney Harbour from Darling Harbour west to Rose Hill (Parramatta) and part of the Darug language group (Phillip, 13 February 1790 in Attenbrow 2003:22). The name Wangal (from wanne) meant 'west' and they are thought to have lived in the Sydney area for approximately 10,000 years (Canada Bay Heritage Society 2013).

In 1791 Governor Philip recorded that the Wangal name for Cockatoo Island was Wareamah. It is not known how the island was used by the Wangal, other than for fishing and possibly for using the trees for canoe making (Fletcher 2011:75).

One of the most famous Wangal people was Woollarawarre Bannellon, better known as ‘Bennelong’, who came from Memel, also known as Goat Island, approximately two kilometres east of the current Study Area. As Bennelong was famous among the early colonists, his life has been written about extensively, giving valuable information about the Wangal and Aboriginal culture generally at the time of colonisation. Given that he was captured in 1789, it is likely that Philip’s knowledge of Cockatoo Island’s traditional name came from Bennelong.

Large Aboriginal groups such as those who lived about Sydney harbour were based on kinship, with huge importance placed on extended family groups or clans, their connections to the land and common language. Like other language groups, the Wangal operated on a subsistence economy based on hunting, fishing and gathering, and it is evident from the archaeological record that this area would have had abundant food resources in the ocean, harbour, forests and woodlands sufficient to support a large Aboriginal population.

Many of the Aboriginal communities living around Sydney harbour, including the Wangal population, were devastated by the outbreak of smallpox in 1789. It is thought that around half of the Aboriginal population living in Sydney at that time were killed by the disease. Many of the Sydney clans were decimated and moved to other areas intending to escape the disease.

Previously recorded Aboriginal sites

A search was undertaken of the Aboriginal Heritage Information Management System (AHIMS) on 27 February 2015 in accordance with the Due Diligence Code (DECCW 2010:11). The coordinates searched for the Study Area were GDA Zone 56, Eastings 329964 to 331964 and Northings 6252458 to 6254458, with a buffer of 50 metres. This search revealed that there are 24 previously recorded Aboriginal sites within these coordinates (Figure 2, Table 3). The search results, however, also showed that none of those sites are located on Cockatoo Island. An updated search using the same coordinates undertaken on 31 August 2016 returned the same results.

Table 3 Summary of AHIMS Sites within the searched coordinates

Site type	Frequency	Per cent
Shelter with midden	8	34%
Midden	6	26%
Shelter with deposit	1	4%
Burial, shelter with midden	1	4%
Rock engraving, shelter with deposit	1	4%
Rock engraving, shelter with midden	1	4%
Midden, artefact scatter	1	4%
Axe grinding groove, water hole, well	1	4%
Shelter with art, shelter with deposit	1	4%
Shelter with art	1	4%
Midden, shelter with art	1	4%
Shelter with art, shelter with midden	1	4%

Site type	Frequency	Per cent
Total	24	100%

The results of the AHIMS search show that midden sites were the most common type of site recorded within the searched coordinates, both within rock shelters and in an open context. Other shelter and rock based sites, such as the rock engraving and axe grinding groove, were also represented. These sites are consistent with those found throughout the Sydney Harbour foreshore.

Archaeological literature review

Given the extensive land modification and use of Cockatoo Island, there are few archaeological reports dealing with the island's Aboriginal history in any real depth. The following reports deal with the archaeology of areas surrounding Cockatoo Island, information of which can be extrapolated to apply to the Study Area:

Australian Archaeological Survey Consultants Pty Ltd, 1995. Archaeological Assessment of Callan Park and Yurulbin Point

This assessment was conducted on behalf of Leichhardt City Council and in consultation with the Metropolitan Local Aboriginal Land Council. Its brief was to record and map previously identified sites, provide guidelines for conservation, management and interpretation of the sites and a background on the post-contact Aboriginal history of the area.

Five midden sites were identified within the Callan Point area. Due to the potential for further midden sites to be present in undisturbed ground, AASC noted a number of management recommendations for the midden sites, including carrying out an archaeological investigation prior to any future disturbance in the area, avoiding development in the vicinity of the middens and seeking the advice of the Metropolitan Local Aboriginal Land Council prior to any ground disturbance in the area (Australian Archaeological Survey Consultants Pty Ltd 1995).

Tanner Architects, 2011. Callan Park Conservation Management Plan, Volume 1

This Conservation Management Plan (CMP) was prepared in order to manage the heritage values of Callan Park, a former hospital for the mentally ill at Lilyfield, approximately 2.1 kilometres to the south of the current Study Area. It was in use as a hospital from 1885 until 1994.

The bulk of the CMP was focussed on the assessment and conservation of the built heritage items within the Callan Park precinct. However, an assessment of both non Aboriginal and Aboriginal archaeology formed part of that analysis. In the case of non Aboriginal heritage, it was assessed that the standing buildings and sites of former buildings had the greatest potential for archaeological deposits to remain, particularly old building configurations. In the case of Aboriginal heritage, four midden sites were located within the Callan Park precinct. All were assessed as being significant largely on the basis of rarity due to dwindling habitation sites remaining within the Sydney metropolitan area. The potential for sites was not addressed (Tanner Architects 2011).

Synthesis of Aboriginal archaeological context

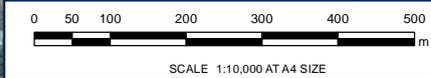
Although Port Jackson was once home to hundreds of Aboriginal people, much of the evidence for thousands of years of occupation has been destroyed by urban development and the transformation of the water body into a major harbour. Generally the more developed and modified an area, the less likelihood for sites to be present, although sites have been recorded in highly modified landscapes. This is borne out by the absence of any recorded sites on Cockatoo Island.

The results of previous archaeological investigations in the Port Jackson area suggest that Aboriginal people who inhabited the area in the past made use of a range of locally available resources including shellfish, fish,

local wildlife, and raw stone materials. The majority of previously recorded Aboriginal sites in the vicinity of Cockatoo Island relate to those associated with middens and rock shelters. The extensive modification of the natural shoreline by the construction of sea wall and wharfage makes it extremely unlikely that any in situ Aboriginal material would be discovered by the proposed works. In any case, given the absence of permanent water on the island, it is likely that the island was visited rather than inhabited by Aboriginal people. In addition, the current wharf is located on reclaimed land, thereby minimising the potential for any Aboriginal heritage to be affected to very low to zero.



- Legend**
- AHIMS**
 - Shelter with Art, Shelter with Midden
 - Burial/s, Shelter with Midden
 - Midden, Shelter with Art
 - Rock Engraving, Shelter with Deposit
 - Axe Grinding Groove, Water Hole/Well
 - Rock Engraving, Shelter with Midden
 - Shelter with Deposit
 - Midden, Open Camp Site
 - Midden
 - Shelter with Art
 - Shelter with Midden



Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Figure 2: AHIMS

LOCATION: Cockatoo Island Wharf	DATUM: GDA94 PROJECTION: MGA Zone 56
JOB NO.: PR119759 PURPOSE: HERITAGE	Data Sources: RPS OEH
Technician: hkarimi Date: 10/03/2015	

CLIENT: RMS
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3 Historical context

3.1 Broad historical context

Cockatoo Island has had many uses since its first post-settlement use as a prison in 1839. The following timeline gives a brief snapshot of these periods of construction and use:

1839-1850	Prison
1850-1870	Fitzroy Dock and Workshop, ship building
1870-1880	Biloela Industrial School for Girls and Reformatory
1880-1890	Shipbuilding and repair activities; Sutherland Dock
1990-1930	Commonwealth Naval Dockyard
1930-1945	Shipbuilding and dockyard for South West Pacific during World War 2 following fall of Singapore
1945-1965	Additional shipbuilding and repair; refit of T-class submarines and Navy destroyers (e.g. <i>HMAS Voyager</i> and <i>HMAS Vampire</i>)
1965-1992	Service and refit of Oberon class of submarines and construction of <i>HMAS Success</i> . Dockyard closes in 1992, machinery sold off and about 40 buildings and several wharves are demolished
2001-present	Sydney Harbour Federation Trust assumes control of the island following a decade of inactivity. Island reopened to the public in 2007 following extensive remediation and rehabilitation.

These uses are broadly broken into four main phases: the convict phase, the reformatory phase, the shipbuilding and industrial phase and the recreational phase.

Prison

In 1839, sixty prisoners were brought from Norfolk Island to Cockatoo Island. Like nearby Goat Island, used as a place of hard labour for convicts since 1820s, Cockatoo Island had ample supplies of sandstone, providing the newly arrived convicts with work. They were charged with constructing the convict stockade with “no indulgence beyond the strict Government ration” (Sydney Gazette and New South Wales Advertiser in Godden Mackey Logan 2009:15).

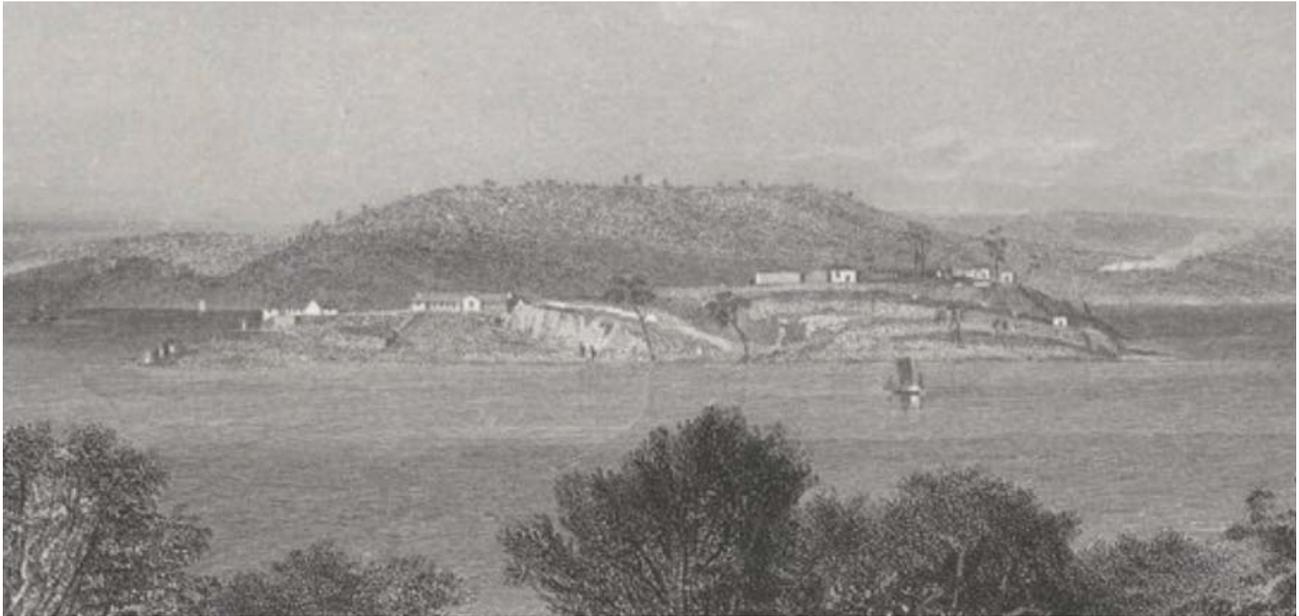


Plate 3 Detail of engraving by T. Outhwaite of Cockatoo Island, c. 1874-1876 (Courtesy State Library of Victoria).

The first building phase on Cockatoo Island took place between 1839 and 1841. Table 4 sets out the constructions during this phase:

Table 4 First phase of building on Cockatoo Island

Date	Constructions
1839-1840	Wharf, well, permanent barracks for 200 prisoners (changed to 300 in 1840), cookhouse, military barracks, mess shed, hospital, silos excavated into the solid rock, additional hospital ward, road from wharf, permanent workshops (lumber yard, blacksmiths', carpenter's shop, engineer's stores and office) (see Plate 3)
1840-1841	Interior fitting of mess shed, hospital no. 3 ward, arch over tank, extension to wharf, additional eight silos

Fluctuations in wheat prices in 1839 prompted the excavation of grain silos into the bedrock of the island to store cheaply bought grain. The work on the silos began in 1839, with nine silos completed by 1841. Each silo measured 20 feet (6.09 metres) wide and 16 feet (4.87 metres) deep, with six silos filled with wheat and three filled with maize. Once sealed, the silos protected the grain from theft, fire, insects, vermin and rot. In 1840 Governor Gipps reported to London the success of the silos and the new-found security of food source for the colony. Colonial Secretary Russell tersely replied that by storing the grain, Gipps had interfered with the free trade market and he was to sell all of the stored grain by public auction. Gipps obeyed, however the silos were not completely emptied until the 1850s (Sydney Harbour Federation Trust 2014:18).

In 1841 the Crown decided that New South Wales was no longer classified as a penal colony but a permanent establishment. Criminals were still sentenced to transportation and Gipps planned to increase Cockatoo Island's capacity to 500, but to send the worst criminals to Tasmania. Gipps officially made Cockatoo Island Sydney's prison for men sentenced to transportation from 1841. Charles Ormsby, the former Assistant Superintendent of Norfolk Island, was appointed as Superintendent. Transported convicts who were held at Woolloomooloo Jail (Darlinghurst stockade) were moved to Cockatoo Island (see Plate 4) (Godden Mackay Logan 2009:18).



Plate 4 "Canary Birds" - drawing by Philip Doyne Vigors depicting convicts writing letters on Cockatoo Island, 1849 (Courtesy State Library of New South Wales).

With the increase in prison population, the second phase of building commenced to provide for the prisoners and additional guards. Although there were already two solitary cells in use and located under the cook house, the increase in prisoners necessitated a further twelve solitary cells to be constructed to the south of the guards barracks on the edge of the escarpment. These were completed in 1843 and measured 8 feet (2.43 metres) by 5 feet (1.52 metres). These were excavated out of solid rock but after completion were found to be so cold and damp that they were prohibited from being used in winter. Other buildings constructed in this phase include quarters for the superintendent, the assistant superintendent, and new prisoners' barracks at the north of the island, although the exact location of these barracks is not precisely known (Godden Mackay Logan 2009:19).



Plate 5 Plan showing the buildings and other developments that were completed during the first 18 years of the convict settlement (Courtesy Sydney Harbour Federation Trust Management Plan, 2010).

The Fitzroy Dock

Early in the 1840s it had become apparent that the Government shipyards were to move from Sydney Cove, Cockatoo Island was suggested as a viable alternative. Work began on a dry dock in 1845 and was the first undertaking of its kind in the colony. Unlike other dry docks, the Fitzroy Dock was excavated from solid rock, which first required the wholesale removal of a sandstone cliff of approximately 45 feet (13.7 metres) in height to allow for a level shore big enough to commence the dock. It took nine years to complete and began service in 1857 (Sydney Harbour Federation Trust 2010:18).

The first project for the Fitzroy Dock was the overhauling of the naval brig HMS *Herald* by convicts. It subsequently repaired and serviced visiting Royal Naval ships. Convicts also built the Engineers' and Blacksmiths' shop in association with the Fitzroy Dock, which was built to a Royal Engineers' design and based on the Portsmouth Steam Factory in England. All machinery in the workshop was steam operated until 1901 (Sydney Harbour Federation Trust 2010:18-19).

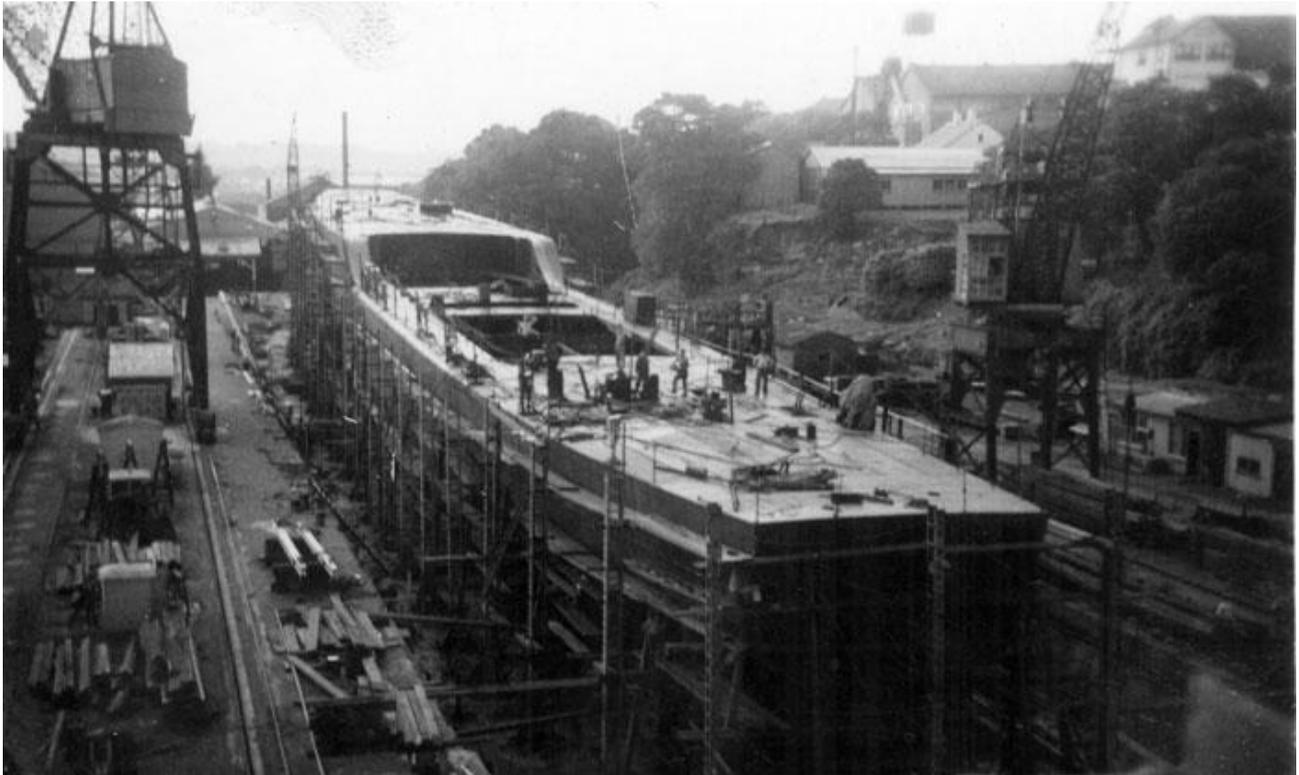


Plate 6 HMAS Vampire in Fitzroy Dock, c.

End of Prison – Beginning of Industrial and Reformatory Schools

By the 1850s, conditions on Cockatoo Island had deteriorated, with overcrowding and sickness common. A Select Committee in 1861 enquiring into public prisons found that Cockatoo Island did not conform to the “moral axioms of the present age” (Sydney Harbour Federation Trust 2010:19). Eight years later, all but one of the prisoners on Cockatoo Island had been sentenced in the Colony. In 1869 the prison was closed and all prisoners moved to Darlinghurst Gaol.

In 1848 a dual scheme of education was introduced in New South Wales, providing a basic education for children. Despite this, juvenile crime and destitution was rife. In 1866 the Industrial Schools Act was enacted, intending to provide education and training for juvenile victims of poverty and neglect, whilst the Reformatory Schools Act did the same for juveniles brought before the Courts. The school ship *HMS Vernon* was established as an industrial school for boys and moored off Cockatoo Island, whilst girls were housed initially in former military barracks in Newcastle, but following the removal of adult prisoners to Darlinghurst Gaol, were later moved to Cockatoo Island. The island was renamed Biloela, a Kamilaroi word for the black cockatoo (Fletcher 2011).



Plate 7 Biloea sewing room c.1870s (Courtesy Sydney Harbour Federation Trust).

In addition to being provided with basic education, boys on the *HMS Vernon* were taught nautical skills, whilst the girls of Biloea undertook sewing, farming and vegetable growing, which provided the inmates with food. Although the reformatory schools removed under aged boys and girls from the adult prison system, this replacement system put vulnerable children and youths with delinquents, who were housed in the former convict cells and all overseen by untrained and unsuitable people. A Royal Commission into public charities in 1873-1874 found evidence of assault, prostitution and ill-health amongst the girls, some of whom were infants (Fitzgerald 2010). In 1880 the girls were moved to a new facility at Watsons Bay.

The boys seemed to fare better than the girls. In addition to the ship, the boys of the *Vernon* also had a small plot of land for a vegetable garden and a drill and recreational area on Cockatoo Island. The boys were taught nautical skills, as well as other trades including tailoring, carpentry, shoe and sail making. The *HMS Vernon* operated until 1892, after which it was replaced by the *Sobraon*. Nautical school ships began to lose their popularity and a new system of juvenile probation was introduced in 1905, resulting in a decline in numbers aboard the *Sobraon*. In 1911 the remaining boys were discharged to parents or guardians, apprenticed, or sent to the Mittagong Farm Home or the Brush Farm Home for boys at Eastwood (Dunn 2008).



Plate 8 *HMS Vernon* moored off Cockatoo Island, c.1870 (Courtesy Sydney Harbour Federation Trust).

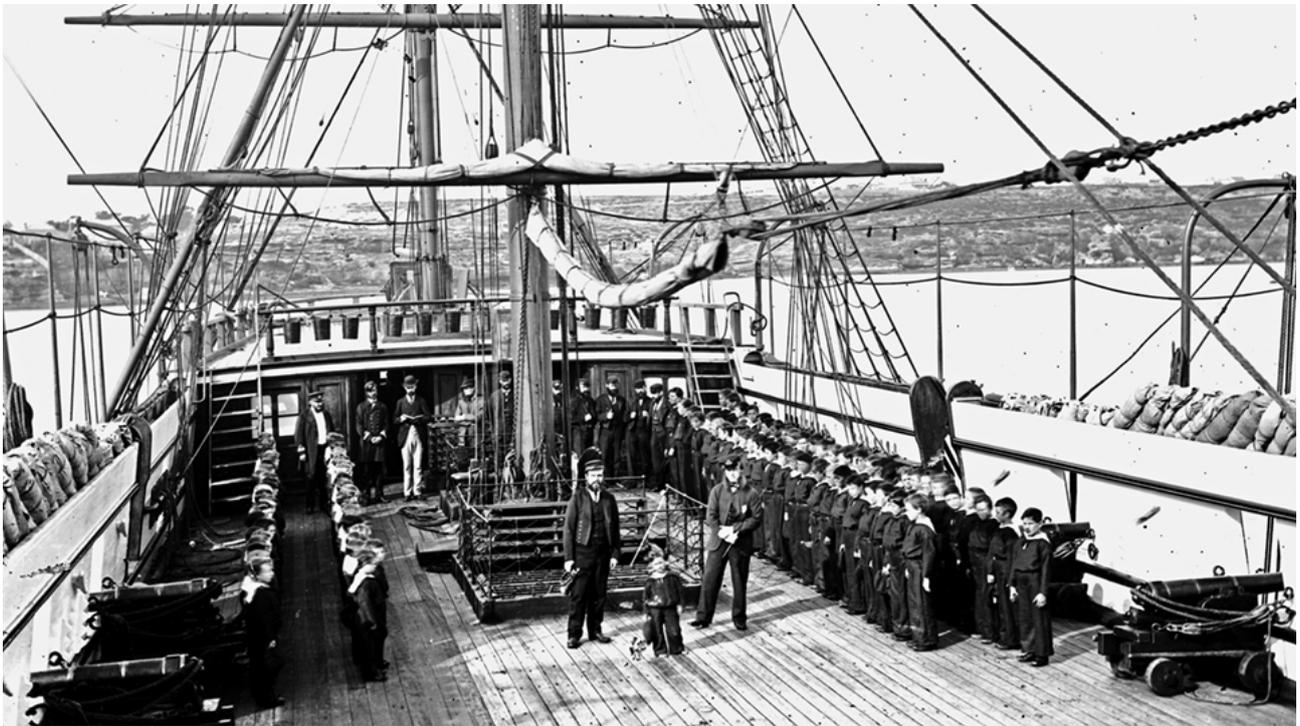


Plate 9 Foot drill aboard the *HMS Vernon*, c1870s (Courtesy Dictionary of Sydney).

Return to a Prison

Following the removal of the Biloela girls, Cockatoo Island once again became home to adult prisoners, this time both men and women. Over 200 prisoners, both those incarcerated as “the broken down class of metropolitan vagrants” and the overflow from Darlinghurst Gaol, were accommodated on the island. Men

were housed in the former convict cells, whilst women were housed in a new block near the convict lumberyard (Godden Mackay Logan 2009:40).

Although only intended to be temporary, the prison stayed on Cockatoo Island from 1888 until 1908. The turnover was high, with approximately 30-40 prisoners entering each week, with a yearly turnover of approximately 3,500 (Godden Mackay Logan 2009:41).

The closure of this prison marked the end of Cockatoo Island's use as a prison.

The Shipyards

Throughout most of Cockatoo Island's prison and reformatory school eras, shipbuilding and the construction of dockyards continued. In 1882, following the removal of the girls from Biloela, another dry dock was begun and completed in 1890. Unlike the Fitzroy Dock, the Sutherland Dock was able to accommodate the larger vessels now coming into Sydney Harbour (Fletcher 2011).

Up until the outbreak of World War 1, approximately 150 ships had been built on Cockatoo Island. In 1913, ownership of the island was transferred from New South Wales to the Commonwealth and became the dockyard for the Royal Australian Navy.

During World War 1, over 4,000 men were employed on the island, constructing, refitting or converting ships to carry troops and horses to the war. Following World War 1, a High Court decision prevented the dockyard from accepting work from anyone other than the Government, leading to a rapid decline in work.

After offering Cockatoo Island for lease to the private sector in 1929, it was finally leased to Cockatoo Docks & Engineering Co in 1933 (Fletcher 2011).

By the 1980s it had become obvious that the facilities at Cockatoo Island needed significant upgrades in order to continue operating successfully. Machinery which had been declared obsolete 20 years earlier was still in use and an estimated \$30 million was required to build new facilities. Even more challenging, was the fact that the site was on an island, with increasingly difficult access. In 1987 the Labor Government determined it would not renew the lease when it expired in 1992. By the early 1990s the profitability and future as a shipbuilding and repair establishment could no longer be sustained. Operations ceased in 1991. The workforce was disbanded; equipment, machinery and furniture was sold off, and many of the buildings and wharves were demolished.

After the closure of the dockyard the management of the island was passed to the Department of Defence's Major Decontamination Projects unit, a specialist unit operated by the Royal Australian Air Force. Operation of the dockyard left a legacy of environmental contamination from foundries, smithies, boilers, cleaning, painting, and anti-fouling of hulls in the docks and yards.

Heritage studies conducted in the late 1980s identified the history and significance of the island, as a colonial prison, British Naval facility, State institution, Commonwealth Naval Dockyard, and engineering works. In 1997 Godden Mackay Logan was commissioned to prepare a CMP to provide context for the island's management. Around the same time, the island was transferred to the Sydney Property Disposal Unit, a section of the Defence Property Management which functioned to prepare surplus Defence property for sale or transfer out of Defence ownership. An environmental contamination study commissioned by the Unit determined a range of contamination, as well as structural and safety issues present. In late 1998 and 1999 a works program commenced to address the most significant of these. The most substantial of these works included the demolition of unsafe timber wharves around the island including the Camber Wharf, and the repair of reinforced concrete piles and beams at the Bolt Wharf, Sutherland Wharf and the Cockatoo Island Wharf. The floating pontoon from the Camber Wharf was sold to a local marine salvage company (GML 2007: 79).

The late 1990s-early 2000s the Sydney Harbour Federation Trust was established to administer the Defence Lands in Sydney Harbour, including Cockatoo Island. The island was opened to public access from 2003.

3.2 Historical development of Cockatoo Island wharf

Being a former shipyard, there have been many wharves on Cockatoo Island since European settlement. The current Cockatoo Island Wharf is a relatively recent construction, dating from after 2001. The earliest record of a passenger wharf at Cockatoo Island is a newspaper article from 1908, which states that

“a new wharf has been erected on the north-east corner of Cockatoo Island, at which the steamers plying on the Parramatta River service will call to land passengers” (Evening News 1908:3)

The article goes on to say that there was an old passenger wharf in use on the northern apron of the island which meant that steamers, after leaving Cockatoo Island, needed to turn about to proceed to Woolwich Wharf. The relocation of the wharf to the north eastern point allowed steamers to proceed straight to Woolwich, saving time for passengers.

The original Camber Wharf was constructed when the site was a Commonwealth Naval Dockyard, between 1913 and 1933. The fixed wharf element of Cockatoo Island Wharf was constructed during the Vickers Cockatoo era of development at the island, between 1948 and 1986 (SHFT 2011: 19). An aerial image of Cockatoo Island from the early 1950s shows the wharf including fixed wharf element (refer Figure 10).

Whilst the island was used as a shipyard, ferry services for workers operated at shift change times. The wharf was damaged in 2004 in a collision with a vessel due to a faulty starboard engine, and the gangway and pontoon appear to have been constructed since that time.

In 2007 Cockatoo Island reopened as a tourist attraction, with the wharf also reopening for public ferry services. At the time of writing, this ferry service operates as part of the Parramatta River “Rivercat” service.

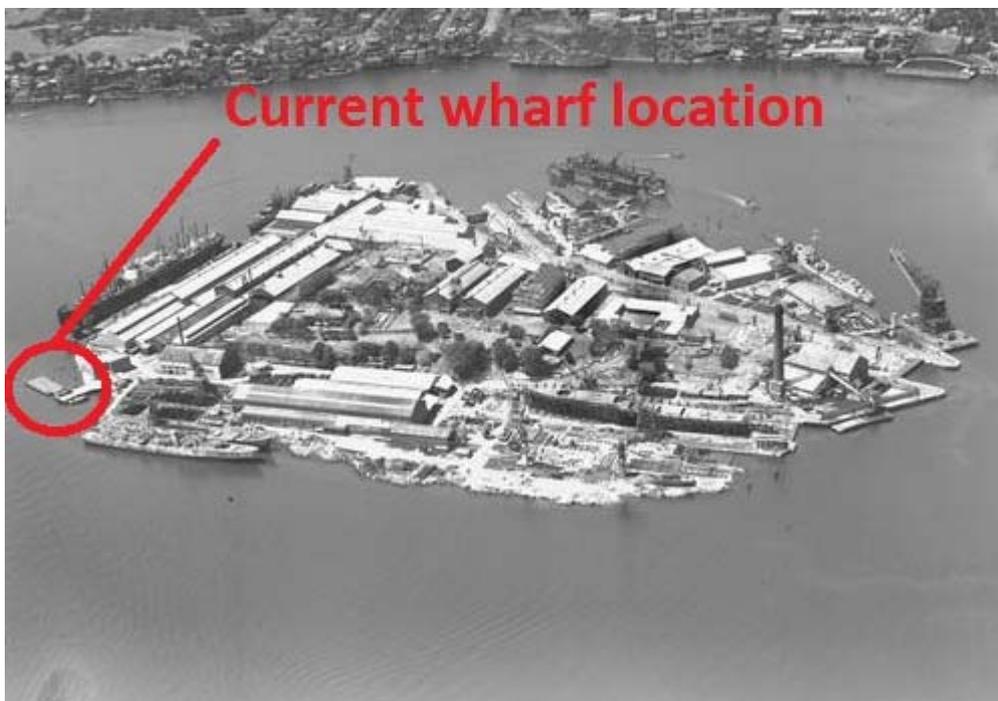


Plate 10 Aerial of Cockatoo Island, c1951, showing location of current Cockatoo Island Wharf (Image courtesy National Library of Australia).

3.3 Recorded Non Aboriginal Heritage

Acknowledged heritage items and places are recorded in statutory and non-statutory registers held at the federal, state and local level depending on their level of significance. Internationally significant sites of ‘outstanding universal value’ are inscribed on the World Heritage List and in turn, such sites are usually recognised through their inclusion on federal and state level registers.

Federal designations include the National Heritage List (NHL) and the Commonwealth Heritage List (CHL) created by the EPBC Act. Both registers are maintained by the Commonwealth Department of the Environment and are available to view on an online database, the Australian Heritage Database. The NHL includes natural, non Aboriginal and Aboriginal places that are of outstanding national heritage value to the Australian nation. The CHL protects natural, Aboriginal and non Aboriginal heritage places on land owned or leased by the Commonwealth or a Commonwealth Authority. To reach the threshold for the NHL, a place must have ‘outstanding’ heritage value to the nation whereas to be entered on the CHL, a place must have ‘significant’ heritage value.

Heritage places of state significance are included on the State Heritage Register (SHR) maintained by the Heritage Branch. Places included on the SHR are available on an online database, the NSW Heritage Inventory database; however, it should be noted that the inventory includes items of state and local significance in NSW, it may not necessarily be comprehensive and inclusion on the inventory does not carry statutory weight in its own right. In order to reach the threshold for inclusion in the SHR, a place needs to meet one of more of the heritage criteria identified by the Heritage Council of NSW. The ultimate decision on whether a place is included on the State Heritage Register is made by the Minister for Heritage.

World Heritage

Cockatoo Island was registered as a part of the World Heritage listing of eleven sites around Australia, collectively known as “Australian Convict Sites”. Cockatoo Island is included in that listing because of its largely intact remains of the convict prison buildings and other convict-built structures.

Table 5 World Heritage listing

Item	Address	Description of protected area
Australian Convict Sites	Cockatoo Island	About 18 ha, in Sydney Harbour, between Birchgrove Point and Woolwich Point, comprising the whole of the Island to low water.

National and Commonwealth Heritage

A search of the Australian Heritage Database was undertaken on 2 July 2015 which indicates that Cockatoo Island is listed on the NHL. Further, separate elements are listed on the CHL.

Table 6 National and Commonwealth heritage listings

Item	Address	Description of Protected Area	Significance	Approximate distance from Cockatoo Wharf
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Cockatoo Island	Rozelle, NSW	About 18 ha, in Sydney Harbour between Birchgrove Point and Woolwich Point, comprising the whole of the Island to low water.	National	Within Study Area
Barracks Block	Cockatoo Island	Part of the Prison Barracks Precinct, Cockatoo Island, Sydney Harbour	Commonwealth	330 metres south west
Bileola Group	Cockatoo Island	Comprises Bileola, former Superintendent's quarters and extensions, stone cottage to west of Bileola, Remaining underground silos to south-east of Bileola and north-east part of small sandstone cottage south-east of Bileola house (Clerk of Petty Sessions cottage), Cockatoo Island, Sydney Harbour	Commonwealth	140 metres south west
Cockatoo Island Industrial Conservation Area	Cockatoo Island	About 18 ha, in Sydney Harbour, between Birchgrove Point and Woolwich Point, comprising the whole of the island to low water	Commonwealth	Within Study Area
Fitzroy Dock	Cockatoo Island	South-eastern corner of Cockatoo Island. Dry dock is now c.145 metres in length and its sides are stepped with sandstone blocks. Original bollards (ex-12 pounder cannons set into top of the dock) are still in position. The present floating caisson (gate to the dry dock) has a rubber seal over its original timber one.	Commonwealth	310 metres south
Mess Hall	Cockatoo Island	Part of Prison Barracks Precinct, Cockatoo Island	Commonwealth	330 metres south west
Military Guard Room	Cockatoo Island	Part of Prison Barracks Precinct, Cockatoo Island	Commonwealth	330 metres south west
Power House/Pump House	Cockatoo Island	West end of Cockatoo Island, Sydney Harbour	Commonwealth	405 metres south west

Prison Barracks Precinct	Cockatoo Island	Comprising barracks complex of prison and hospital wards, cook house and mess shed and its enclosed court; former officer's guard room; former military guard room, kitchen and grassed enclosure; cottage, former free officer's quarters; and north-west escarpment, including trees. Crowning the ridge on south west corner of Cockatoo Island, Sydney Harbour	Commonwealth	330 metres south west
Sutherland Docks	Cockatoo Island	Dry or graving dock on south-western side of Cockatoo Island, where it is excavated into the island's sandstone. The dock is 210 metres long and the depth of water over the sill at high tide is 9.75 metres.	Commonwealth	320 metres south west
Underground Grain Silos	Cockatoo Island	About 65 metres south east of Biloela and immediately between the cottage marked Robb (Clerk of Petty Sessions Cottage) and the cliff, Cockatoo Island, Sydney Harbour	Commonwealth	140 metres south west

State Heritage

A search of the State Heritage Inventory database on 2 July 2015 found no items on Cockatoo Island included on the SHR and no items on Cockatoo Island subject to an interim, or authorised interim heritage order.

Section 170 Registers

Section 170 of the *Heritage Act 1977* requires State Government Agencies to keep records of heritage items owned or operated by it. These registers can be found on the NSW Heritage Inventory. A search of this inventory was carried out on 2 July 2015 and no items on Cockatoo Island were identified as being located within the study area.

Local Heritage

As the land side of Cockatoo Island is a Commonwealth owned island, it is outside the jurisdiction for State laws requiring Local Environmental Plans or other State planning instruments.

Maritime archaeology

A search of the NSW Maritime Heritage database indicates that there are no known shipwrecks recorded in the vicinity of Cockatoo Island. The hulk of one known vessel, a torpedo-boat destroyer the HMAS *Warrego*,

sank at a wharf at Cockatoo Island in 1931 after being blown up, however the database notes that the wreck was subsequently removed (NSW Maritime Heritage Database undated).

3.4 Potential Archaeological Resources

Given the extensive use of Cockatoo Island there is a high potential for archaeological resources in most areas. However as this assessment is to assess impact on heritage as a result of the demolition and construction of the Cockatoo Island Wharf, an assessment of potential archaeological resources will be confined to the two areas of activity, namely Cockatoo Island Wharf and Camber Wharf.

Appendix 4 of the SHFT Cockatoo Island Conservation Management Plan contains a map of archaeological sensitivity, which lists both Cockatoo Island wharf and the Camber Wharf as being of high archaeological potential. Under Criterion C (“Research Potential”) of Appendix 7 (“National Heritage Listing”), it states:

“The surviving archaeological elements of now demolished or obscured structures and functions of the dockyard in particular the remains of docks, equipment, warehouse and industrial buildings and range of cranes, wharves, slipways and jetties, have potential to illustrate and reveal the materials, construction techniques and technical skills employed in the construction of shipbuilding and dockyard facilities that are no longer available through other sources in Australia”.

It is agreed that the areas of the docks are and should be of high archaeological potential, however whether Cockatoo Island Wharf and Camber Wharf should be captured in this area of research potential is less certain. Cockatoo Island wharf has always been an “entry point” to the island and is therefore less likely to have ever had any of the ship-building and/or dockyard facilities indicated as of high sensitivity. In addition, the first wharf built on the site of the Cockatoo Island Wharf was constructed in 1908, and it has been rebuilt many times since then. All available historical information with the potential to reveal “materials, construction techniques and technical skills” has therefore long since been removed.

It is therefore considered unlikely that either the Cockatoo Island Wharf or Camber Wharf will yield any further information not already collected. In relation to the potential to disturb maritime archaeology, the only works with the potential to disturb archaeological remains are the piles used to stabilise the pontoon portions of the wharf (for further assessment of this impact, see Section 6.4 below).

The Cockatoo Island Management Plan 2010 states that one of the priority tasks for rejuvenating the island was the “reinstatement of Camber Wharf and pontoon”, marked as complete as of the date of the Management Plan (Sydney Harbour Federation Trust 2010:112). This would indicate that the wharf is of recent (immediately pre 2010) construction. In any case, this wharf will not have any piles driven into the sediment as a part of these works and therefore can be excluded from any further archaeological assessment.



Proposed wharf upgrade
(Cockatoo Wharf)



Temporary wharf
(Camber Wharf)

Legend

Commonwealth Heritage Areas

- 1 Prison Barracks
- 2 "Biloela" complex
- 3 Cockatoo Island Industrial Conservation Area
- 4 Fitzroy Dock
- 5 Mess Hall (former)
- 6 Military Guard Room
- 7 Power House/Pump House
- 8 Prison Barracks Precinct
- 9 Sutherland Dock
- 10 Underground Grain Silos

Source:



SCALE 1:4,000 AT A4 SIZE

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Figure 3: Commonwealth Heritage Elements

LOCATION: Cockatoo Island Wharf	DATUM: GDA94 PROJECTION: MGA Zone 56
JOB NO.: PR119759 PURPOSE: HERITAGE	Data Sources: RPS OEH
Technician: mark.durkan Date: 1/09/2016	

CLIENT: RMS

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4 Visual inspection

A visual inspection of the Study Area was made on 14 July 2015 by RPS Heritage Manager Sydney, Deborah Farina and RPS Planner, Katie Allchurch. The following paragraphs include a discussion of the general physical context of the study area, and more detailed analyses of the heritage items:

- Adjoining the Study Area; and
- In the vicinity of the Study Area.

The locations of identified heritage items are shown in Figure 3.

4.1 General physical context

Cockatoo Island is located in Sydney Harbour approximately three kilometres west of the Sydney Harbour Bridge. The island is entirely encircled by reclaimed land leaving the central portion of the island as the only natural land of the island. This central portion of the island is dominated by a high plateau, upon which lies the convict Precinct and Biloela Precinct. The wharf is located on the north eastern point of the island and is reclaimed land.

The island is now used for recreational purposes, with many parts of the island dedicated to this. At the exit of the wharf is an inter war administration building, with a gateway through which all visitors must pass to enter the island. To the west of the wharf a large space is used for “glamping” (“glamorous camping”) and camping, with rows of fully erected tents, “glamping” tents with camp beds and camping tents with a ground cover. These tents are located on the level, reclaimed land along the northern apron of the island as far as the slipways at the north western tip. There are also toilet and amenity shelters for use by campers.

On the island’s eastern apron to the south of the wharf there is a large, flat space formerly occupied by cranes and sheds used for shipbuilding.

4.2 Cockatoo Island Wharf

A wharf in this location has been used since 1908 and intermittently modified over the intervening period. The wharf comprises a fixed shorebridge which is oriented in a north-south direction from the island. A former Bundy Office, where workers used a “bundy” clock arriving and leaving the island, is used as a waiting area and contains Opal card readers and shelter for waiting commuters (Plate 11). The Bundy Office, also known as the Parramatta Wharf Turnstile Shelter (North), was constructed in 1945 as part of a turnstile facility for workers entering and existing Cockatoo Island (Godden Mackay Logan 2012).

Enquiries were made with the Sydney Harbour Federation Trust, who was responsible for the construction of the current wharf, in relation to the prior wharf. It is understood that no fabric remains regarding the original wharf.

The current wharf comprises a pontoon oriented in an east-west direction off the north eastern point of the island. Landside access is a fixed timber piled wharf with a concrete deck faced with timber (Office of Transport Safety Investigation 2004:15). Access between the fixed wharf and pontoon is via a gangway (Plate 12).

As noted above, there are no recorded shipwrecks beneath the Cockatoo Island Wharf and no known archaeological potential, either terrestrial or maritime. The various constructions in the vicinity of the wharf has likely removed all terrestrial archaeological material and in any case, there is limited earthworks to disturb previously unrecorded archaeological deposits. In relation to maritime archaeology, a pre-works dive is recommended to exclude unrecorded maritime archaeological items.



Plate 11 Former security box, known as the Bundy Office, looking east down the gangway to the pontoon (RPS, 2015).



Plate 12 Cockatoo Island Wharf, looking north-west from the island (RPS, 2015).

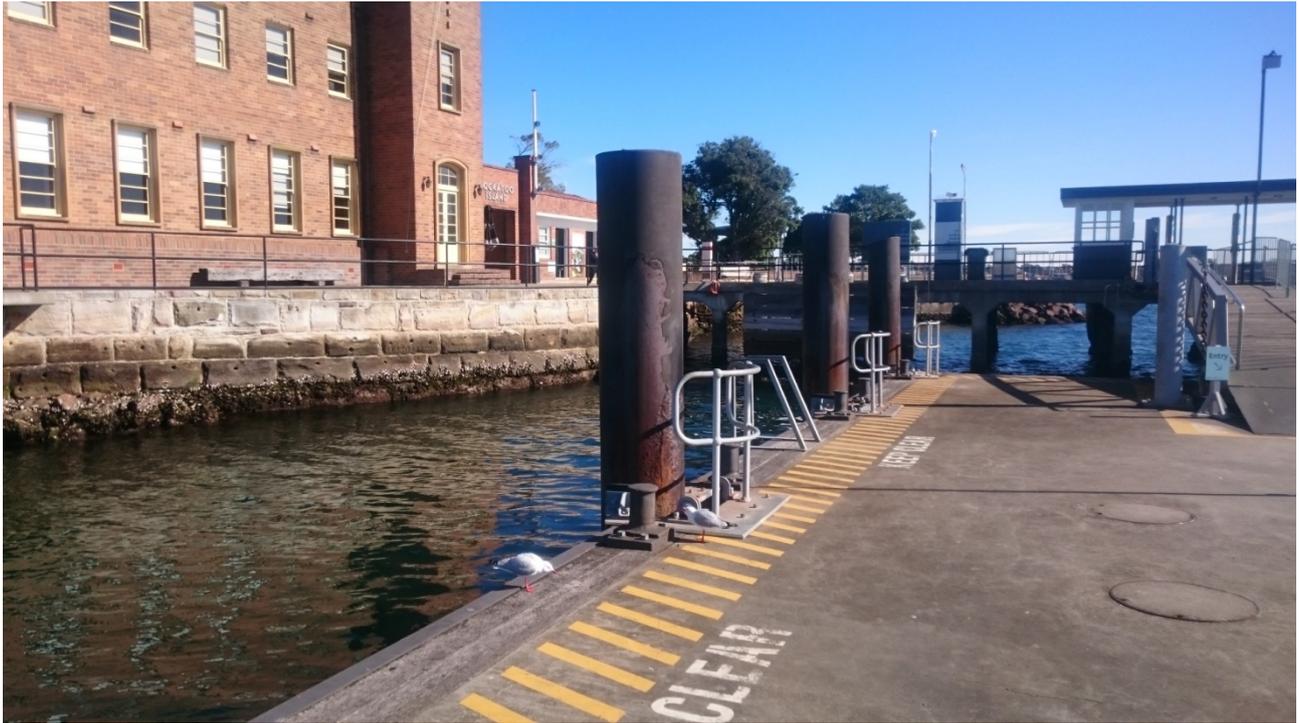


Plate 13 Cockatoo Island Wharf, looking west from existing pontoon (RPS, 2015).

4.3 Camber Wharf

The Camber Wharf is located on the southern apron, south of the Fitzroy dock (see Figure 1 above). It was constructed during the same period as the original Cockatoo Island wharf as part of the Commonwealth naval Dockyard occupation between 1913-1933 (Sydney Harbour Federation Trust 2010:28).

The Camber Wharf is currently used for the mooring of private vessels visiting Cockatoo Island and was upgraded in 2004-2005 (Cordell Construction Projects Pty Ltd 2005). This wharf will only be used for commuter ferries during the redevelopment of the Cockatoo Island Wharf.

5 Significance assessment

In line with the Burra Charter, before making decisions about the future of a heritage item it is first necessary to understand its heritage significance and the values it embodies. The following section contains an assessment of the heritage significance of Cockatoo Island using the National and Commonwealth heritage significance criteria as explained in Guidelines for the Assessment of Places for the National Heritage List (Australian Government 2009). The aim of this particular significance assessment is to explain the heritage values embodied by Cockatoo Island.

The findings of the following heritage assessment are summarised in a Statement of Significance below.

5.1 Historical themes in evidence

National and State-level patterns of historical development are useful in determining the historical value of a site. Nine historical themes have been developed and adopted by NSW Heritage Council. They are derived from the Australian historical themes prepared by the Australian Heritage Commission. Table 7 notes the NSW historical themes considered to be in evidence at Cockatoo Island:

Table 7 Australian and NSW historical themes considered to be in evidence.

Australian Theme	NSW Theme	Notes
1 Tracing the natural evolution of Australia	Environment – naturally evolved	There are two aspects to this theme: (1) Features occurring naturally in the physical environment which have significance independent of human intervention; and (2) Features occurring naturally in the physical environment which have shaped or influenced human life and cultures
2 Peopling Australia	Convict	Activities relating to incarceration, transport, reform, accommodation and working during the convict period in NSW (1788-1850).
3 Developing local, regional and national economies	Commerce	Activities relating to buying, selling and exchanging goods and services
3 Developing local, regional and national economies	Environment – cultural landscape	Activities associated with the interactions between humans, human societies and the shaping of their physical surroundings
3 Developing local, regional and national economies	Events	Activities and processes that mark the consequences of natural and cultural occurrences
3 Developing local, regional and national economies	Health	Activities associated with preparing and providing medical assistance and/or promoting or maintaining the well being of humans
3 Developing local, regional and national economies	Technology	Activities and processes associated with the use of mechanical arts and applied sciences

Australian Theme	NSW Theme	Notes
3 Developing local, regional and national economies	Transport	Activities associated with the moving of people and goods from one place to another and systems for the provision of such movements
4 Building settlements, towns and cities	Towns, suburbs and villages	Activities associated with creating, planning and managing urban functions, landscapes and lifestyles in towns, suburbs and villages
4 Building settlements, towns and cities	Utilities	Activities associated with the provision of services, especially on a communal basis.
4 Building settlements, towns and cities	Accommodation	Activities associated with the provision of accommodation and particular types of accommodation.
5 Working	Labour	Activities associated with work practices and organised and unorganised labour
6 Educating	Education	Activities associated with teaching and learning by children and adults, formally and informally.
7 Governing	Defence	Activities associated with defending places from hostile takeover and occupation
7 Governing	Law and order	Activities associated with maintaining, promoting and implementing criminal and civil law and legal processes.
7 Governing	Welfare	Activities and process associated with the provision of social services by the State or philanthropic organisations.
8 Developing Australia's cultural life	Domestic life	Activities associated with creating, maintaining, living and working around houses and institutions.

5.2 Significance assessment

Cockatoo Island is part of a World Heritage item known as “Australian Convict Sites”. However it is also listed on the National Heritage List. Significance is therefore assessed against the National heritage significance criteria as set out in Guidelines for the Assessment of Places for the National Heritage List (Australian Government 2009). In addition, the island has been assessed as a whole. Consideration of the various heritage elements on the island are assessed at Section 5.3 below. As noted below, the purpose of an impact assessment is to determine whether a proposal will impact on the significance of the item. The significance assessment, therefore, provides a basis for that assessment.

Table 8 Assessment of significance against National heritage criteria

Criterion	Assessment
<p>(a) Events and processes - The place has outstanding heritage value to the national because of the place's importance in the course, or pattern of Australia's natural or cultural history</p>	<p>Cockatoo Island meets this criterion. It was a purpose built convict settlement utilised because of its isolation from the general colony, providing both security for the continued incarceration of convicts and for the general populace. It was a place of hard labour and secondary punishment eventually becoming the primary place of punishment for all male convicts sentenced to transportation.</p> <p>Cockatoo Island also contributed to the developing of Australia through its use as a dockyard for commercial and defence shipbuilding. The Fitzroy dock was constructed using convict labour and remains one of the largest convict-era public works surviving in Sydney. There is also convict remains in the form of the prisoners' barracks, hospital, mess hall, guard and officers' room, free overseers quarters, isolation cells and the superintendant cottage. Evidence of the convicts' hard labour includes the sandstone buildings, the quarried cliffs, underground silos and Fitzroy dock.</p>
<p>(b) Rarity – the place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history.</p>	<p>Cockatoo Island meets this criterion. It comprises a rare example of a purpose-built convict settlement, with nearly all necessary built heritage surviving. Owing to its importance as a primary terminus for convicts in a colony primarily founded for penal transportation and punishment, official documentation regarding Cockatoo Island's development both in Australia and England has also survived, allowing modern researchers to recognise the rarity of its almost complete survival as a complex. The complex's survival is also an important physical manifestation of an important era in the development of Australia as a nation.</p>
<p>(c) Research – The place has outstanding heritage value to the nation because of the place's potential to provide information that makes a contribution of national importance to the understanding of Australia's history, cultures or the natural world.</p>	<p>Cockatoo Island has the potential to yield information that can contribute to the understanding of Australia's development. Although most of the island's convict past remains, there are some parts that have not, or are obscured. One such example is the punishment cells, which were known to have existed but only unearthed in 2009.</p> <p>Other areas that retain the potential to contribute important information include the Fitzroy dockyard, equipment, warehouse and industrial buildings, cranes, wharves, slipways and jetties. These may all contain evidence of materials, construction techniques and technical skills employed in the construction of shipbuilding and dockyard facilities. Given the long history of shipbuilding on Cockatoo Island, any evidence that is present is likely to be early, extensive and varied.</p>
<p>(d) Principal characteristics of a class of places - an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history</p>	<p>As stated in the National Heritage Listing:</p> <p><i>“Cockatoo Island represents some of the principal characteristics of Australian convict sites including: hard labour as a means of punishment and deterrence to the British “criminal class”; use of convict labour for the establishment of a colony through public works; and secondary punishment for re-offending convicts”</i> (See Appendix 7).</p> <p>Further, its inclusion as part of the “convict sites” item on the World Heritage List evidences that Cockatoo Island's convict heritage represents the principal characteristics of that class of place.</p>

Criterion	Assessment
(e) Aesthetic characteristics – the place has outstanding heritage value to the national because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group	Although the setting of Cockatoo Island is aesthetically pleasing, being on Sydney Harbour, with sweeping views east towards the city of Sydney skyline, the Sydney Harbour Bridge and south toward the Iron Cove Bridge, its heritage significance is not reliant on this. The convict settlement was established on Cockatoo Island because of the security offered by an island location, at that time of sufficient distance from the main settlement. Its aesthetics are more appealing and significant to modern leisure travellers to the island.
(f) Creative or technical achievement - the place has outstanding heritage value to the nation because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period	There are some important technical achievements associated with the island, including the excavation of the underground silos and the construction of the Fitzroy Dock, however it is uncertain whether these technical achievements are of national significance. The underground silos were found to be extremely effective, with each of the 17 silos protecting the grain from theft, fire, insects vermin and from rotting. They were excavated in 1839-1841, and shortly after being filled in 1840 were shut down by order of the Colonial Secretary, Lord John Russell, as the British Government believed that such effective storage would interfere with the corn trade in the colony. Corn, however, was still being retrieved from the silos in the 1850s (Sydney Harbour Federation Trust 2014:18).
(g) Social – The place has outstanding heritage value to the national because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons	Cockatoo Island has special associations with various communities, however as it has mostly been a penal colony, corrective facility and industrial complex, it does not meet this criterion for social, cultural or spiritual association.
(h) Associations – The place has outstanding heritage value to the national because of the place's special association with the life or works of a person or group of persons, of importance in Australia's natural or cultural history	Although the convict era was only a small part of the history of Cockatoo Island, it is nonetheless an important part of its history. This is even more so given that the European history of Australian begins with it being a penal colony. There is therefore a nexus between the early convicts and the penal system and the growth of the nation.
(i) The place has outstanding heritage value to the nation because of the place's importance as part of Aboriginal tradition	As noted above, it was noted that Cockatoo Island was used by Aboriginal people at the time of European contact as a resource gathering site, however because of the absence of drinking water on the island, was never a place of habitation. Whilst the place was no doubt of importance to indigenous tradition, it is not assessed as being of outstanding heritage value to the nation on that basis.

5.3 Statement of significance

It is assessed that Cockatoo Island embodies outstanding heritage values on the basis of its historical events, rarity, research potential, principal characteristics, technical achievement and associations with the convict and penal era, the reformatory era and the shipbuilding era. These values are graded as outstanding and therefore meet criteria (a), (b), (c), (d), (f) and (h) of the National heritage significance criteria. In relation to Cockatoo Island Wharf, it is not considered to be sensitive to change owing to its late construction and continued use as a ferry wharf. It is therefore amenable to change.

5.4 Grading of site elements' significance

The following table describes the intactness and integrity of the components of Cockatoo Island and their relative contributions to the significance of the site. As the Commonwealth heritage list merely requires an item to have heritage "significance" to be eligible, the grading system for the relative contribution made by the component parts of the site has been derived from the Assessing heritage significance (NSW Heritage Office (former), 2001) (See Table 9).

Table 9 Intactness and integrity of components of Cockatoo Island

Element	Integrity/Intactness	Contribution to the Significance of Cockatoo Island	Significance impacted by Proposal Y/N
Barracks Block	Assessed on Australian Heritage Database (AHD) as meeting Commonwealth significance criteria A, B, D and H to a high level. Moderately intact, high integrity.	Exceptional	No
Bileola Group	Assessed on AHD as meeting Commonwealth significance criteria A, B, D, E, F and H. Highly intact, moderate integrity.	High	No
Cockatoo Island Industrial Conservation Area - various sites	Assessed on the AHD as meeting Commonwealth significance criteria A, B, D and H. Moderately intact, moderate integrity.	High	No
Fitzroy Dock	Assessed on AHD as meeting Commonwealth significance criteria A, B, D, E and F. Moderately intact, high integrity.	High	No
Mess Hall	Assessed on AHD as meeting Commonwealth significance criteria A, B, D, E and F Moderately intact, Moderate integrity.	Exceptional	No
Military Guard Room	Assessed on AHD as meeting Commonwealth significance criteria A, B, D and H. Moderately intact, Moderate integrity.	Exceptional	No
Power House/Pump House	Assessed on AHD as meeting Commonwealth significance criteria A, B, D, E and F. Moderately intact, Moderate integrity.	High	No

Element	Integrity/Intactness	Contribution to the Significance of Cockatoo Island	Significance impacted by Proposal Y/N
Prison Barracks Precinct	Assessed on AHD as meeting Commonwealth significance criteria A, B, D, E and H. Moderately intact, Moderate integrity.	Exceptional	No
Sutherland Docks	Assessed on AHD as meeting Commonwealth significance criteria A, B, D, E and F. Moderately intact, Moderate integrity.	High	No
Underground Grain Silos	Assessed on AHD as meeting Commonwealth significance criteria A, B, F and H. High intactness, high integrity.	Exceptional	No

Table 10 Guide to significance Grading (*Heritage Division, 'Assessing Heritage Significance'*)

Grading	Justification	Status
Exceptional	Rare or outstanding item of local or State significance, High degree of intactness. Item can be interpreted relatively easily.	Fulfils criteria for local or State listing.
High	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.	Fulfils criteria for local or State listing.
Moderate	Altered or modified elements. Elements with little heritage value but which contribute to the overall significance of the item.	Fulfils criteria for local or State listing.
Little	Alterations detract from significance. Difficult to interpret.	Does not fulfil criteria for local or State listing.
Intrusive	Damage to the item's significance.	Does not fulfil criteria for local or State listing.

6 Statement of heritage impact

The following section assesses the likely heritage impacts of the proposed development on the heritage significance of Cockatoo Island as assessed above. When considered along with a policy or plan for conservation and management, a SoHI allows an informed decision to be made on whether a proposal is acceptable in heritage terms. As such, this SoHI makes reference to the recommendations and policies contained in the Conservation Management Plan for the Convict Buildings and Remains (Godden Mackay Logan 2009) and the Sydney Harbour Federation Trust Management Plan – Cockatoo Island (Sydney Harbour Federation Trust 2010).

6.1 Summary of proposed changes

As noted in Section 1, the proposal would include the replacement of the existing gangway, pontoon and the upgrade of the fixed wharf structure and associated landside infrastructure at Cockatoo Island Wharf. The concept design for the proposal is illustrated at Figure 1 and in Appendix A of the REF. For the purposes of this REF, a proposal area of about 11,000 square metres (about 4,000 square metres on the landside and 7,000 square metres on the waterside) (shown in Figure 1) has been assessed to consider potential changes to the proposal should they be required following further design development.

During the construction phase, the existing Camber Wharf to the south of the island will be used to maintain the existing ferry service. This wharf will require temporary relocation of some equipment and temporary wayfinding installation prior to use.

The proposal would comprise the following elements:

6.2 The proposal

The proposal would include the replacement of the existing gangway, pontoon and the upgrade of the fixed wharf structure. The concept design for the proposal is fully described at section 1.2 above.

6.3 Impact of proposal on physical fabric, attributes and setting

The proposed Cockatoo Island Ferry Wharf upgrade involves work within World and National Heritage List curtilages and also work beyond those curtilages.

Proposed works beyond the heritage curtilages include the demolition and removal of the existing gangway and pontoon at Cockatoo Island Wharf, and the construction of a new bridge, gangway and pontoon at Cockatoo Island Wharf. Works such as the affixing of the new gangway to the existing wharf will be undertaken where the current gangway is located, therefore in an area previously impacted by the same function. There is no fabric remaining from the earlier Cockatoo Island wharves since the construction of the current wharf and heritage interpretation at this location may be appropriate. SHFT has confirmed it is willing to investigate options for interpretation devices.

Works within the heritage curtilage will include the temporary relocation of Opal readers to Camber Wharf, the construction of landside infrastructure at Cockatoo Island Wharf, some wayfinding, and a temporary compound. In relation to the temporary ferry facilities proposed at the Camber Wharf, it is noted that as the wharf is already operational for pleasure craft, and no existing fabric of the wharf will need to be altered. The addition of existing Opal Readers and Self Service Machine from the Cockatoo Island Wharf to the Camber Wharf will require anchoring by drilling into existing concrete or bitumen. It is not anticipated that this or any

of the other temporary works, such as the compound or wayfinding signs from the Camber Wharf to damage either the fabric or significance of individual items on Cockatoo Island or the Island a whole.

In relation to wayfinding signage, concept designs for wayfinding signage has been prepared by BrandCulture Communications and included in the proposed plans at Appendix B. The signage is designed to be consistent with existing signage while maintaining the public’s recognition of transport signage. Signs outside of the curtilage of Cockatoo Island are consistent with other ferry wharves. Signs within the curtilage are unobtrusive and utilitarian. As noted above, signage between the Camber Wharf and the Cockatoo Island information centre are planned to be temporary and will not cause damage to any significant fabric.

The proposed works will ensure the ongoing use of the wharf for access, while upgrading safety, accessibility and security for users. This is consistent with Policies 20, 21, 22 and 41 of the Cockatoo Island Conservation Management Plan.

Setting

A Landscape Character and Visual Impact Assessment (LCVIA) was undertaken by Jane Irwin Landscape Architecture (JILA) in connection with this project. That assessment found that the most sensitive views are highest in the immediate vicinity of Cockatoo Island, and that views to and from Cockatoo Island/Hunters Hill-Birchgrove were less so. The LCVIA concluded that the impact on landscape character and views is highest in the immediate vicinity of the island. This is particularly noticeable when seen “in direct juxtaposition with the existing brick buildings sitting on this point” (Jane Irwin Landscape Architecture 2016:31).

A total of ten views were assessed by JILA, with the following observations (JILA, 2016:23-24):

Viewpoint	Setting	Visible Elements	Distance zone	Impact	Comment
Cockatoo Island – northern foreshore, view east	Parramatta River, Cockatoo Island heritage buildings, background Greenwich, Balls Head and Birchgrove peninsulas with Sydney Harbour Bridge behind	Existing waiting shed and pontoon	FZ	High	High visibility and high number of viewers. The view to the east sees the proposed wharf structure set against the Sydney Harbour Bridge. The impact is considered high due to the significance of the viewpoint and the proximity to the foreshore heritage buildings.
Cockatoo Island – eastern foreshore, view west	Parramatta River, Cockatoo island heritage buildings, background Woolwich Peninsula	Pontoon, part gangway and bridge	FZ	Moderate-High	The impact is considered moderate to high. There is a high visibility from the grassed foreshore immediately adjacent to the wharf to the east. The open unstructured nature of this part of the foreshore provides general views to the surrounding harbour rather than focussed viewpoints. This is a lesser view with a lesser impact on the wider contextual view (harbour) from a limited area of the foreshore.

Viewpoint	Setting	Visible Elements	Distance zone	Impact	Comment
Cockatoo Island – upper level – view north east	Northern and eastern aprons of Cockatoo Island, heritage buildings, Parramatta River, mouth of Lane Cove River between Woolwich and Greenwich peninsulas	Part of pontoon	FZ	Moderate	There is partial visibility of the proposed structure from any one viewpoint on the upper level. Wide harbour views are maintained with the proposal seen as fragmented pieces within a collection of built elements on the foreshore. The impact is considered moderate.
Cove Street – Birchgrove – view north	Parramatta River, Cockatoo island southern and eastern sides, Woolwich Peninsula in background	Part of pontoon roof	BZ	Negligible	Limited access to views from a small reserve at the end of the street. The proposal is seen as a minor interruption against the island and harbour. The proposal represents a change in scale. The impact is considered negligible.
Balls Head Reserve/Coal Loader Site – view west	Birchgrove and Greenwich peninsulas, framing mouth of Parramatta River, Cockatoo Island and Woolwich Peninsula in background	Pontoon	BZ	Negligible	Changing, filtered views are available along the western edge of the headland. The wharf is seen in the context of broad harbour views, which are stronger here than the relationship of the wharf to the heritage buildings on Cockatoo Island. The impact is considered negligible.
Greenwich Wharf – view south west	Parramatta River, Cockatoo Island, Birchgrove and Drummoyne background	Pontoon	BZ	Moderate-Low	The proposal is seek in the broader harbour context. The wharf is seen against the island's heritage buildings – distance mitigates this impact. The impact is considered moderate-low.
Woolwich Wharf – view south west	Mouth of Lane Cove River, Clarkes Point Reserve, Parramatta River, Cockatoo Island Birchgrove Peninsula in background	Pontoon, gangway and bridge	BZ	Moderate-Low	The impact is considered moderate to low. The proposal is seen in the broader harbour context. The proposal interrupts the form and facade detail of the heritage buildings on the foreshore. The proposal appears in the forefront of this viewpoint.

Viewpoint	Setting	Visible Elements	Distance zone	Impact	Comment
Clarkes Point Reserve – view south	Parramatta River, Cockatoo Island, Birchgrove Peninsula in background	Pontoon, gangway and bridge	MZ	Moderate	The potential impact is related to the juxtaposition of the new form of the wharf against the heritage building. The proposal appears in the forefront of this viewpoint. The impact is considered moderate.
Kellys Bush Reserve – view south east	Parramatta River, Cockatoo Island, Birchgrove Peninsula in background	Pontoon and part gangway.	MZ	Moderate-Low	The proposal is not set against the building from this viewpoint, rather seen in the context of broader harbour views. Views are filtered through the visual clutter of the marina at the lower park level.
Pulpit Point – view east	Parramatta River, Cockatoo Island, Birchgrove and Greenwich peninsulas with Balls Head in background	Part pontoon	BZ	Negligible	The impact is considered negligible given the distance of the viewpoint from the proposal. Views are filtered through the marina with only part of the wharf visible. The wharf is seen in the broader context of the harbour.

FZ = foreground zone (0-250 metres from viewer)

MZ = Middle ground zone (250 m – 500 m)

BZ = background zone (greater than 500 m from proposed wharf)

JILA's assessment of overall visual impact is repeated here:

“The location of Cockatoo Island at the centre of the harbour, and the prominent location of the wharf as the single element extending from the northern shore of the island, from surrounding areas to the north, east and south. The wharf is also highly visible on approach by water from the east and west. Broad, open views to the island are possible from the surrounding foreshore areas, particularly Clarkes Point Reserve where the open grassed areas of the parkland offer unobstructed views to the south towards the wharf. Filtered views to the island are also available from Greenwich Point Reserve through the native planting along the foreshore.

“The heritage buildings adjacent to the wharf generally obstruct views from the lower foreshore level of the island to the proposal. Clear views are available however, from the northern foreshore looking east towards the wharf, and from the south east of the wharf.

“Views from the upper level of the island are again partially obstructed by the heritage buildings and are restricted to specific view corridors between the existing buildings, with only fragments of the proposal visible from only one point.

“Views towards the wharf on approach from the east and west are open and unobstructed. The wharf reads as a single element extending from the northern shore of the island.

“The wharf is overlooked from Woolwich, Greenwich and Birchgrove peninsulas, with longer distance views possible from Drummoyne and Waverton Peninsula. The upgrade is anticipated to have a low

impact on these views. Views from these areas are generally panoramic, taking in a wider-angle views of the harbour, rather than narrow focused views.

“Views from surrounding points to the east and approach by water take in a landscape dominated by the sandstone knoll and the scale of the remaining industrial buildings and machinery on the island. The bulk and scale of these built elements are much greater than the proposed wharf.

“The greatest potential for impact is from the foreshore immediately surrounding the wharf (viewpoints 1 and 2).

“There is a moderate impact on views where the proposed new structure, particularly the roofed section, is seen directly against the heritage buildings on the foreshore at this point (viewpoints 6, 7 and 8).

“Overall the impact is considered moderate to low with the proposal forming part of a broader harbour context for the majority of views”. (Jane Irwin Landscape Architects 2016:25)

From a heritage perspective, the outcomes of the Visual Impact Assessment confirms that the visual impact to the heritage significance by the proposal of both the individual elements of Cockatoo Island, and Cockatoo Island overall, will be minimal.

6.4 Impact of proposal on potential archaeological resources

None of the proposed works will require earthworks, with the exception of site preparation and bolting of Opal Card readers into concrete. These works are not expected to breach below the existing concrete and it is therefore considered that there is no threat of impact to any potential archaeological resources.

As noted in Section 3.4 above, given the long history of the wharves being used as entry points to Cockatoo Island and the repeated removal and re-building of the wharf facilities for that purpose, it is not anticipated that there will be any impact on potential archaeological resources as a result of this proposal. There was only one known shipwreck in the vicinity of the island, and the NSW Maritime Heritage database states that the hulk of that vessel were deliberate blown up and removed.

Nonetheless, as with all works undertaken by Roads and Maritime, their Unexpected Finds Protocol will continue to operate during these works. A pre-works dive will also be undertaken by a suitably qualified marine archaeologist to safeguard any previously unrecorded maritime heritage.

6.5 Conclusion

It is concluded that there will be no significant impact to the World or National Heritage significance of Cockatoo Island or to the Commonwealth heritage significance of its individual elements.

7 Conclusions and Recommendations

This investigation has assessed the likelihood of damage to the fabric and/or heritage significance of Cockatoo Island and its individual elements. This has been achieved through a review of historical and archaeological information, analysis of the proposal and an assessment of the current condition and heritage significance of Cockatoo Island and its elements.

It is concluded that:

- The proposed works for the new wharf will be taking place inside and outside of the World and national heritage curtilage;
- Those elements of the proposed upgrade works that take place inside the World and National heritage curtilage are not expected to cause additional damage to the fabric; therefore there is no anticipated impact to the World or National Heritage significance of Cockatoo Island or its Commonwealth heritage listed elements;
- The temporary works, such as the installation of Opal Readers, Self Service Machines, works compound and wayfinding signs, are not anticipated to cause any damage, either permanent or temporary, to significant fabric of Cockatoo Island or the Camber Wharf.

As a result of this investigation and its conclusions, the following general heritage management recommendations are made:

Recommendation 1

Owing to the loss of the original Cockatoo Island wharf and the absence of any fabric from previous wharves, it is recommended that the Sydney Harbour Federation Trust investigate the potential for the installation of interpretation devices at the original location of the wharf.

Recommendation 2

It is recommended that a reconnaissance dive be undertaken at Cockatoo Island Wharf by a suitably qualified maritime archaeologist prior to the commencement of works to confirm that no maritime archaeological remains will be impacted.

Recommendation 3

In accordance with Schedule 1, Section 3.4 (c) of the *Bilateral Agreement made under Section 45 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) Relating to Environmental Assessment* made between the Commonwealth of Australia and the State of New South Wales a copy of this assessment should be provided to the Minister of the Federal Department of Environment.

Recommendation 4

All policies contained in the *Sydney Harbour Federation Trust Management Plan – Cockatoo Island* of 2010 should be followed during all phases of the wharf upgrade.

Recommendation 5

Should any unexpected finds be uncovered during the course of construction, the mitigation and management measures set out in the RMS Standard Management Procedure – Unexpected Archaeological Finds should be followed.

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Appendix A

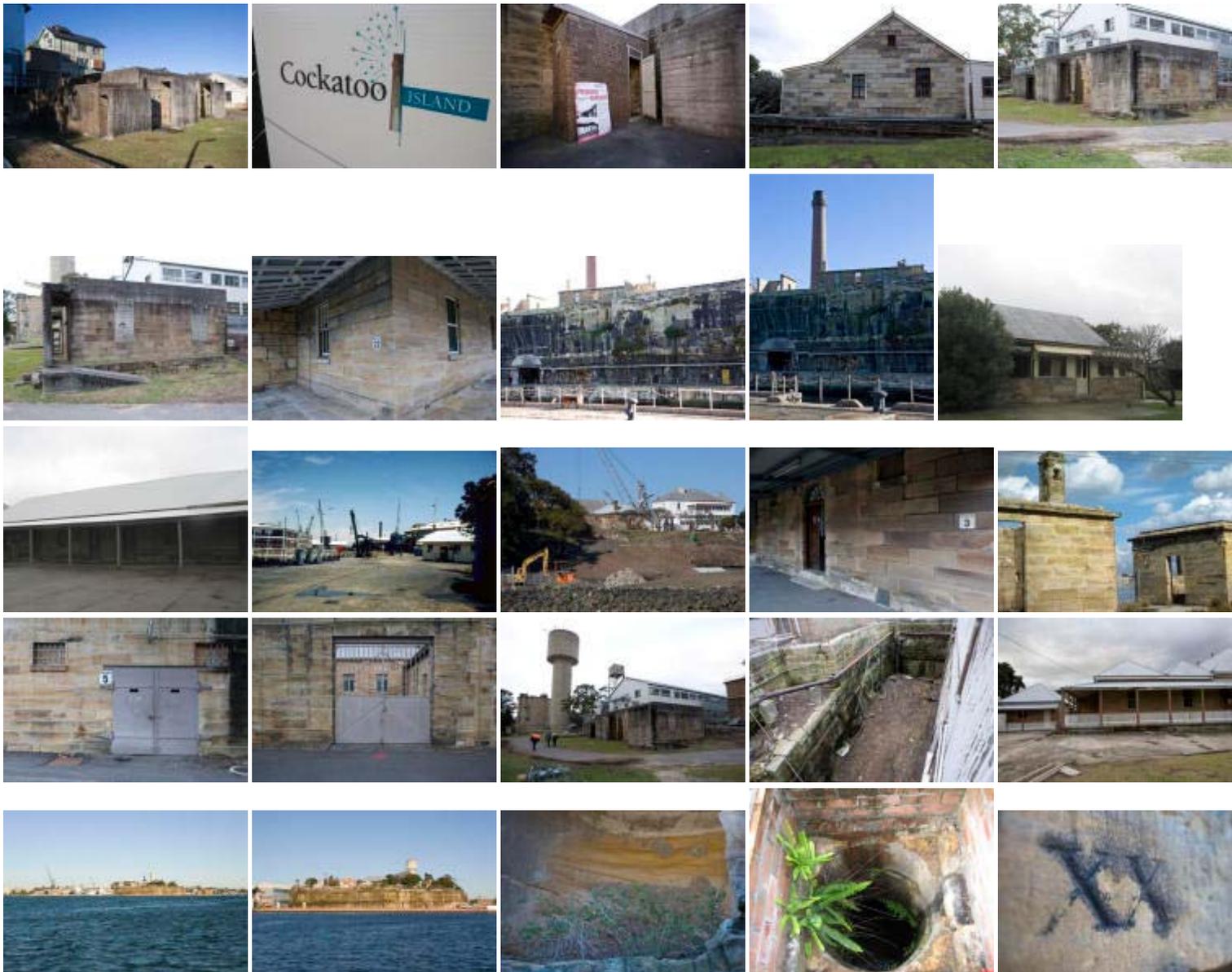
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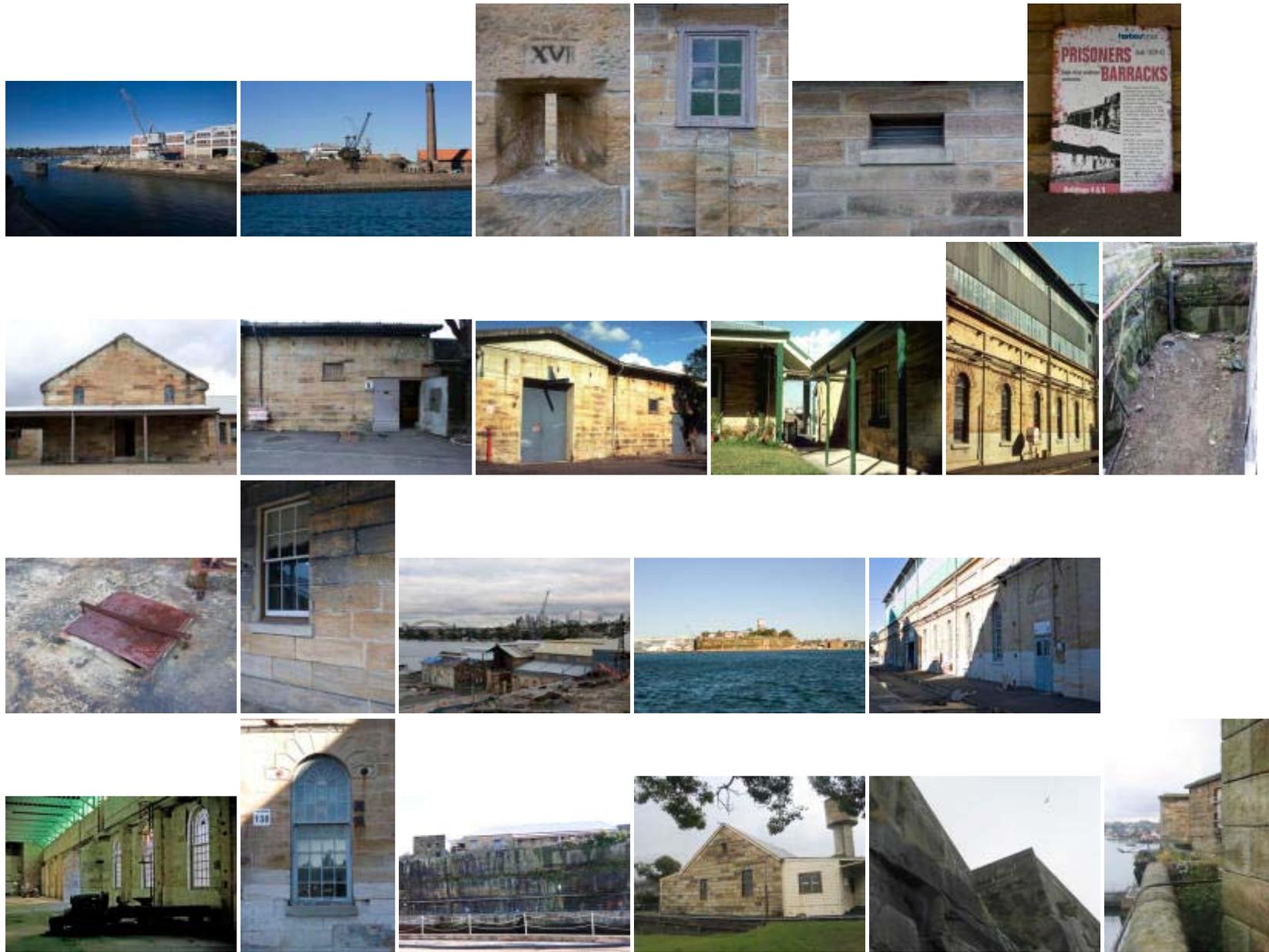
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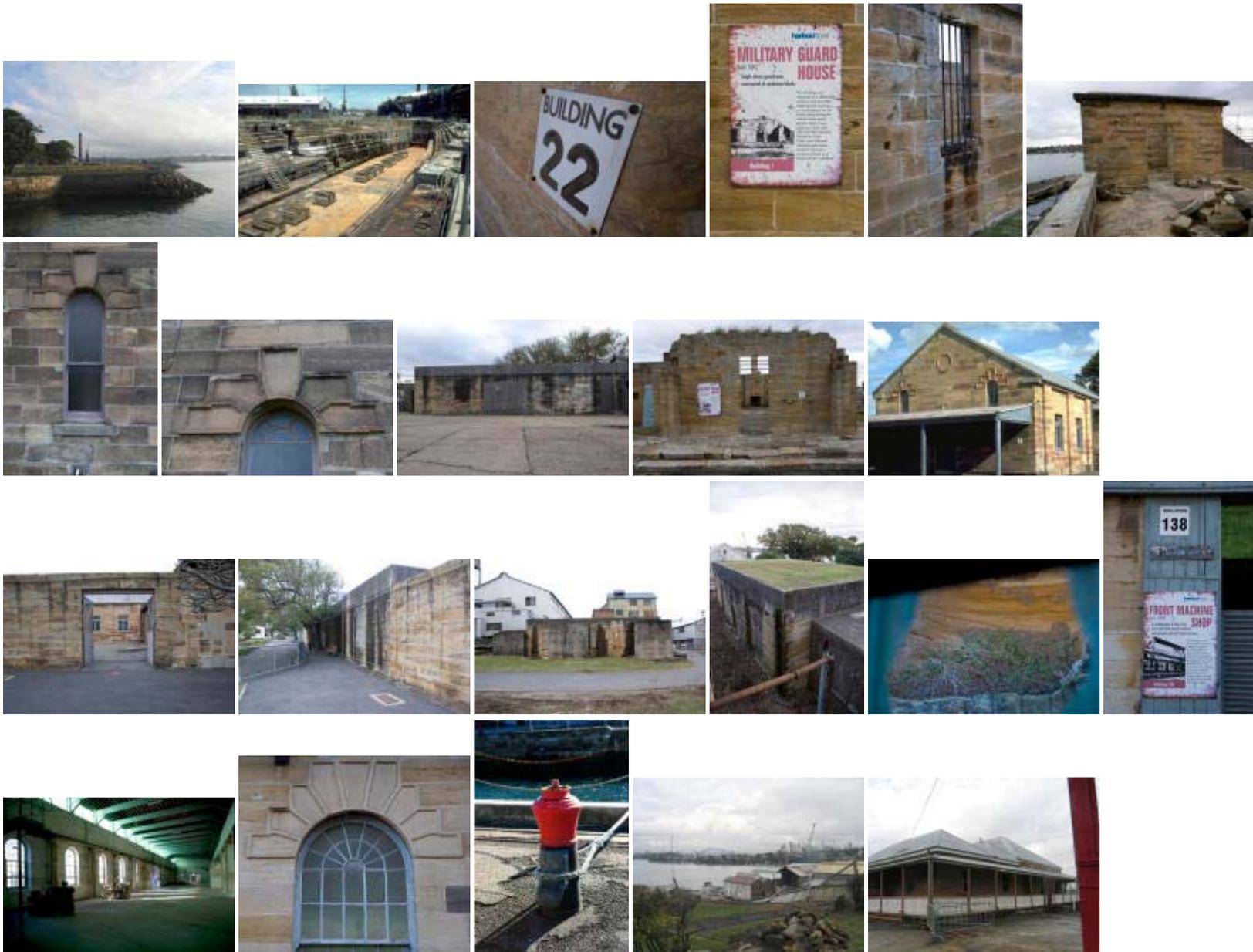
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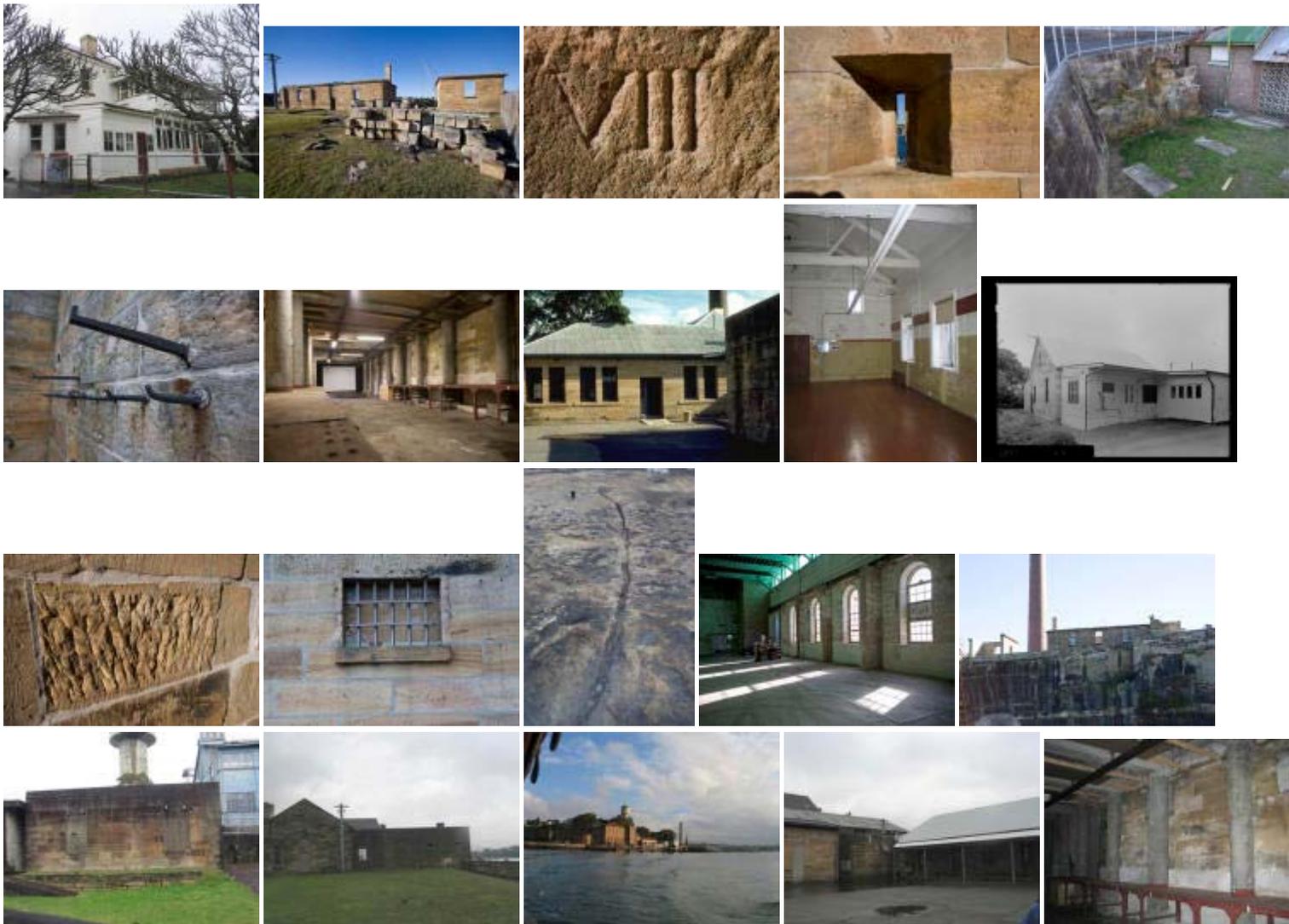
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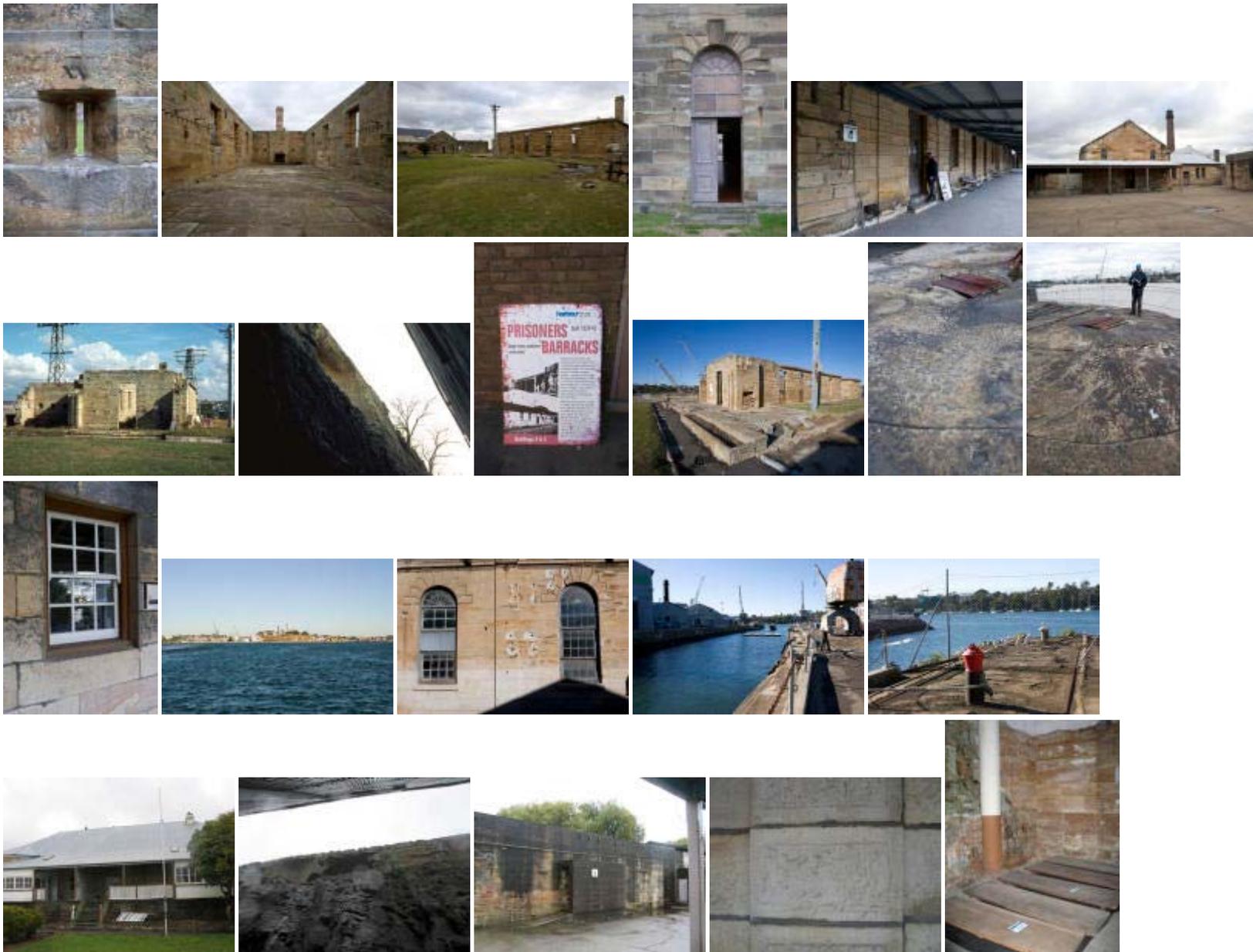
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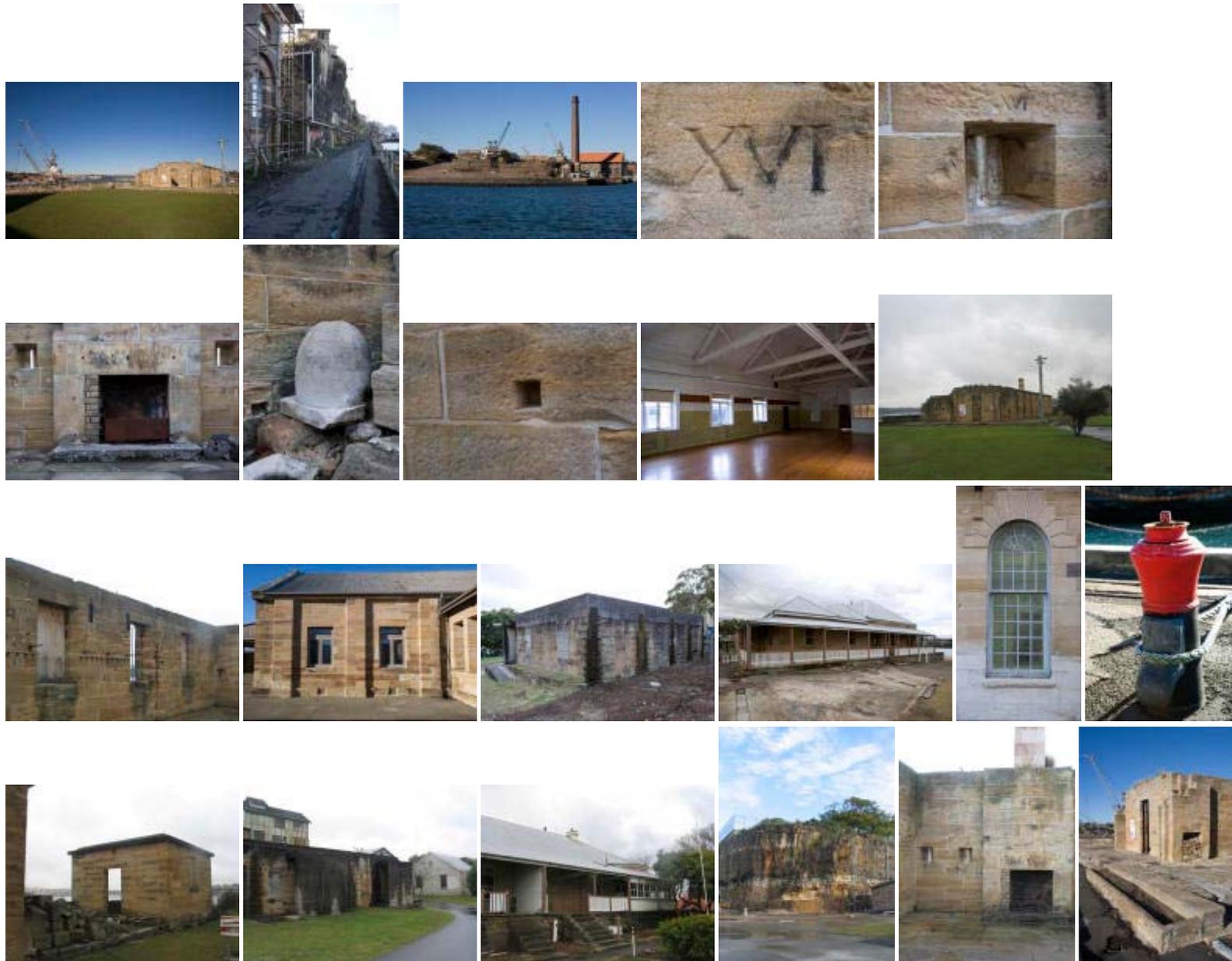


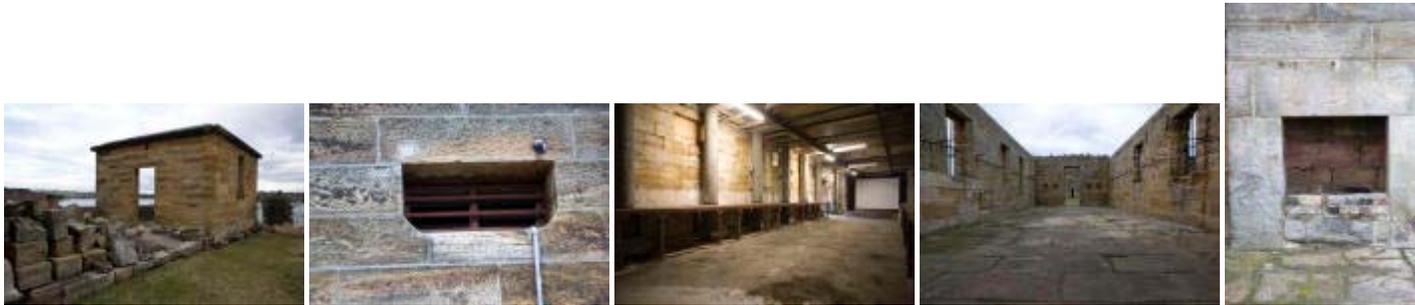
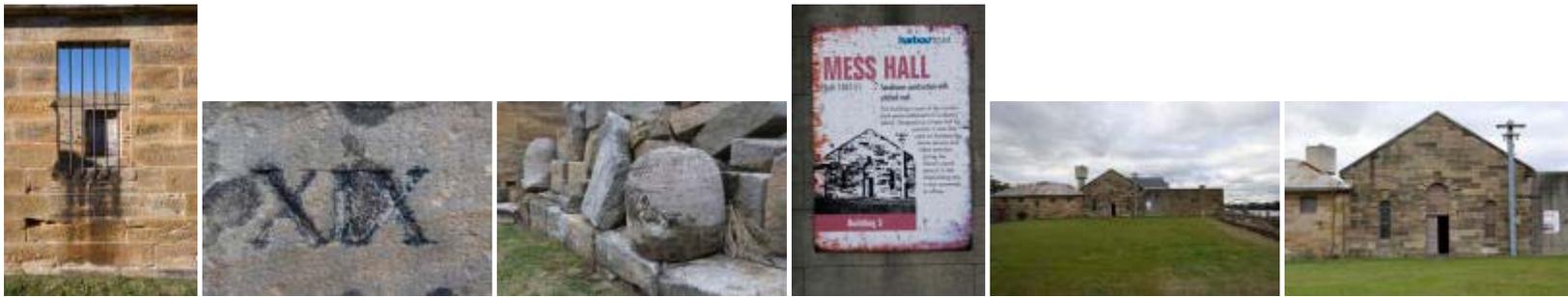












List	National Heritage List
Class	Historic
Legal Status	Listed place (01/08/2007)
Place ID	105928
Place File No	1/12/022/0089

Summary Statement of Significance

Cockatoo Island is highly significant for its associations with convicts and the nature and extent of its remains demonstrate the principal characteristics of a dual use convict site where incarceration is combined with hard labour.

Cockatoo Island operated as a penal establishment from 1839-69, primarily as a place of secondary punishment for convicts who had reoffended in the colonies. Convicts sent to Cockatoo Island were subject to harsh living and working conditions and the place is outstanding as a site of severe punishment and labour. The main form of hard labour on the Island was quarrying, labouring and construction. Convicts excavated 580 000 cubic feet of rock creating 45 feet (14 metre) sandstone cliffs to prepare an area to construct a dock. The Fitzroy Dock was constructed between 1839-1847 and is the only remaining dry dock in Australia built using convict and prisoner labour. Fitzroy Dock was strategically situated on Cockatoo Island to provide services to the Royal Navy which at that time had no depot in the South Pacific.

Convicts also constructed impressive underground silos to store wheat. These were hand hewn in rock and averaged 19 feet (5.8 metres) deep and 20 feet (6 metres) in diameter. The silos were built in response to the severe drought of 1837-39 and were part of a strategy to reduce the colony's reliance on infrequent grain shipments.

Cockatoo Island contains an extensive suite of extant buildings and fabric related to the administration, incarceration and working conditions of convicts and has considerable potential to contribute to our understanding of the operation of a convict industrial site.

Cockatoo Island is also important to the nation as a pre and post Federation shipbuilding complex. It operated for 134 years between 1857-1991. It was Australia's primary shipbuilding facility for much of this time and contributed significantly to Australia's naval and maritime history. It was Australia's first naval dockyard for the Royal Australian Navy (1913-21) and continued to support and build ships for the Navy through two World Wars, Korea and Vietnam. It retains extensive fabric associated with ship building (including the Fitzroy and Sutherland docks). The place demonstrates the principal characteristics of a long running dockyard and ship building complex including evidence of key functions, structures and operational layout. Cockatoo Island contains the nation's most extensive and varied record of shipbuilding and has the potential to enhance our understanding of maritime and heavy industrial processes in Australia from the mid nineteenth century.

Official Values

Criterion A Events, Processes

Cockatoo Island is a convict industrial settlement and pre and post-federation shipbuilding complex. It is important in the course of Australia's cultural history for its use as a place of convict hard labour, secondary punishment and for public works, namely its history and contributions to the nation as a dockyard.

Fitzroy Dock is outstanding as the only remaining dry dock built using convict and prisoner labour and it is one of the largest convict-era public works surviving in Sydney. The dock was the earliest graving dock commenced in Australia and was one of the largest engineering projects completed in Australia to that time. Convicts excavated 580,000 cubic feet of rock creating 45 foot (14 metre) sandstone cliffs that extended around the site just to prepare the area for the dock, a huge technical achievement in itself.

The dockyard's lengthy 134 years of operation and its significance during both world wars, and in Australia's naval development and service as the Commonwealth dockyard all contribute to its outstanding value to the nation. It is the only surviving example of a 19th century dockyard in Australia to retain some of the original service buildings including the pump house and machine shop. The powerhouse, constructed in 1918, contains the most extensive collection of early Australian electrical, hydraulic power and pumping equipment in Australia.

The surviving fabric related to convict administration includes the prisoners' barracks, hospital, mess hall, military guard and officers' room, free overseers' quarters and the superintendent's cottage. Evidence of convict hard labour includes the sandstone buildings, quarried cliffs, the underground silos and the Fitzroy Dock.

Cockatoo Island's dockyard, through its contribution to Australia's naval and maritime history, demonstrates outstanding significance to the nation. Fitzroy Dock is the oldest surviving dry dock in Australia operating continuously for over 134 years (1857-1991). The dockyard has direct associations with the convict era, Australia's naval relationship with its allies (particularly Britain during the nineteenth and early twentieth centuries) and Australia's naval development, especially during the First and Second World Wars. Cockatoo Island's development into Australia's primary shipbuilding facility and Australia's first Naval Dockyard for the RAN (1913-21) further demonstrates its outstanding importance in the course of Australia's history.

Criterion C Research

There has been considerable archaeological investigation on Cockatoo Island by the Sydney Harbour Federation Trust. This has indicated that it has significant research potential in terms of enhancing the knowledge of the operation of a convict industrial site and a long running dockyard.

The surviving archaeological elements of now demolished or obscured structures and functions of the dockyard, in particular the remains of docks, equipment, warehouse and industrial buildings and a range of cranes, wharves, slipways and jetties, have potential to illustrate and reveal the materials, construction techniques and technical skills employed in the construction of shipbuilding and dockyard facilities that are no longer available through other sources in Australia. The archaeological resources also have importance in demonstrating changes to maritime and heavy industrial processes and activities in Australia from the mid-nineteenth century.

The dockyard contains the earliest, most extensive and most varied record of shipbuilding, both commercial and naval, in Australia. This is supported by extensive documentary evidence in the National Archives.

Criterion D Principal characteristics of a class of places

Cockatoo Island represents some of the principal characteristics of Australian convict sites including: hard labour as a means of punishment and deterrence to the British 'criminal class'; use of convict labour for the establishment of the colony through public works; and secondary punishment for re-offending convicts.

Cockatoo Island is of outstanding importance to the nation as a site of severe punishment. The level of severity is expressed through the policy to extend convicts with 'no indulgence beyond the strict Government ration'. The fundamental purpose of Cockatoo Island was to be the worst possible place imaginable and the ultimate deterrent and is a fine example as a symbol of the harsh treatment used to deter the 'criminal class' in Britain. Fitzroy Dock and its associated excavation and buildings are outstanding examples of the use of convict and prisoner labour for public works. The underground silos, remaining evidence from quarrying and the group of convict built structures on the island are also a testament to public works undertaken by the convicts. Although convicts under various sentences ended up at Cockatoo Island, it was established specifically as, and primarily was a place of secondary punishment for re-offending convicts.

Cockatoo Island critically represents the principal characteristics of a dual use convict site, one that both incarcerates convicts and provides them with hard labour.

The values expressed at Cockatoo Island are important for their ability to demonstrate the function, planning layout and architectural idiom and principal characteristics of an imperial convict public works establishment of the 1840s; and the functions, planning layout and architectural idiom and principal characteristics of a range of structures and facilities associated with the development and processes of the dockyard and shipbuilding industry over a period of 134 years.

Description

In its original state it was 12.9 hectares in size, however it has been expanded to 17.9 hectares through cutting, filling and reclamation. Almost all of the original vegetation of the island has been removed, and the current vegetation includes plants growing on the quarried cliff faces and planting of exotic species in the garden areas. Its landscape is articulated by man made cliffs, stone walls and steps, docks, cranes, slipways and built forms (GAO CMP:2005:p2).

Cockatoo Island consists of a sandstone plateau up to 79 feet (24 metres) above water level that has been gradually reduced from its original extent by quarrying for sandstone building blocks and excavation for docks and buildings. Spoil from these activities over time has been used to help create the surrounding flat apron areas.

The plateau area can be divided into three main areas dictated by the convict era layout. The western end comprises the **prisoners barracks and hospital** (1839-42) forming three sides of an open courtyard with the **mess hall** (1847-51) comprising the fourth side. West of the barracks a formal lawn encloses the roofless **military guard house** (1842), and the **military officers quarters** (1845-57).

The central part has the two **Free Overseers Quarters** and evidence of the Prison Quarry area. The latter has been built over by a group of six large dockyard buildings. The **Electrical shop** is built in the area excavated for the water cisterns. These large buildings plus two concrete elevated water tanks are part of the island's distinctive silhouette.

The eastern end of the plateau is the residential area comprising the remaining convict era structures of the **Superintendent's residence** substantially enlarged in 1860, the **Clerk of Petty Sessions** residence is adjacent to Biloela house. A second free overseers quarters was converted to an air raid shelter in 1942. The rock hewn **silos** are visible only as covers at ground level and two half silos are exposed from prior quarrying. The symmetrical silos are bottle shaped, and an incision on the surface of the rock indicates the diameter of the silo below ground, averaging 19 feet (5.8 metres) deep and 20 feet (6 metres) in diameter. Additions were made to three Federation style residences constructed by the dockyard in 1915-16.

The lower part of the island, which surrounds the central area, has been mostly levelled and developed for dockyard purposes and still accommodates over 80 industrial buildings, concrete pads from demolished buildings, cranes, dry docks and wharf related structures. Many buildings and wharves were demolished after the closure of the dockyard, and this has resulted in large open areas on the northern and eastern foreshores. A detailed description of the remaining buildings, machinery and equipment associated with the dockyard can be found in the Godden Mackay Logan Conservation Management Plan, February 2006.

The apron areas beneath the plateau can also be divided into distinct precincts.

The southern area with the two docks Fitzroy Dock and Sutherland Dock:

Fitzroy Dock is an excavated dry dock 472 feet (144 metres) in length and maximum beam of vessel which could be docked is 49 feet (14.8 metres). Its sides are lined and stepped with sandstone masonry blocks to facilitate shoring of ships and access to ships for maintenance and repair. The dock can be pumped out by the electrical pumping plant located in the Powerhouse building and is connected to the pump wells by a deep conduit alongside the Sutherland Dock. Twelve of the original 15 gun barrel bollards remain in place (three are held in storage). The present caisson was completed by the dockyard in July 1932.

The **Sutherland Dock** is an excavated dry dock lined with bluestone concrete blocks (partly replaced by new concrete in the late 20th century). The dock is 686 feet (209 metres) long when the caisson is in the inner fit, 89 feet (27 metres) in breadth and the depth of the water over the sill at high tide is 32 feet (9.75 metres). The lower altars are bluestone concrete, the broad altars and copings are granite and the upper altars sandstone ashlar. A sliding steel caisson was installed in 1975 to replace the original wrought iron caisson.

The eastern area with the large group of interconnected sheds abutting the convict built **Steam Workshop** built at the same time to support the Fitzroy Dock. The northern part of this apron has had its buildings demolished (1991) except for the **Administration Building** adjacent to the Parramatta wharf to the main point of entry to the island.

The northern apron is also devoid of its main buildings and is now a grassed area ending in the two concrete slipways. At the western end of the island is the brick **Powerhouse** with its landmark brick chimney.

History

Unless otherwise specified, the history is sourced from the Godden Mackay Logan and Government Architects Office CMPs, 2006.

In the early 1820s convict assignment was increased to provide cheap labour to free settlers and to relieve the burden on the British Treasury. For those who continued to offend, or whose crimes were such that they could not be assigned, life was often much harder. A report from Governor Bourke in 1837 on the overcrowded secondary punishment penal establishment at Norfolk Island stated the system of convict management produced 'no real reformation of heart'. This resulted in passing of *'An Act for the Conditional remission of Sentences of Convict transported to Norfolk Island and Moreton Bay and to enforce the conditions thereof'* (The Public General Statutes of New South Wales:1838-46). The Act substituting hard labour for transportation to a place of secondary punishment was introduced in June 1838. Secondary offenders 'of good conduct' who had been sentenced by the colonial courts to Norfolk Island or Moreton Bay could earn conditional remission of parts of their sentences by working in irons on the roads or other public works. The Act made labour available for public works where it was most needed, and remitting sentences reduced costs by removing men from the convict system early. In a climate of changing views about the object of punishment, it also provided a rather different opportunity for prisoner reform (2005 CMP: 2005:16). Cockatoo Island was selected by Governor George Gipps as the ideal location for a place of hard labour; isolated, easy to provision and secure, but not distant and so was 'under the very eye of authority'.

Convict settlement of Cockatoo Island 1839 - 1841

In February 1839, under direction of Governor Sir George Gipps, an initial contingent of sixty commuted prisoners from Norfolk Island was sent to Cockatoo under military escort. The initial establishment was a convict stockade, worked by men in irons, with 'no indulgence beyond the strict Government ration' to construct the convict establishment. By May, convict numbers had increased to 167. The island had ample supply of sandstone for quarrying and more permanent prisoners barracks commenced. Convicts constructed a wharf to receive essential supplies of goods and provisions, extensive terraced gardens and walling and with no fresh source of water, cut water tanks in the rock above the escarpment. In response to drought, fluctuating wheat prices and infrequent shipments of grain to the colony, Governor Gipps ordered convicts to excavate up to 20 grain silos by hand in solid rock to store grain for future use in the colony. This was later (1841) seen by British Government as an interference with free market forces and all grain was ordered to be sold.

In 1840 transportation to New South Wales was suspended, but it was to be many years before all its convicts ceased to be a burden on the British Treasury. The majority of those who had been transported to New South Wales were assigned, or had tickets of leave, but there remained about 5 000 prisoners who were still under punishment, or who through illness or disability were still maintained by the government.

Governor Gipps responded to the considerable pressure for convict accommodation by gazetting Cockatoo Island in 1841 as a place for the reception of male offenders under sentence of transportation (GAO CMP p4(2.1.6)). Transportation to New South Wales had ended, but the worst offenders were now to be housed much closer to the heart of the colony.

The second building phase – 1841-44

With an increasing workforce, the second phase of building construction included permanent accommodation for the military guard and a combined guard house and barracks for 56 soldiers. Two cells under the cookhouse and a range of twelve solitary cells was completed in 1843. The cells were excavated out of solid rock and accessed by ladder through a trap door from above. By 1844 all of the major penal buildings on Cockatoo Island were complete.

In 1842 there were 342 prisoners on the island. With accommodation already overcrowded it was difficult to carry out the only form of classification that had been ordered by the Governor, to keep the Norfolk Island men separate from those who had been sentenced to transportation (State Records NSW in GAO CMP 2005: p20).

The numbers decrease, and increase

Captain Alexander Maconochie's social experiment in penal reform on Norfolk Island meant that it solely received prisoners newly arrived from Britain. Those convicted in New South Wales of transportable offences were sent to Cockatoo Island. The experiment was abandoned in 1844 and all doubly convicted prisoners under sentence of transportation on Cockatoo Island were sent to Norfolk Island. As the remaining convict population of the colony decreased rapidly in the 1840s, the population on Cockatoo Island did likewise, to 85 by 1847. By this time there were no prisoners trustworthy enough to serve as overseers, an integral part of the system. In total, about 1 440 prisoners had been brought to Cockatoo Island from Norfolk Island, the majority of whom had their sentences commuted. Their conduct, Governor Gipps reported, 'both on the Island and after their release from it, has been such as fully to vindicate the Act, indeed to prove in a remarkable degree the policy no less than the mercy of it.' (GOA CMP:2005:21).

In October 1847 Earl Grey sent instructions for as many prisoners as possible to be given tickets of leave or conditional pardons, to relieve the government of the expense of their upkeep. Those who could not be released on such terms would be sent to Van Diemen's Land. Once again, insufficient accommodation for this in Van Diemen's Land resulted in the use of Cockatoo Island. Norfolk Island would be used for convicts still serving their original sentences and requiring strict coercion, while secondary offenders and those sentenced to punishment, deprived of their tickets of leave or returned from private service, would be placed on Cockatoo Island (2005 CMP: 21).

As Cockatoo Island changed from a British penal establishment to a colonial one, the number of civil officers employed in its administration increased. From 1839 to 1847 the island was run by the Superintendent and his assistant, with security maintained by the military guard and prison labour under the Engineer's Department. All other tasks necessary to run the penal establishment, including the supervision of labour, were carried out by prisoners (2005 CMP: 26).

A dry dock to serve the British Navy

As the population of the colony grew, Governor Gipps among others hoped that Port Jackson might become a naval station for the British Fleet. Cockatoo Island was a sheltered, easily accessible but safe and defensible location surrounded by deep water with a workforce that had been sentenced to hard labour, and identified by Governor Gipps as a the best place in Sydney Harbour for a naval establishment (GAO CMP:2005:p22). Although not sanctioned until 1847, Governor Gipps directed convicts to begin clearing and preparing the island for construction of a dry dock in 1845 (Birmingham:1984:p20). Convicts removed large sandstone rock cliffs with an average height of 45 feet (15 metres), just to clear a level space large enough to accommodate the dock. Construction of the dock commenced in 1851 (Parker:1977:p13). As a distant and remote British settlement, shipping was a vital lifeline for the Australian colonies. The construction of a dry dock within the harbour of Port Jackson 'would be of great and permanent advantage to the Colony' and would be built using prisoner labour (2005 CMP: 22). The Royal Navy contributed to the cost of the dock on the condition the Royal Navy ships had preferential use rights (Jeremy:1998:p19). Gother Kerr Mann was responsible for the design and construction of the dockyard. Work on the dock progressed more slowly than anticipated, with a largely unskilled, and often unwilling prisoner workforce. A strong demand for labour in the Colony following the gold rush, combined with Cockatoo Island's penal status meant that free labour was not an option. The Resident Engineer, under pressure to have the dock completed promptly so it could receive vessels, pushed the prisoners hard, but some refused to work after hours. Alongside the dry dock were engine houses, a police barracks, offices a chapel and a mess room. The dock was finally completed in 1857 and the first ship to use the dock was the survey frigate HMS *Herald*, which docked on 1 December 1857 (Jeremy: 1998:p9). Of equal importance with the dock were its pumps, the machinery for ship repairs and the workshops in which to the house them. By c 1858-59 the engine house and six bays of workshops had been completed (2005 CMP: 26). As soon as the

dry dock was finished there were plans to extend it and by 1858 the work was under way. Like the original dock, this took a long time as more of the adjacent cliff had to be excavated.

Overcrowding in the penal establishment became a regular problem and by 1861 around 500 convicts were held in accommodation built for no more than 328 (Kerr:1984:p26). Overcrowded wards and lack of supervision also lead to physical suffering through lack of fresh air and practices 'grossly obscene' between the male prisoners (Kerr:1984:p26).

Dual use – Public Works and Social Institutions

The period from 1869 saw the administration of the prison and dockyard split. The land above the escarpment remained in institutional use under the newly appointed NSW Department of Prisons and the foreshores became dedicated to dockyard use under the Public Works Department.

Disturbing reports concerning the harsh treatment of prisoners had caused considerable public concern for years and in 1869 the penal settlement was disbanded and prisoners were transferred to Darlinghurst. The name was changed to 'Biloela' (Aboriginal for cockatoo) in order to try to present a new image.

From 1871 to 1888 the prison barracks became an industrial school for girls and a separate reformatory for girls under 16 convicted of a crime (Kerr:1984:p9). In 1871 the wooden sailing ship, the NSS *Vernon* moored at Cockatoo Island for the training of delinquent, homeless or orphaned boys in seamanship. An initiative of Henry Parkes, the ship was administered by the Department of Education and housed up to 500 students (Kerr:1984:9). The boys were given an area on the island for recreation with swimming baths and a vegetable garden to tend (Parker :1977:p8). The dilapidated *Vernon* was replaced in 1891 by the NSS *Sobraon* which remained until 1911. Although kept separate from the dock, later the more trustworthy students were given trade training in some of the dockyard workshops on ship building and repairs (Parker:1977: p8). The girls reformatory was relocated to Watson's Bay in 1879 and the industrial school for girls closed in early 1888.

By the time the last extension of the Fitzroy Dock was completed in 1880, the NSW Parliament, keen to see Australia capable of serving bigger vessels in the Royal Navy, decided to build a new dock (GML CMP:2006:2). Construction of the Sutherland Dock commenced in 1882 and was completed in 1890. It was built by free labour under the guidance of a young engineer, Louis Samuel, who died in 1887 at the age of 26. The work was completed under the supervision of his younger brother Edward. The new dock was a spectacular sight. It was a significant engineering achievement designed to be one of the most advanced docking facilities in the southern hemisphere and is reported to have been able to accommodate the largest ships then in service in the world (Jeremy:2006:1). In an official NSW Government publication in 1886, the Sutherland Dock is referred to: 'The dock is the largest single graving dock yet constructed, and will be capable of receiving the largest vessel afloat' (Docks, Slips and Engineering Establishments of Port Jackson:p5).

With closure of the prison, departure of the school ship and increased international shipping, the shipbuilding, ship repair and engineering activities expanded rapidly and dockyard facilities spread over the whole island. The dockyard at Cockatoo Island was the only one in Australian which was big enough to accommodate (after modification) the flagship of the new Australian Navy, the battle cruiser HMAS *Australia*. The preoccupation with keeping the Royal Navy engaged with the Colonies port facilities would continue into the new century.

Return to a gaol 1888-1909

Overcrowding elsewhere in the colony forced the return of prisoners to Cockatoo Island on 8 June 1888 (Kerr:1984:p11). 'Biloela gaol' was a temporary establishment to hold habitual petty offenders, vagrants and prostitutes. Although considered 'unsuitable' and 'temporary' they were to remain in penal use for a further 20 years (Kerr:1984:p26). Men were accommodated in convict barracks and females housed in buildings in the lumber yard. By 1889, Biloela housed 85 male and 106 female prisoners, with approximately two thirds in some form of employment. By 1896 Biloela could claim to be the oldest establishment reformatory in Australasia, with 560 prisoners.

Following Federation in 1901 the name returned back to and has since remained Cockatoo Island (Parker:1977:p5). The male prison section was closed in 1906 and prisoners were transferred to the new Long Bay Gaol. In 1909 female prisoners were similarly relocated to Long Bay. *NSS Sobraon* was relocated in 1911 by the Commonwealth Government for use as a naval training ship and the boys were moved to a boys farm at Gosford (Parker:1977:p5).

Between 1904 and 1908 extensions were made to the shops and yard plant, new slipways were built, and cranes and other machinery were acquired. The formation of the Australian Navy (the RAN from 1911) opened the way for local construction of warships. The first RAN warship built at Cockatoo Island was the destroyer HMAS *Warrego*, completed in 1912. *Warrego* was built in pieces in Scotland and re-assembled in Sydney.

Commonwealth-owned Dockyard

In 1913, the Commonwealth Government purchased Cockatoo Island for the building of major naval vessels as well as for ship repair (Balint et al:1982:p47). It was the first Naval Dockyard for the Royal Australian Navy (RAN) and continued to support and build and service ships for the Navy for some 80 years through two World wars, Korea and Vietnam. In 1928, the Commonwealth Shipping Act 1923 stated that 'where possible, all repairs, construction etc. of Commonwealth vessels to be at Cockatoo Island' (Balint et al:1982:p49). The first steel warship to be wholly built in Australia, HMAS *Huon*, was completed on the island in 1916. Cockatoo dockyard also built the first steel ship ever built in Australia, the tug *Hinton*, in 1886, assembled from imported components.

The period from 1910-19 saw the greatest expansion of the facilities on Cockatoo Island since construction of the docks. Prior to World War One 800-900 men were employed on Cockatoo Island, by the end of the war this had increased to a maximum of 4 085 in December 1919 (Jeremy:1998: p250). In 1918 a large powerhouse and chimney was built to provide electricity to the island. The building housed steam-turbine generating plant, the dock pumping machinery and hydraulic pumps and air compressors for dockyard services.

With the outbreak of World War Two development of the dockyard increased dramatically. From 1933 the dockyard was leased from the Commonwealth by Cockatoo Docks and Engineering Co Ltd and during World War Two the workforce, which reached an average of 3 043 in 1942, was employed on the island fitting out troop ships, building naval vessels and repairing allied warships (Birmingham: 1984:p11,12). After the war the lessee company became a member of the world-wide Vickers Group and dockyard undertook a continuing programme of re-converting ships for commercial service, modernising warships and constructing warships for the RAN, including the construction of the first all-welded warships to be built in Australia. Cockatoo Island dockyard also built the propulsion machinery for most of these ships. Cockatoo Dockyard was the largest steam turbine builder and repairer in Australia, servicing turbines for ships, power plants, sugar mills, oil refineries and other industries throughout Australia.

For over a hundred years, since the late 19th century, Cockatoo Dockyard contributed to the development of Australia by producing products for power stations, bridges, dams, ports, mines and major projects including the Snowy Mountains Scheme. From 1960 to 1991 the dockyard undertook a long programme of submarine refitting for which special

facilities were built in 1969-71. For the last 20 years of operation the refit and maintenance of the RAN's Oberon-class submarines was the main role of the dockyard during which time it had one of the most advanced (non-nuclear) submarine refit facilities in the world.

In its 137 year history, Cockatoo Dockyard docked or slipped some 12 000 vessels, more than any other dockyard in Australia, it built Australia's first modern warship and the largest (at the time) roll on/roll off passenger ship in the world. Cockatoo Dockyard introduced the first formal quality control system in any Australian dockyard and trained many thousands of young Australians through the dockyard apprentice training scheme. The combination of such a wide range of work in one establishment reflects the strength of the position of Cockatoo Dockyard in the heavy engineering industry of the day.

In the run-down prior to closure of the dockyard at the end of 1992, most Commonwealth and company assets were sold, a number of buildings were sold and demolished for scrap, and the docks flooded. Sale of the island was proposed. 'Friends of Cockatoo Island' a group of mainly ex dockyard employees fought the sale and the island became vested in the Sydney Harbour Federation Trust (SHFT).

Condition and Integrity

Cockatoo Island has been vacant from all industrial activity since 1992 and many buildings have deteriorated during this time. The various uses of the island since the convict era have resulted in the layering of fabric and some destruction and adaptation of original fabric. The Sydney Harbour Federation Trust commissioned a survey of all external penal settlement building stonework on the island and the results show that it is in good to reasonable condition with the main areas for remediation being mortar joints and some refacing with only minimum stone replacement needed. A program of stonework repairs is scheduled to commence in 2007. Decontamination works have been completed for all buildings.

The buildings and machinery such as cranes are subject to corrosion in the exposed maritime environment and require conservation and maintenance (GMLCMP 2006:134).

The prisoner's barracks was converted to an air raid shelter during World War Two which saw a concrete roof, supported on freestanding internal concrete columns, and blast walls added to the northern and eastern wings. The sequence of finishes and bed arrangements are only partly visible, obscured in many areas by later modifications. The two wards have both been subdivided and their original volumes are not evident. The eastern quarters building has good stonework, but the building's integrity was significantly reduced through partitioning for later dockyard uses. The southern wing of the barracks, which was used as the infirmary, is in good condition and was fitted out as offices and boardroom for the dockyard. The original roof framing may exist under the existing metal roofing. The courtyard has been covered in bitumen and large puddles are formed during rain. The central division walls largely survive as does evidence of the sequence of institutional colour schemes and plugs in the walls.

The military guard room and kitchen is roofless. Stonework is in sound condition and all external metalwork, for example the iron gun racks and window bars, were conserved in 2000. There is some weed and other vegetation growth.

The mess hall is substantially intact, and the stonework is in mainly good sound condition. Pine floor boards lie on top of original flagged stone flooring, the condition of which is not known. Windows have been elongated to suit dockyard use of the building.

The officers quarters has been added to substantially over time. It is in fair to good condition. The building is divided into two units.

The free overseers' quarters is in fair to good condition and will be the subject of major conservation works (2007-08). The other remaining structure of the three dwellings, has been significantly altered in its conversion to an air raid shelter with only its external and middle interior stone walls remaining.

Biloela House has been divided into two with a wall and is in good condition. It has been re-roofed losing the original separate curved veranda roof profile. This will be rectified when future conservation works take place (2007-08). Stonework of the north and south wings is in mainly good condition.

The clerk of petty sessions cottage The original stone cottage has been extended and the whole building is in fair to good condition.

One intact **sil**o is able to be viewed and is in excellent condition. A grill covers the mouth of the silo and rain water has built up inside. No investigations have been done to date

to check the condition of the other silos.

Dockyard buildings. Over 80 buildings remain from the dockyard periods. A more detailed description can be found in the Godden Mackay Logan Conservation Management Plan 2006.

Two Dockyard Residences, two brick detailed cottages and a two storey semi detached have been conserved externally in 2001 and are in good condition.

The Drawing Office was the home of the embryonic Australian aircraft manufacturing business. The building is in fair condition and will be the subject of a program of conservation works (2007-08).

The Powerhouse Building brickwork is mostly in good condition. Repairs to windows have been completed and re-roofing will be completed in 2007 to fix current leaks. The basement area including the pumps has been pumped dry.

The Mould Loft is a steel-framed galvanized iron clad building dating from about 1910. It is possibly the only surviving full-size shipbuilding mould loft remaining in Australia, and is certainly the oldest. Recent cleaning of the floor by the SHFT has revealed the full-size body plans of the last ships lofted at the dockyard and there is evidence that lines scribed into the floor may date back to World War Two, although this is still to be confirmed. Conservation works will be completed during 2007.

The Fitzroy Dock is now filled with water. The sandstone dock has been extended and the floor reconfigured but the original stone altars and coping with gun barrel bollards remain intact. The caisson for Fitzroy dock is in excellent condition as are the 12 bollards. The stonework has been subject to extensive weathering and wear.

The Sutherland Dock stonework has been subject to extensive weathering and wear. Some of the dock's original equipment is still intact, including the steam travelling jib cranes. It is thought the condition of the Sutherland Dock caisson is good.

The Engine House workshops and Pump house, built in a number of stages suffers from rising damp (currently being treated with sacrificial render) and roof leaks. Otherwise this robust building is in fair to good condition.

The Turbine Shop group of steel framed sheds that abut the engine house workshops to the west are in fair to good condition.

The group of five buildings to the east of the engine house workshops varies from fair to good condition.

The group of buildings on the **southern apron** are mainly robust brick structures that are in good condition.

Many items of plant and machinery were sold in 1991. Demolition removed some forty buildings from the island. All slipways existing in the last decades of the dockyards operation are still present. Several other structures are no longer extant including Fitzroy Wharf, Destroyer Wharf, Plate Wharf, Coal Wharf and Cruiser Wharf. New sea walls were constructed at the site of the Cruiser, Destroyer and Plate Wharfs, and around the northern shipyard fill.

Location

About 18ha, in Sydney Harbour, between Birchgrove Point and Woolwich Point, comprising the whole of the Island to low water.

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- Volume 2: Assessment of Buildings
- Volume 3: Assessment of items of Industrial Archaeology including machines, cranes, wharves and slipways.

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Appendix B

Cockatoo Island Wharf Upgrade Design Drawings



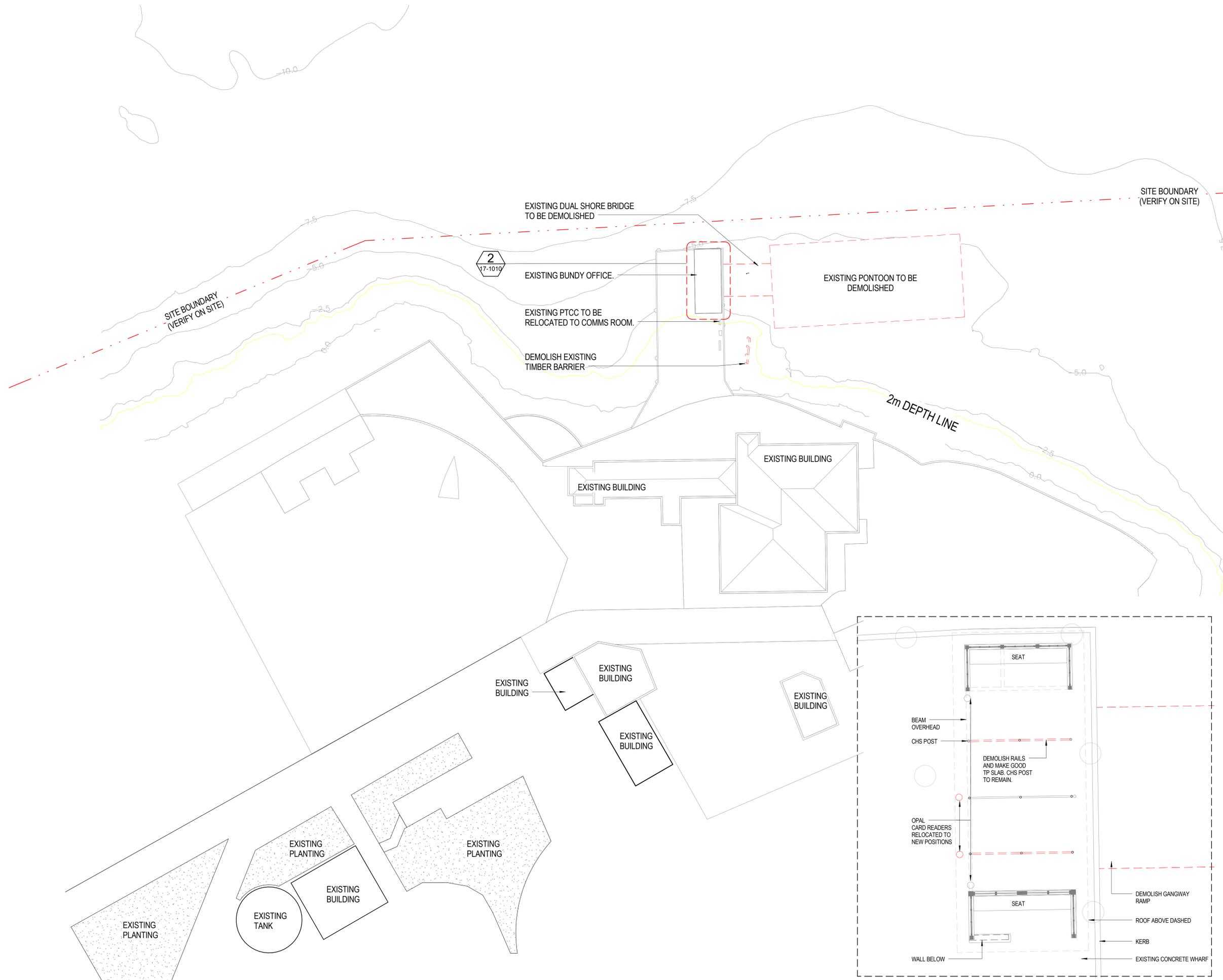
rms.nsw.gov.au



contactus@rms.nsw.gov.au



Customer feedback
Roads and Maritime
Locked Bag 928,
North Sydney NSW 2059



CONRAD GARGETT ANCHER MORTLOCK WOOLLEY

PROJECT
 Ferry Wharves Upgrade Program 2 - Cockatoo Island Wharf

CLIENT
 HANSEN YUNCKEN

DRAWING
 Demolition Site Plan

PROJECT No: 14214-17
 DRAWING No: 17-1010
 STATUS: DDR
 REV: A
 A1 SCALE: As indicated

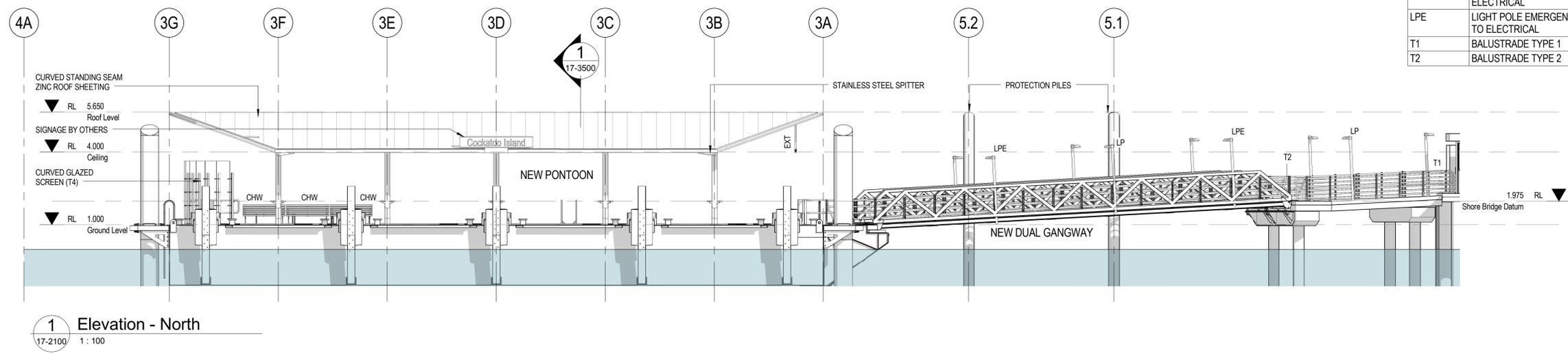
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 1 : 250

2 Plan - Former Bundy Office Building
 17-1010 1 : 50

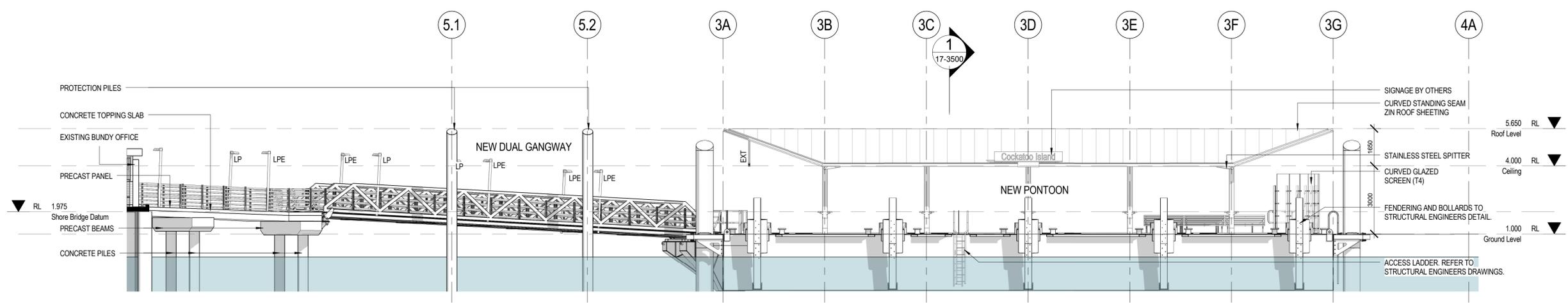


CODE	DESCRIPTION
CHW	CHAIR, WAITING
EXT	EXIT SIGNAGE - REFER TO ELECTRICAL
LP	LIGHTING POLE - REFER TO ELECTRICAL
LPE	LIGHT POLE EMERGENCY - REFER TO ELECTRICAL
T1	BALUSTRADE TYPE 1
T2	BALUSTRADE TYPE 2

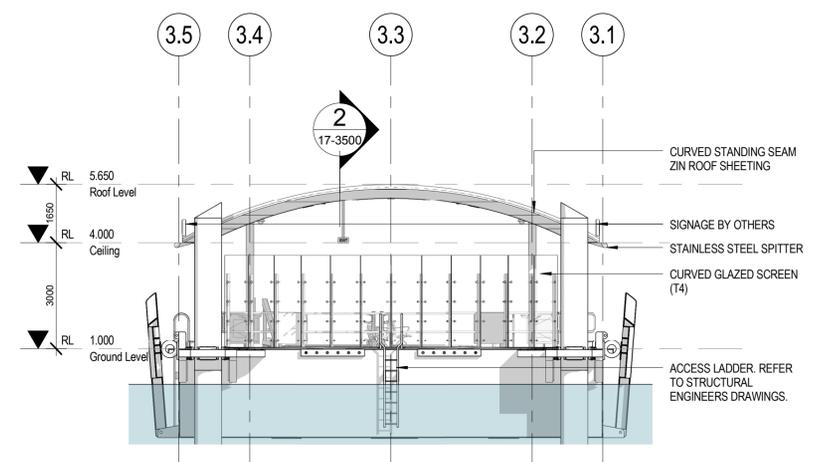
SCALE CHECK
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 © CONRAD GARGETT ANCHER MORTLOCK WOOLLEY
 mail@conradgargett.com.au ABN 49 325 121 350
 DO NOT SCALE DRAWING & VERIFY ALL DIMENSIONS AND LEVELS ON SITE
 REV DESCRIPTION DATE APPD
 A Construction Issue 19.10.16



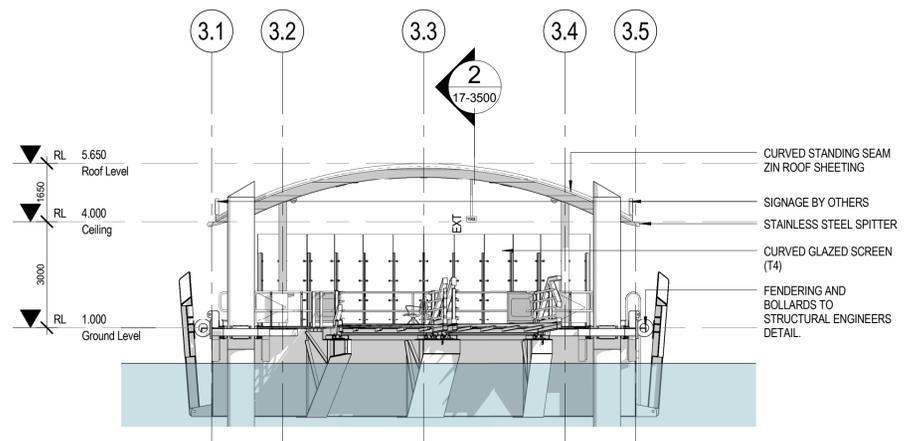
1 Elevation - North
 17-2100 1:100



2 Elevation - South
 17-2100 1:100



3 Elevation - East
 17-2100 1:100



4 Elevation - West
 17-2100 1:100

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PROJECT
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 Program 2 -
 Cockatoo Island Wharf

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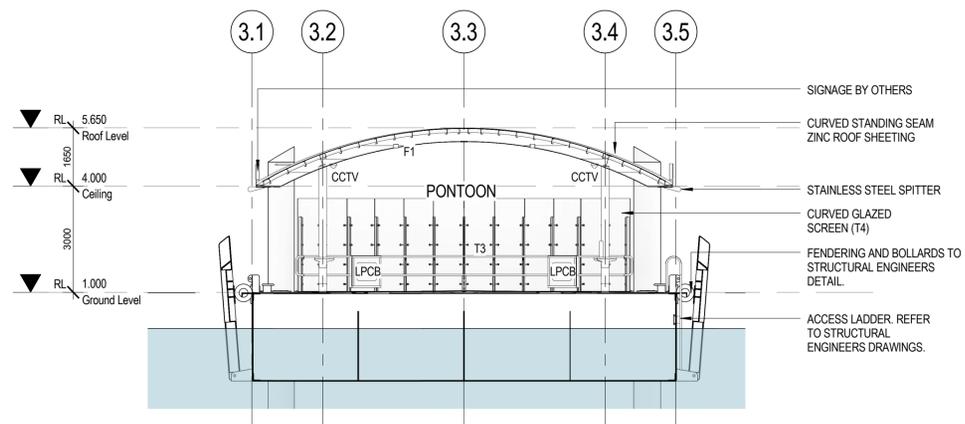
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 Elevations

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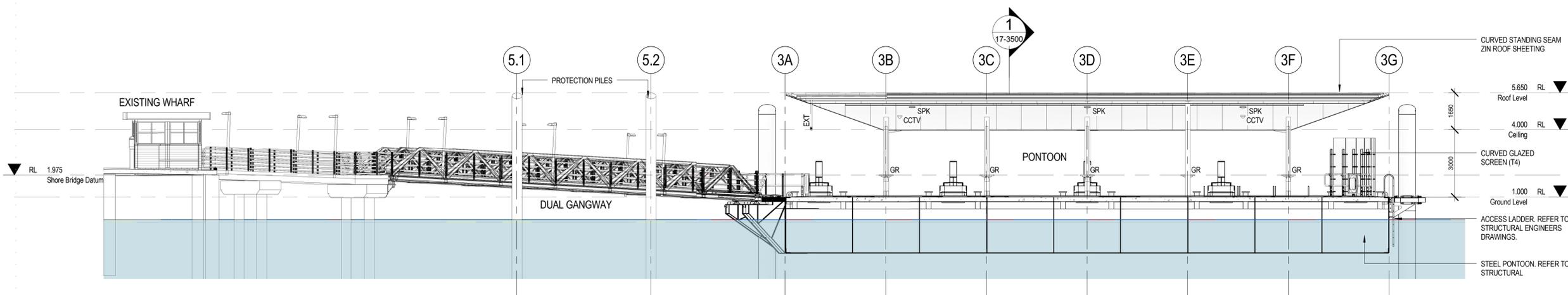
CONSTRUCTION

CODE	DESCRIPTION
CCTV	CLOSED CIRCUIT TELEVISION
EXT	EXIT SIGNAGE - REFER TO ELECTRICAL
F1	RECESSED LIGHT FITTING - REFER TO ELECTRICAL
GR	GRAB RAIL
LPCB	LIFE PRESERVER - SS CANINET
SPK	SPEAKER
T3	BALUSTRADE TYPE 3

SCALE CHECK
 0 10 20 30 40 50
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 DO NOT SCALE DRAWING & VERIFY ALL DIMENSIONS AND LEVELS ON SITE
 REV DESCRIPTION DATE APPD
 A Construction Issue 19.10.16



1 Cross Section
 17-2100 1 : 100



2 Long Section
 17-2100 1 : 100

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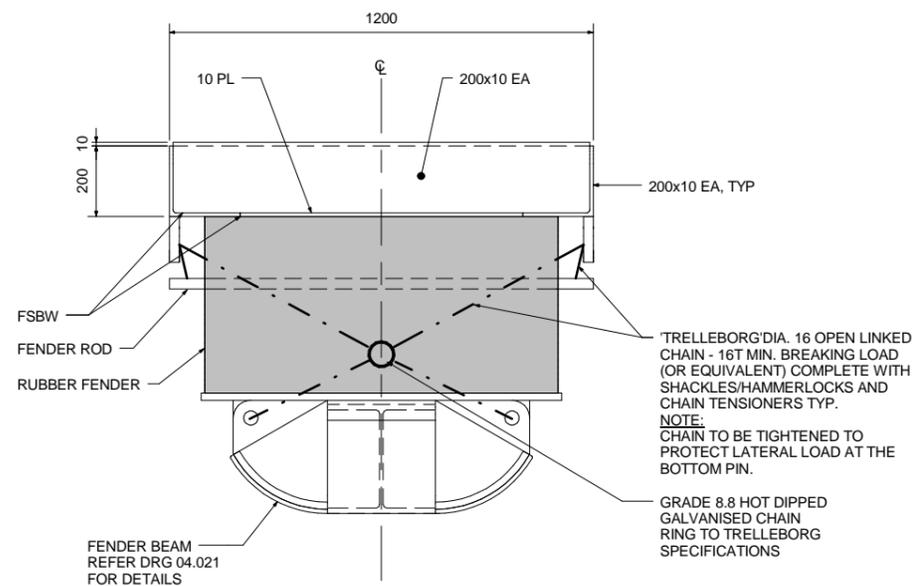
PROJECT
Ferry Wharves Upgrade Program 2 - Cockatoo Island Wharf

CLIENT
HANSEN YUNCKEN

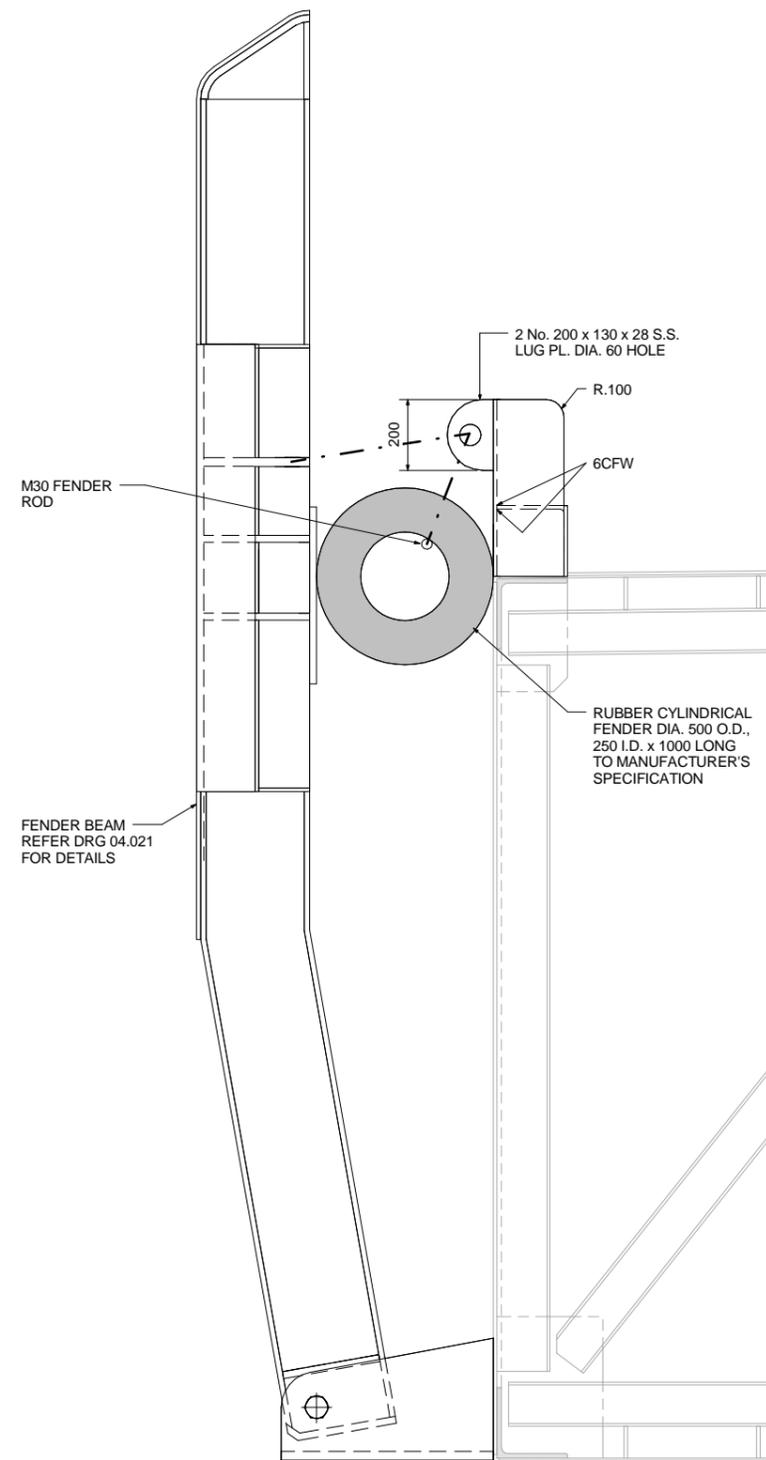
DRAWING
Sections

CONSTRUCTION

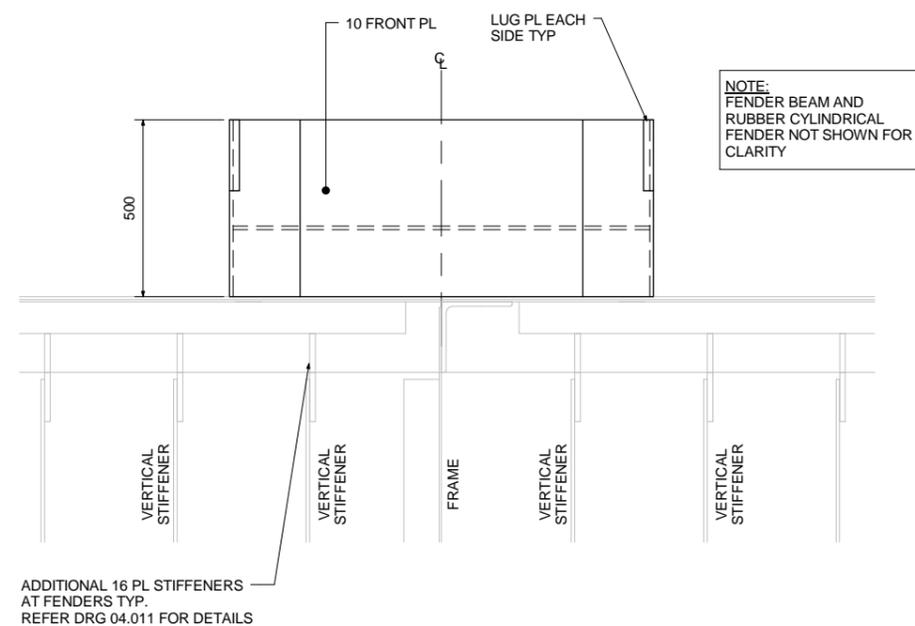
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FENDER PLAN
1 : 10 (A1)



SIDE ELEVATION
1 : 10 (A1)



FRONT ELEVATION
1 : 10 (A1)

ADDITIONAL 16 PL STIFFENERS AT FENDERS TYP. REFER DRG 04.011 FOR DETAILS

FOR CONSTRUCTION

REV	DATE	DESCRIPTION	BY	CHK	APPD
A	21.06.16	ISSUED FOR CONSTRUCTION	SC	MS	AP

REVISIONS

CLIENT

hansen yuncken
BUILDING VALUE

PROJECT:

SYDNEY WHARVES UPGRADE PACKAGE 2 COCKATOO ISLAND

DRAWING TITLE:

STEEL PONTOON FENDER BEAM ARRANGEMENT SHEET 2

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DRAWN	MN	DATE	JOB No. PA0258
AUTOCAD REF.		SCALE AT A1 AS SHOWN	
DRAWING No.		REVISION	
ST.17.04 .022		A	

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