Appendix

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Appendix J

Non-Aboriginal heritage

January 2020

Roads and Maritime Services

Western Harbour Tunnel and Warringah Freeway Upgrade

Technical working paper: Non-Aboriginal heritage

January 2020

Prepared for

Roads and Maritime

Prepared by

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Executive Summary

Roads and Maritime Services (Roads and Maritime) is seeking approval under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to construct and operate the Western Harbour Tunnel and Warringah Freeway Upgrade (the project), which would comprise two main components:

- A new crossing of Sydney Harbour involving twin tolled motorway tunnels connecting the M4-M5 Link at Rozelle and the existing Warringah Freeway at North Sydney (the Western Harbour Tunnel)
- Upgrade and integration works along the existing Warringah Freeway, including allowance for connections to the Beaches Link and Gore Hill Freeway Connection project (the Warringah Freeway Upgrade).

This report has been prepared to support the environmental impact statement for the project and responds to the Secretary's environmental assessment requirements for non-Aboriginal heritage. This report focuses on land-based non-Aboriginal heritage, and also summarises the results of the Technical working paper: Maritime non-Aboriginal heritage (Cosmos Archaeology 2020).

The assessment presented in this report has considered potential impacts to non-Aboriginal heritage items within the study area, being the construction footprint associated with surface works plus the tunnel alignment, with a 50-metre zone on either side to account for potential construction or operation impacts. The impact of the project on each heritage item is assessed, for direct, potential direct, and indirect impacts. Level of impacts on the heritage significance of each heritage item in the study area has been assessed based on the definitions and framework for assessing severity of impacts from the *EPBC Act Significant impact guidelines 1.2* (Department of Sustainability Environment Water Population and Communities 2013). Appropriate management measures are identified to avoid, minimise, and manage impacts to the heritage items.

There are 238 heritage items and two potential heritage items identified within the study area, totalling 240. These include one of world heritage significance (Sydney Opera House buffer zone), one of national heritage significance, 10 of state heritage significance, 227 of local heritage significance, and one potential heritage item which did not meet thresholds for heritage significance.

Within these heritage items, three have areas of archaeological potential identified within the study area. These are located at Yurulbin Park, Birchgrove; the BP site, Waverton; and Woodleys Shipyard, Berrys Bay (maritime archaeology only).

During design development, opportunities to avoid temporary and permanent impacts to heritage items have been considered alongside other design considerations including:

- Avoidance of direct impacts by design
- Reduction in the footprint or scale of project components
- Mitigation in the potential scale of impacts through the selection of construction methodologies.

The majority of heritage items within the study area have been assessed as having no impact or negligible impact from the project depending on their distance from construction works, or proximity to construction works that could result in indirect visual impacts. These heritage items are generally those located in the vicinity of surface works near Rozelle and Annandale, North Sydney, or adjacent to the Warringah Freeway Upgrade.

Those listed heritage items that are properties may qualify for at-property acoustic treatment. This could impact the heritage fabric or significance of the heritage item. Eligibility would be confirmed during detailed design and in consultation with the landowner.

Statements of Heritage Impact (SOHI) have been prepared for 19 heritage items, which would be directly or indirectly impacted by the construction of the project. For those heritage items situated above the tunnel alignment, they have been assessed as a group due to their proximity to each other, the similarity of impacts, and similarity of mitigation measures.

Impacts to the items above the tunnel alignment or adjacent to surface works have predominantly been assessed as being negligible to minor due to indirect impacts from settlement, vibration or changed views related to operational facilities such as noise barriers.

The proposed works within St Leonards Park would be of small or localised scale, of low intensity, along the margins of the park in the southeast, and northeast, with some of the changes being permanent and irreversible. Direct impacts would occur through construction works required for surface connections from the mainline tunnels to Falcon Street and the Ridge Street north (WHT9) construction support site. Reinstatement works following the completion of construction would be redesigned in consultation with a landscape architect and North Sydney Council, and would seek to retain as much of the existing character and the original design intent as possible.

Cammeray Park (including Golf Course) has been assessed as having moderate impacts. Temporary and permanent direct impacts associated with key components of the project in the vicinity of the heritage item include the Cammeray Golf Course construction support site (WHT10 / WFU8) which would support civil works associated with the project. Parts of the Cammeray Park Golf Course would no longer be available for recreational uses, and the change in use would affect the heritage values of the site.

There is limited land to support construction activities, which has necessitated the need to use Yurulbin Park as a construction support site. Yurulbin Park has local heritage significance and it has been identified that the proposed works within Yurulbin Park would be of medium-large scale and moderate intensity, with some of the changes being permanent and irreversible. As such, the level of impact on the heritage item overall would be major. The design of the project works at Yurulbin Park have been developed in consultation with Bruce MacKenzie, the original designer of the park. This has resulted in a design that minimises impacts to significant features and changes to the permanent landform at Yurulbin Park. Some mature trees within the park would be directly impacted, but areas of exclusion have been identified and replacement plantings would be provided on completion of construction as part of the redesign. Opportunities to temporarily remove, store and reinstate certain elements such as stone flagging, stone walls and steps would be investigated and implemented if these elements need to be temporarily removed. While permanent impacts would occur to areas of archaeological potential during site establishment, specialist investigations would provide an opportunity to obtain information about the archaeology and history of the site not available from other sources. Reinstatement works following the completion of construction would be designed in consultation with Bruce MacKenzie. The new design would seek to retain and enhance the existing character and the original design intent as much as possible. These works would also improve the quality and long-term viability of landscaping and useability of the park.

An assessment of cumulative impacts has been carried out, for relevant projects overlapping or adjacent to the current project, and with timeframes for construction overlapping or recently completed. The project traverses areas of Sydney with a relatively high concentration of heritage items. Given the length and extent of the current project, the level of heritage impact is relatively minor with much of the impact minimised through the subsurface tunnelling of the project. Therefore, the level of cumulative impact created by the current project is low**.**

Management measures will be implemented during construction to manage potential impacts to items of heritage significance from construction works in the vicinity of heritage items. This includes selection of construction equipment to minimise vibration, and delineation of exclusion areas to avoid inadvertent works occurring within the curtilage of heritage items.

Site-specific management measures would also be applied at specific sites that have been identified as being subject to impact due to the activities associated with construction of the project. Archival recording will be completed prior to any works that have the potential to impact upon the following items:

- Item 2 The Valley Heritage Conservation Area, Rozelle and Balmain
- Item 4: Yurulbin Park, Birchgrove
- Item 6: Woodleys shipyard, Waverton
- Item 7: BP site, Waverton
- Item 9: North Sydney Bus Shelters
- Item 10: St Leonards Park (including W. Tunks Memorial Fountain, War Memorial, and North Sydney Oval), North Sydney
- Item 14: Cammeray Park (including Golf Course), Cammeray

- Item 15: Cammeray Conservation Area, Cammeray.

A detailed archaeological research design and methodology has been prepared in accordance with *Archaeological Assessments: Archaeological Assessment Guidelines* (NSW Heritage Office 1996a) to support the proposed mitigation measures for archaeological investigation for the following sites:

- Item 4: Yurulbin Park, Birchgrove
- Item 7: BP site, Waverton.

Archaeological investigations will be completed prior to any works that have the potential to impact upon the potential archaeology of heritage items and circulated to appropriate stakeholders as determined prior to construction.

Important note about your report

The sole purpose of this report and the associated services performed by Jacobs is to carry out a non-Aboriginal cultural heritage assessment in accordance with the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs may have relied upon information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

1. Introduction

This section provides an overview of the Western Harbour Tunnel and Warringah Freeway Upgrade (the project), including its key features and location. It also outlines the Secretary's environmental assessment requirements addressed in this technical working paper.

1.1 Overview

The Greater Sydney Commission's Greater Sydney Region Plan – A Metropolis of Three Cities (Greater Sydney Commission, 2018) proposes a vision of three cities where most residents have convenient and easy access to jobs, education and health facilities and services. In addition to this plan, and to accommodate for Sydney's future growth the NSW Government is implementing the Future Transport Strategy 2056 (Transport for NSW, 2018), a plan that sets the 40 year vision, directions and outcomes framework for customer mobility in NSW. The Western Harbour Tunnel and Beaches Link program of works is proposed to provide additional road network capacity across Sydney Harbour and to improve transport connectivity with Sydney's northern beaches. The Western Harbour Tunnel and Beaches Link program of works include:

- The Western Harbour Tunnel and Warringah Freeway Upgrade project which comprises a new tolled motorway tunnel connection across Sydney Harbour, and an upgrade of the Warringah Freeway to integrate the new motorway infrastructure with the existing road network and to connect to the Beaches Link and Gore Hill Freeway Connection project
- The Beaches Link and Gore Hill Freeway Connection project which comprises a new tolled motorway tunnel connection across Middle Harbour from the Warringah Freeway and Gore Hill Freeway to Balgowlah and Killarney Heights and including the surface upgrade of Wakehurst Parkway from Seaforth to Frenchs Forest and upgrade and integration works to connect to the Gore Hill Freeway at Artarmon.

A combined delivery of the Western Harbour Tunnel and Beaches Link program of works would unlock a range of benefits for freight, public transport and private vehicle users. It would support faster travel times for journeys between the Northern Beaches and south, west and north-west of Sydney Harbour. Delivering the program of works would also improve the resilience of the motorway network, given that each project provides an alternative to heavily congested harbour crossings.

1.2 The project

Roads and Maritime Services (Roads and Maritime) is seeking approval under Division 5.2, Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to construct and operate the Western Harbour Tunnel and Warringah Freeway Upgrade (the project), which would comprise two main components:

- A new crossing of Sydney Harbour involving twin tolled motorway tunnels connecting the M4-M5 Link at Rozelle and the existing Warringah Freeway at North Sydney (the Western Harbour Tunnel)
- Upgrade and integration works along the existing Warringah Freeway, including infrastructure required for connections to the Beaches Link and Gore Hill Freeway Connection project (the Warringah Freeway Upgrade).

Key features of the Western Harbour Tunnel component of the project are shown in Figure 1-1 and would include:

- Twin mainline tunnels about 6.5 kilometres long and each accommodating three lanes of traffic in each direction, connecting the stub tunnels from the M4-M5 Link at Rozelle to the Warringah Freeway and to the Beaches Link mainline tunnels at Cammeray. The crossing of Sydney Harbour between Birchgrove and Waverton would involve a dual, three lane, immersed tube tunnel
- Connections to the stub tunnels at the M4-M5 Link project in Rozelle and to the mainline tunnels at Cammeray (for a future connection to the Beaches Link and Gore Hill Freeway Connection project)

- Surface connections at Rozelle, North Sydney and Cammeray, including direct connections to and from the Warringah Freeway (including integration with the Warringah Freeway Upgrade), an off ramp to Falcon Street and an on ramp from Berry Street at North Sydney
- A ventilation outlet and motorway facilities (fitout and commissioning only) at the Rozelle Interchange
- A ventilation outlet and motorway facilities at the Warringah Freeway in Cammeray
- Operational facilities including a motorway control centre at Waltham Street, within the Artarmon industrial area and tunnel support facilities at the Warringah Freeway in Cammeray
- Other operational infrastructure including groundwater and tunnel drainage management and treatment systems, signage, tolling infrastructure, fire and life safety systems, lighting, emergency evacuation and emergency smoke extraction infrastructure, CCTV and other traffic management systems.

Key features of the Warringah Freeway Upgrade component of the project are shown in Figure 1-2 and would include:

- Upgrade and reconfiguration of the Warringah Freeway from immediately north of the Sydney Harbour Bridge through to Willoughby Road at Naremburn
- Upgrades to interchanges at Falcon Street in Cammeray and High Street in North Sydney
- New and upgraded pedestrian and cyclist infrastructure
- New, modified and relocated road and shared user bridges across the Warringah Freeway
- Connection of the Warringah Freeway to the portals for the Western Harbour Tunnel mainline tunnels and the Beaches Link tunnels via on and off ramps, which would consist of a combination of trough and cut and cover structures
- Upgrades to existing roads around the Warringah Freeway to integrate the project with the surrounding road network
- Upgrades and modifications to bus infrastructure, including relocation of the existing bus layover along the Warringah Freeway
- Other operational infrastructure, including surface drainage and utility infrastructure, signage, tolling, lighting, CCTV and other traffic management systems.

A detailed description of the project is provided in Chapter 5 (Project description) and construction of the project is described in Chapter 6 (Construction works) of the environmental impact statement. The project alignment at the Rozelle Interchange shown in Figure 1-1 and Figure 1-3 reflects the arrangement presented in the environmental impact statement for the M4-M5 Link, and as amended by the proposed modifications. The project would be constructed in accordance with the finalised M4-M5 Link detailed design (refer to Section 2.1.1 of Chapter 2 (Assessment process) of the environmental impact statement for further details).

The project does not include ongoing motorway maintenance activities during operation or future use of residual land occupied or affected by project construction activities, but not required for operational infrastructure. These would be subject to separate planning and approval processes at the relevant times.

Subject to the project obtaining planning approval, construction is anticipated to commence in 2020 and is expected to take around six years to complete.

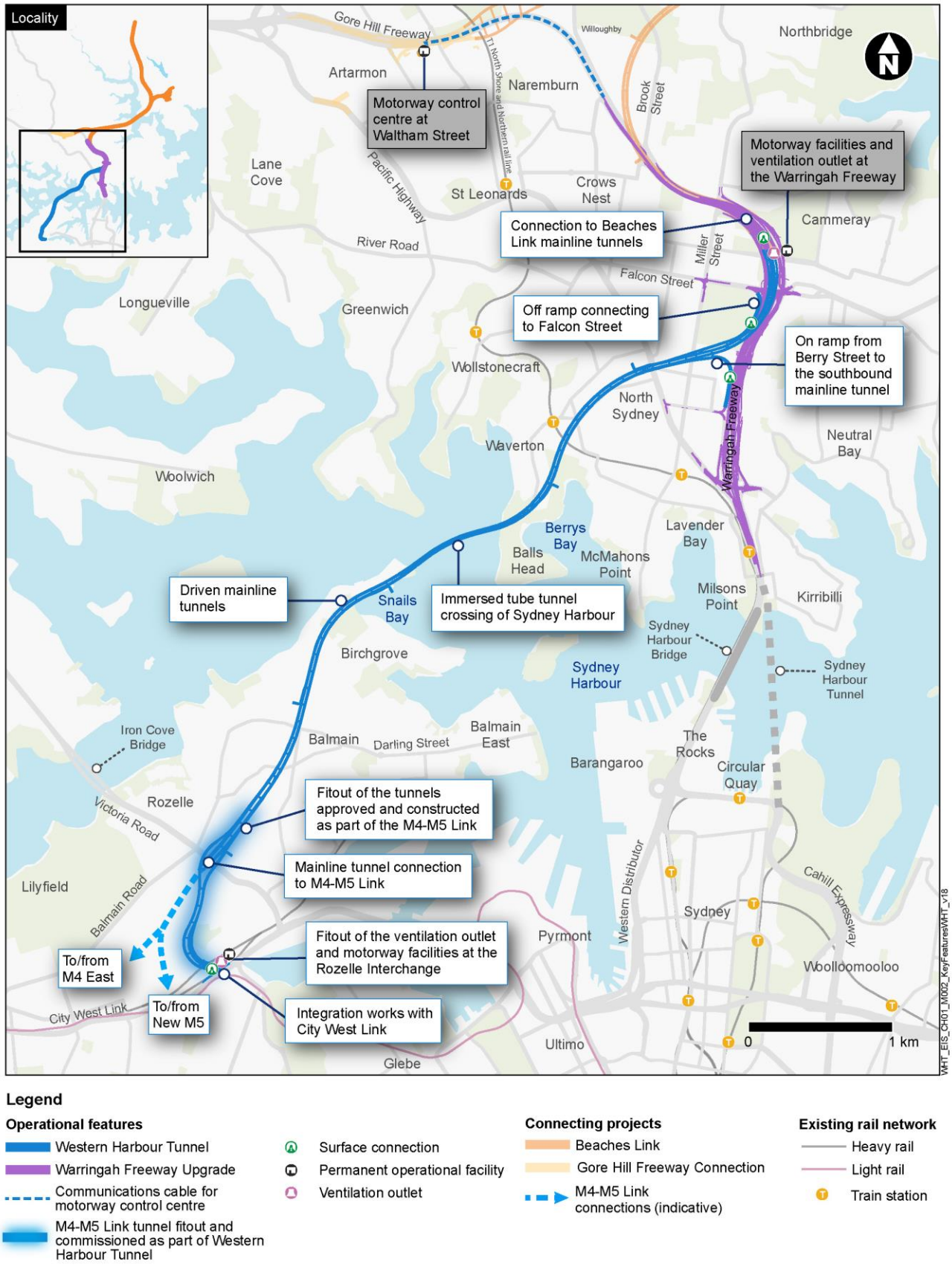


Figure 1-1 : Key features of Western Harbour Tunnel component of the project

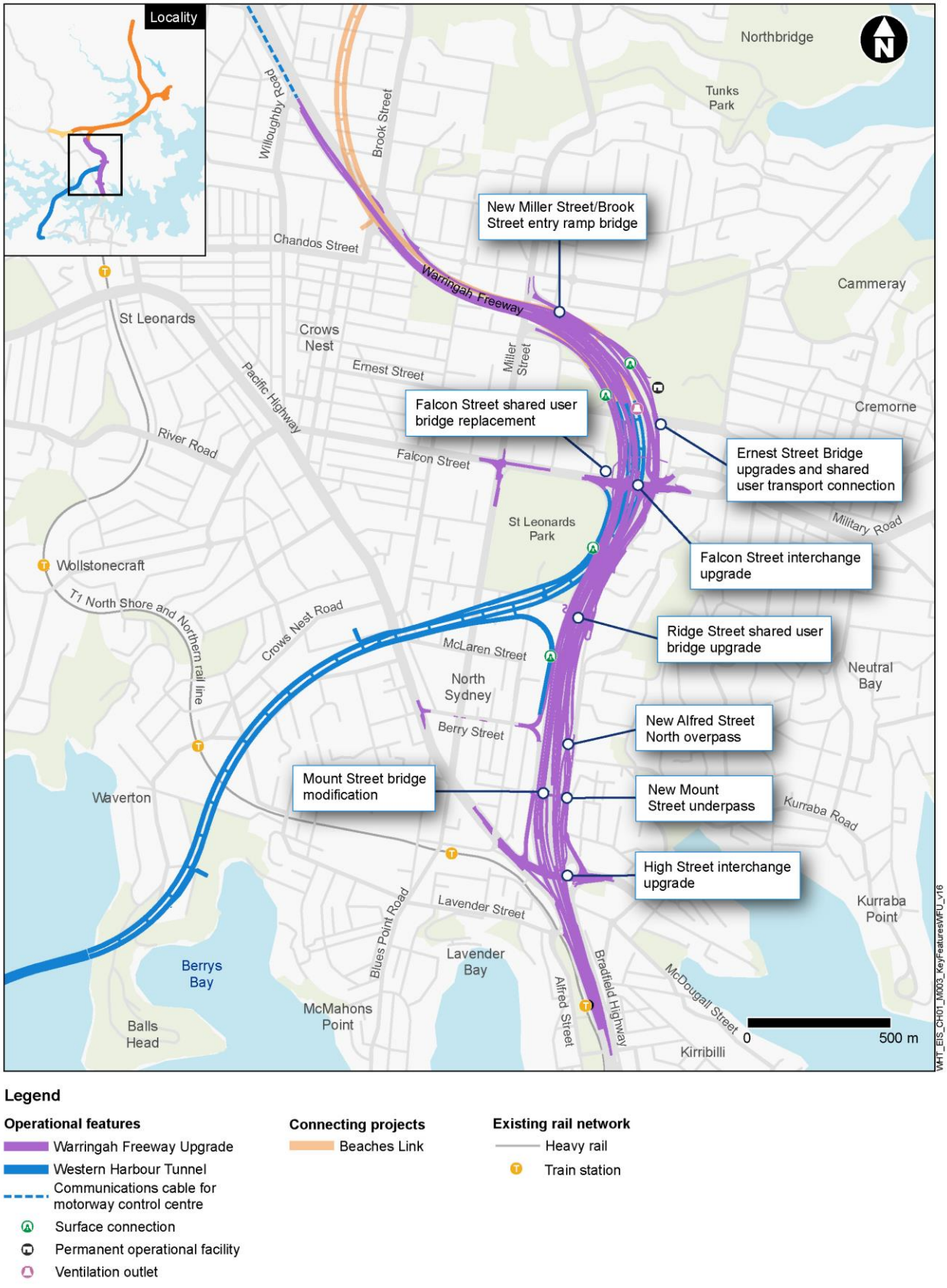


Figure 1-2: Key features of the Warringah Freeway Upgrade component of the project

1.3 Key construction activities

The area required to construct the project is referred to as the construction footprint. The majority of the construction footprint would be located underground within the mainline tunnels. However, surface areas would be required to support tunnelling activities and to construct the tunnel connections, tunnel portals and operational ancillary facilities.

Key construction activities would include:

- Early works and site establishment, with typical activities being property acquisition and condition surveys, utilities installation, protection, adjustments and relocations, installation of site fencing, environmental controls (including noise attenuation and erosion and sediment control) and traffic management controls, vegetation clearing, earthworks and demolition of structures, establishment of construction support sites including acoustic sheds and associated access decline acoustic enclosures (where required), construction of minor access roads and the provision of property access, temporary relocation of pedestrian and cycle paths and bus stops, temporary relocation of swing moorings within Berrys Bay and relocation of the historic vessels
- Construction of Western Harbour Tunnel, with typical activities being excavation of tunnel construction accesses, construction of driven tunnels, cut and cover and trough structures and construction of cofferdams, dredging activities in preparation for the installation of immersed tube tunnels, casting and installation of immersed tube tunnels and civil finishing and tunnel fitout
- Construction of operational facilities comprising of a motorway control centre at Waltham Street in Artarmon, motorway and tunnel support facilities and ventilation outlets at the Warringah Freeway in Cammeray, construction and fitout of the project operational facilities that form part of the M4-M5 Link Rozelle East Motorway Operations Complex, a wastewater treatment plant at Rozelle and the installation of motorway tolling infrastructure
- Construction of the Warringah Freeway Upgrade, with typical activities being earthworks, bridgeworks, construction of retaining walls, stormwater drainage, pavement works and linemarking and the installation of road furniture, lighting, signage and noise barriers
- Testing of plant and equipment, and commissioning of the project, backfill of access declines, removal of construction support sites, landscaping and rehabilitation of disturbed areas and removal of environmental and traffic controls.

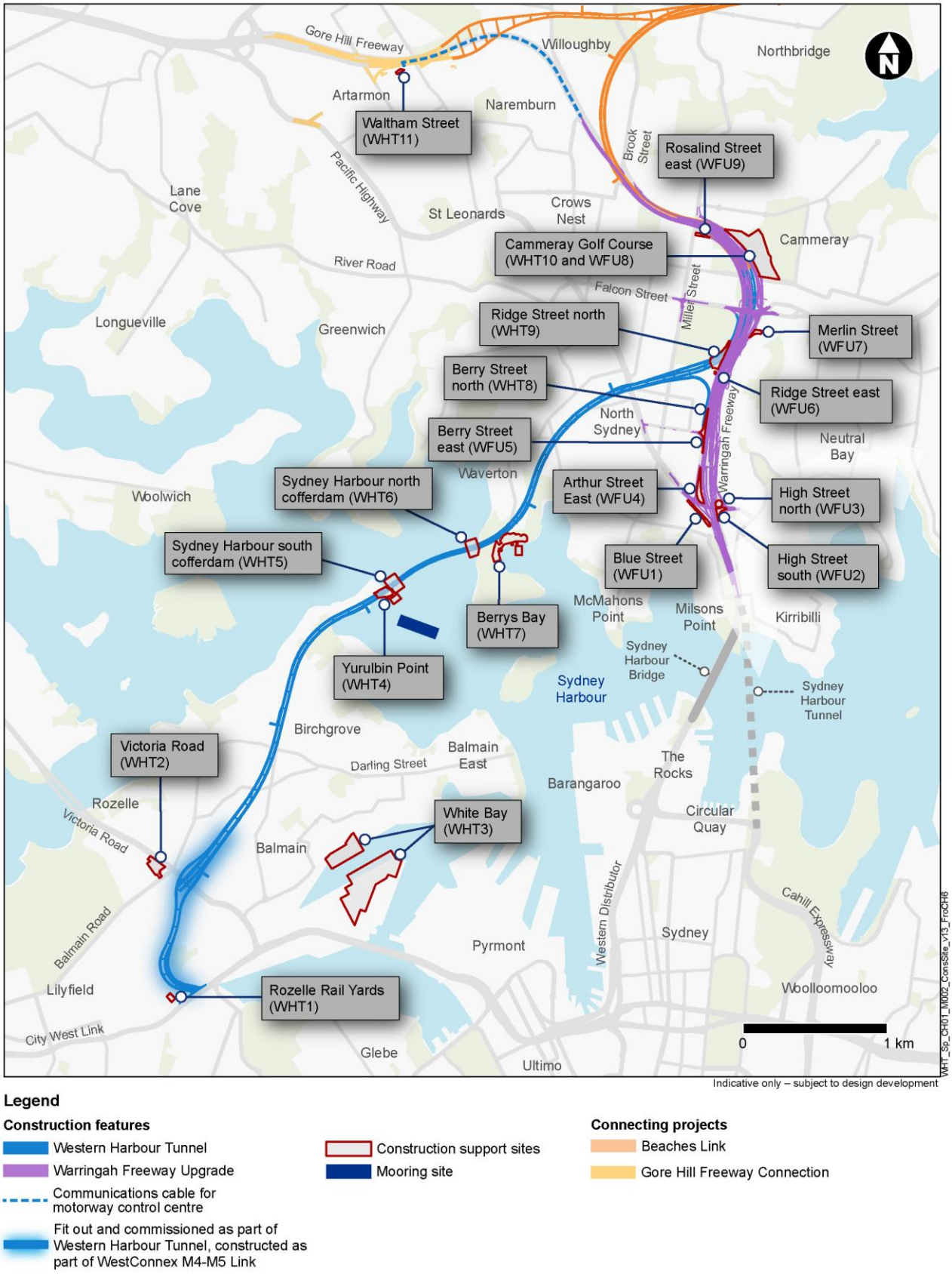
Temporary construction support sites would be required as part of the project (refer to Figure 1-3) and would include tunnelling and tunnel support sites, civil surface sites, cofferdams, mooring sites, wharf and berthing facilities, laydown areas, parking and workforce amenities. Construction support sites for Western Harbour Tunnel would include:

- Rozelle Rail Yards (WHT1)
- Victoria Road (WHT2)
- White Bay (WHT3)
- Yurulbin Point (WHT4)
- Sydney Harbour south cofferdam (WHT5)
- Sydney Harbour north cofferdam (WHT6)
- Berrys Bay (WHT7)
- Berry Street north (WHT8)
- Ridge Street north (WHT9)
- Cammeray Golf Course (WHT10)
- Waltham Street (WHT11).

During the construction of the Warringah Freeway Upgrade, smaller construction sites would be required to support the construction works (as shown on Figure 1-3). These include:

- Blue Street (WFU1)
- High Street south (WFU2)
- High Street north (WFU3)
- Arthur Street east (WFU4)
- Berry Street east (WFU5)
- Ridge Street east (WFU6)
- Merlin Street (WFU7)
- Cammeray Golf Course (WFU8)
- Rosalind Street east (WFU9).

A detailed description of construction works for the project is provided in Chapter 6 (Construction works) of the environmental impact statement.



Legend

Construction features

- Western Harbour Tunnel
- Warringah Freeway Upgrade
- Communications cable for motorway control centre
- Fit out and commissioned as part of Western Harbour Tunnel, constructed as part of WestConnex M4-M5 Link
- Construction support sites
- Mooring site

Connecting projects

- Beaches Link
- Gore Hill Freeway Connection

Figure 1-3 : Overview of construction support sites

1.4 Project location

The project would be located within the Inner West, North Sydney and Willoughby local government areas, connecting Rozelle in the south with Naremburn in the north.

Commencing at the Rozelle Interchange, the mainline tunnels would pass under Balmain and Birchgrove, then cross Sydney Harbour between Birchgrove and Balls Head. The tunnels would then continue under Waverton and North Sydney, linking directly to the Warringah Freeway to the north of the existing Ernest Street bridge.

The motorway control centre would be located at Waltham Street, Artarmon, with a trenched communications cable connecting the motorway control centre to the Western Harbour tunnel along the Gore Hill Freeway and Warringah Freeway road reserves.

The Warringah Freeway Upgrade would be carried out on the Warringah Freeway from around Fitzroy Street at Milsons Point to around Willoughby Road at Naremburn. Upgrade works would include improvements to bridges across the Warringah Freeway, and upgrades to surrounding roads.

1.5 Purpose of this report

This report has been prepared to support the environmental impact statement for the project and to address the environmental assessment requirements of the Secretary of the Department of Planning, Industry and Environment (formerly the Department of Planning and Environment) ('the Secretary's environmental assessment requirements').

This report addresses non-Aboriginal archaeology, heritage items and conservation areas, in accordance with NSW Heritage Division guidelines, the Australia ICOMOS *Charter for Places of Cultural Significance* (*Burra Charter*), the Roads and Maritime Heritage Guidelines, and relevant Commonwealth heritage guidelines. It identifies non-Aboriginal heritage items within the study area, assesses the potential impacts on the heritage items from the proposed project activities, and identifies mitigation and management measures to minimise impacts to heritage.

1.6 Secretary's environmental assessment requirements

The Secretary's environmental assessment requirements relating to heritage, and where these requirements are addressed in this report, are outlined in Table 1-1.

Table 1-1 : Secretary's environmental assessment requirements – Non-Aboriginal Heritage

Secretary's environmental assessment requirements	Where addressed
The design, construction and operation of the project facilitates, to the greatest extent possible, the long term protection, conservation and management of the heritage significance of items of environmental heritage and Aboriginal objects and places. The design, construction and operation of the project avoids or minimises impacts, to the greatest extent possible, on the heritage significance of environmental heritage and Aboriginal objects and places.	Overall report including: • Statements of Heritage Impact, including detailed assessment of impacts, mitigation measures and level of impact on each heritage item are presented in Section 5.4. • Section 5.3 includes an assessment of impacts to heritage items in the vicinity of surface and tunnelling works. • Heritage items impacted by the project, including description of impact, level of impact and mitigation measures summary are presented in Section 5.4.
1. The Proponent must identify and assess any direct and/or indirect impacts (including cumulative, vibration and visual	The results of all historical heritage register searches are presented in Table 3-2..

Secretary's environmental assessment requirements	Where addressed
impacts) to the heritage significance of listed (and nominated) heritage items inclusive of: (c) environmental heritage, as defined under the *Heritage Act 1977* (including potential items of heritage value, conservation areas, open space heritage landscapes, built heritage landscapes and archaeology); (d) items listed on the State, National and World Heritage lists (including Cockatoo Island); (e) heritage items and conservation areas identified in local and regional planning environmental instruments covering the project area; and	Statements of Heritage Impact, including detailed assessment of impacts, mitigation measures and level of impact on each heritage item are presented in Section 5.4. Cockatoo Island is located outside of the study area as defined in Section 2.4, and the maritime heritage values of this site would not be impacted (direct or indirectly).
2. Where impacts to State or locally significant heritage items or archaeology are identified, the assessment must: (a) include a significance assessment and statement of heritage impact for all heritage items (including any unlisted places that are assessed of heritage value; (b) provide a discussion of alternative locations and design options that have been considered to reduce heritage impacts; (c) in areas identified as having potential archaeological significance, undertake a comprehensive archaeological assessment and management plan in line with Heritage Council guidelines which includes a methodology and research design to assess the impact of the works on the potential archaeological resource and to guide physical archaeological test excavations and include the results of these excavations. This is to be carried out by a suitably qualified archaeologist and is to discuss the likelihood of significant historical, maritime and Aboriginal archaeology on the site, how this may be impacted by the project, and includes measures to mitigate any impacts; (d) consider potential impacts to the Balls Head Coal Loader particularly associated with vibration and disturbance as part of the ongoing works. Due to the potential significance of this site, options to ensure that it is not impacted must be considered; (e) consider impacts to the item of significance caused by, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, increased traffic, visual amenity, landscape and vistas, curtilage, subsidence and architectural noise treatment (as relevant); (f) provide a comparative analysis to inform the rarity and representative value of any heritage places proposed for demolition; (g) outline mitigation measures to avoid and minimise identified impacts in accordance with the current guidelines; and (h) be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council's Excavation Director criteria).	Significance assessments are presented in Section 2.7, and further details are provided in Appendix A (Heritage item descriptions and significance assessments) Statements of Heritage Impact, including detailed assessment of impacts, mitigation measures and level of impact on each heritage item are presented in Section 5.4. A discussion of alternative locations and design options are outlined in Section 1 and Chapter 4 of the environmental impact statement. For heritage items with a detailed archaeological assessment, a detailed research design and methodology has been prepared in accordance with *Archaeological Assessments: Archaeological Assessment Guidelines (NSW Heritage Office 1996a)* to support the proposed mitigation measures for archaeological investigation. These are presented in Appendix B (Archaeological research design and methodology for BP Site) and Appendix C Archaeological research design and methodology for Yurulbin Park. Statements of Heritage Impact, including detailed assessment of impacts, mitigation measures and level of impact on each heritage item are presented in Section 5.4. As outlined in Section 5.4, no whole heritage places are proposed for demolition, therefore no comparative analysis carried out. Environmental management measures are provided in Section 7. Qualifications of the heritage consultants involved in this assessment are shown in Table 2-2.

2. Assessment methodology

The methodology is designed to be in accordance with NSW Heritage Division guidelines, the *Australia ICOMOS Charter for Places of Cultural Significance* (Burra Charter), the Roads and Maritime Heritage Guidelines and relevant Commonwealth heritage guidelines. The methodology has also taken into consideration the Secretary's environmental assessment requirements for heritage.

2.1 Relevant legislation

This assessment was carried out in accordance with the following statutory planning instruments/legislation:

- *Heritage Act 1977 (NSW)* (Heritage Act)
- *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act)
- *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)* (EPBC Act)
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
- North Sydney Local Environmental Plan 2013
- Leichhardt Local Environmental Plan 2013
- Sydney Local Environmental Plan 2012.

2.2 Relevant guidelines and policies

This assessment was carried out and report prepared according to the principles outlined in:

- Australia ICOMOS *Charter for Places of Cultural Significance* (Burra Charter) (Australia ICOMOS 2013)
- *NSW Heritage Manual* (NSW Heritage Office 1996b) including the following sections:
  - *Investigating History*. This section was used in carrying out research into historical context and history of individual heritage items
  - *Investigating Fabric*. This section was used in surveying and recording individual heritage items
- *Assessing Heritage Significance* (NSW Heritage Office 2001). The updated section of 1996 NSW Heritage Manual was used to review existing significance assessment and carry out significance assessment for new heritage items
- *Investigating Heritage Significance* (draft guideline) (NSW Heritage Office 2004). The updated section of NSW Heritage Manual was used to carry out significance assessment for new heritage items
- *Statements of Heritage Impact* (NSW Heritage Office 2002)
- *Cultural Heritage Guidelines* (Roads and Maritime,2015).

2.3 Overall approach

The following methodology has been followed in preparing this assessment:

- Review of heritage registers and lists, including the National Heritage List, World Heritage List, Commonwealth Heritage List, the State Heritage Register, Section 170 State Agency Heritage and Conservation Registers, and environmental planning instruments (ie local environmental plans)
- Review of relevant heritage reports and other source material. This includes relevant major heritage assessments, local heritage studies carried out by local councils, and conservation management plans
- Field survey of the study area to inspect listed items or conservation areas within the study area and to identify potential heritage items or areas of archaeological potential that may be affected by the project

- Completion of the statements of heritage impact for identified items located within the study area in accordance with the *Statements of Heritage Impact guidelines* (NSW Heritage Office, 2002), with consideration of direct and indirect impacts.
- The level of impact on the heritage significance of each heritage item in the study area has been assessed based on the definitions and framework for assessing severity of impacts from the *EPBC Act Significant impact guidelines 1.2* (Department of Sustainability Environment Water Population and Communities 2013)

Where registered heritage items comprise both a land-based component and a maritime component (either underwater or at the interface of land and water), these are assessed in Technical working paper: Maritime heritage for the maritime component and consolidated within this technical working paper. Maritime heritage is defined as 'all material culture of potential heritage significance on or under the seabed below the Highest Astronomical Tide. This includes the former seabed under reclamation.'

All other maritime heritage items (including movable maritime heritage) are considered in Technical working paper: Maritime heritage.

2.4 Study area

The impact assessment has considered impacts to identified heritage items, conservation areas or areas of archaeological potential that are located within the study area. The study area is defined as the construction footprint plus areas within 50 metres of the footprint. The study area includes the mainline tunnel alignment, ramps and tunnel shafts, all operational ancillary facilities and construction support sites (including access declines).

The exception is for heritage items above or within 50 metres of the ramps associated with Rozelle Interchange. The impacts of tunnelling (vibration and settlement) have been considered in the M4-M5 Link environmental impact assessment and have not been reconsidered in this assessment.

2.5 Desktop assessment

The desktop assessment informed the key areas of focus for the field survey/site inspection, and the later significance assessment and impact assessment.

2.5.1 Heritage register searches

The following heritage registers and databases were searched to identify known heritage items within the study area, using a combination of spatial data tools and online databases:

- World Heritage List
- Commonwealth Heritage List
- National Heritage List
- State Heritage Register
- State Heritage Inventory
- Section 170 Heritage and Conservation Registers
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
- North Sydney Local Environmental Plan 2013
- Leichhardt Local Environmental Plan 2013
- Sydney Local Environmental Plan 2012
- Willoughby Local Environmental Plan 2012
- National Trust of Australia (NSW) list

- Register of the National Estate.

The location and known curtilage of each site was then mapped in relation to the study area. The results of the register searches are presented in Section 3.2.1.

2.5.2 Literature review

A review was carried out on the following types of literature:

- Previous major heritage assessments within, or in proximity to, the study area. This included the *WestConnex M4-M5 Link Technical working paper: Non-Aboriginal heritage* (GML Heritage Pty Ltd 2017)
- Previous relevant local heritage studies carried out by councils in the study area
- Conservation management plans or heritage management plans for specific individual heritage items within the study area
- Local histories and other historical secondary sources.

This review informed the following:

- To identify heritage items which are not registered
- To understand the nature and extent of heritage assessment already carried out
- To understand and assess cumulative impacts
- To prepare a succinct historical summary of the study area.

The literature review is provided in Section 3.1 (Historical context) and Section 3.2.2 (Previous heritage assessments).

2.6 Field survey/site inspection

2.6.1 Known heritage items

The field survey approach reflected the degree of potential disturbance or impact of the project.

For heritage items within or immediately adjacent to the above ground elements of the project, the following tasks were carried out:

- A visual inspection: Heritage items in public areas were recorded in detail. Heritage items in private property were viewed from outside the property boundary
- Recording: The recording of key features and the nature and condition of the heritage item, including photographs and notes.

For heritage items that are within the study area but are located above mainline tunnels, ramps or shafts, the following tasks were carried out:

- A visual inspection of each individual heritage item on foot or from vehicle from public roadways/footpaths
- For individually listed heritage items a recording of nature and condition of individual heritage item (including a photograph and brief notes) was taken
- For heritage conservation areas, individual photos of all items within the conservation heritage area were not taken, but general notes and photos were taken to inform an understanding of the nature and significance of the area.

2.6.2 Areas of archaeological potential or other previously unidentified heritage items

For areas in proximity to the above ground elements of the project, a visual inspection was carried out to:

- Understand the potential for archaeological remains to be present, and the levels of past disturbance to the areas
- Identify any buildings or features that have the potential to be heritage items.

The key features and the nature and condition of the areas of archaeological potential, or previously unidentified potential heritage item, were recorded during the field survey, including photographs and notes.

The field survey results are presented in Section 3.3 and incorporated into Appendix A (Heritage item descriptions and significance assessments).

2.7 Significance assessments

Key historical themes for the study area have been identified from the *Heritage Council's New South Wales Historical Themes*.

For known heritage items, existing significance assessments and statements of heritage significance were collated and reviewed, but where significance assessments were not in existence, major updates were not carried out.

The detailed significance assessments are presented in Appendix A, while the summary statements of significance are presented in Chapter 4.

2.8 Archaeological assessment

For known heritage items with archaeological potential identified as part of their significance, and which were identified as being subject to direct impacts, a detailed archaeological assessment was prepared in accordance with *Archaeological Assessments: Archaeological Assessment Guidelines* (NSW Heritage Office, 1996a). This included synthesising historical research and physical evaluation of the site to assess its archaeological significance. Maps of potential archaeological features and areas of archaeological potential were also prepared.

2.9 Impact assessment

2.9.1 Definition of impacts

For the purposes of this assessment, the following categories of impact were considered:

- **Direct impact**. This is defined as planned, intentional physical change occurring to a heritage item from project activities occurring within the heritage boundary, which results in the significant diminution of the historical heritage values of that heritage item. Direct impact may include minor and peripheral changes, or large-scale removal and destruction, including demolition, archaeological disturbance, and the requirement for architectural noise treatment.
- **Potential direct impact**. This is defined as incidental physical impacts and consequences occurring to a heritage item from project activities occurring adjacent to or within the heritage boundary, which result in the significant diminution of the historical heritage values of that heritage item. Potential direct impact may include a variety of changes including inappropriate access by vehicles, which can be managed or mitigated by appropriate measures.
- **Indirect impact**. This is defined as a secondary impact to a heritage item or to its surroundings (where those surroundings contribute significantly to the historical heritage values of that item or place), where this occurs outside the heritage boundary, and the impact is a consequence of the project. The potential for indirect impact varies according to the nature of the heritage item, and its proximity to the project. Indirect impact may include vibration, settlement, visual impact, social impact, impact to landscapes and vistas, changes to ongoing use, changed associations, or change to access. Assessments of indirect impact were completed based on site-specific characteristics.

2.9.2 Levels of impact

The level of impact on the heritage significance of each heritage item in the study area has been assessed based on the definitions and framework for assessing severity of impacts from the *EPBC Act Significant impact guidelines 1.2* (Department of Sustainability Environment Water Population and Communities, 2013).

The following criteria were used to assess the level of impact:

- The scale of the proposed work and its impact
- The intensity of the proposed work and its impact
- The duration and frequency of the proposed work and its impact.

The levels of impact used in this assessment are defined in Table 2-1; for impacts to meet a certain level it must generally have two or more of the characteristics noted. The level of impact assigned to each heritage item is based on the level assessed following implementation of management or mitigation measures.

Table 2-1: Definitions of levels of impacts

Two or more characteristics:	Scale	Intensity	Duration/frequency
Major	Medium – large	Moderate – high	Permanent / irreversible
Moderate	Small – medium	Moderate	Medium – long term
Minor	Small / localised	Low	Short term / reversible
Negligible	Little or no physical impact; or little or no impact on heritage significance from physical impacts; or potential physical impacts can be prevented through implementation of management measures (eg reduction of vibration).		

2.9.3 Statements of heritage impact

A Statement of Heritage Impact is used to identify what impact the project would have on the heritage items identified in the assessment. A Statement of Heritage Impact, together with supporting information, addresses:

- Why the item is of heritage significance
- What impact the proposed works would have on that significance
- What measures are proposed to mitigate negative impacts
- Why more sympathetic solutions are not viable (NSW Heritage Office, 2002).

A Statement of Heritage Impact has been prepared for each State or locally significant heritage item impacted by the project in accordance with the NSW Heritage Office (2002) *Statements of Heritage Impact guidelines*, except for those heritage items that are located in the study area but would not be impacted or where the project would have negligible impacts on the heritage item. For some heritage items where there is a similarity of impacts and mitigation measures, the assessment has grouped these heritage items for consideration of impacts.

For the Sydney Harbour Bridge, which is listed on the National Heritage List, the impact assessment has been carried out in accordance with Commonwealth heritage guidelines including *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (Department of the Environment, 2013).

The Statements of Heritage Impact consider both the construction and operational impacts together to assess the overall impact the project would have on the heritage item both in the short term and long term.

The Statements of Heritage Impact are provided in Section 5.4.

2.9.4 Archaeological research design and methodology

For terrestrial heritage items with a detailed archaeological assessment, a detailed research design and methodology has been prepared in accordance with *Archaeological Assessments: Archaeological Assessment Guidelines* (NSW Heritage Office, 1996a) to support the proposed mitigation measures for archaeological investigation. These are presented in Appendix B (Archaeological research design and methodology for BP Site) and Appendix C (Archaeological research design and methodology for Yurulbin Park).

2.9.5 Cumulative impacts

Cumulative impacts occur when impacts from the project interact or overlap with impacts from other projects and potentially result in a larger overall impact. Cumulative impacts may also occur when projects are constructed consecutively, resulting in construction fatigue for local receivers.

Relevant projects were identified based on criteria including location overlapping or adjacent to the current project, timeframe for construction overlapping or recently completed, size and scale of impacts, and status as approved or under statutory environmental impact assessment. The impacts due to the Western Harbour Tunnel and Beaches Link program of works have been considered in Chapter 5 where relevant. Chapter 6 provides an assessment of the heritage impact of other relevant projects, and the relationship of their impact to the current project.

This cumulative impact assessment is based on the broad requirements set out by the Secretary's environmental assessment requirements. There are currently no NSW or Australian Government guidelines on carrying out cumulative impact assessments.

2.10 Limitations

Limitations of the field survey and site inspection involved the inability to investigate buried or underground infrastructure, and for most places, access being limited to the boundary of each property from the street. In the case of the Glebe Island Bridge, the site inspection was completed from a distance. These limitations are unlikely to affect the quality of this assessment, as they were taken into account during the assessment and reporting during fieldwork.

Settlement predictions for the project do identify the potential for 'very slight' to 'slight' settlement impacts to heritage items outside the study area. Slight severity may result in the following:

- Cracks in buildings that are easily filled during redecoration
- Cracks that may be visible on externally and some repointing may be required
- Doors and windows may stick slightly.

Given the level of the predicted settlement and the environmental management measures identified in the environmental impact statement to manage settlement impacts, impacts to these heritage items are considered to be negligible. These items have not been considered further.

Multiple heritage items listed on the RNE have been identified in the register searches, with most of these also being listed on other statutory registers. One item listed as an indicative place on the Register of National Estate has been identified - Sydney Harbour Landscape Area – however it is not on any statutory registers. As such, this item is included in Section 3.2.1 for completeness, however no mapping or additional assessment of this item has been carried out.

2.11 Authors

The assessment was carried out by a team of suitably qualified heritage consultants under the direction of Dr Karen Murphy (Technical Leader, Historical Heritage, Jacobs) (Table 2-2).

Table 2-2: Heritage consultants carrying out this assessment

Name	Qualifications	Role
Dr Karen Murphy	PhD (Historical Archaeology) Bachelor of Arts (Honours) (Archaeology)	Management and direction of overall assessment Technical advice and review Archaeological assessments, research designs and methodology Statements of Heritage Impact for archaeological sites
Rose Overberg	Bachelor of Arts (Archaeology/Anthropology) Bachelor of Science (Honours) (Geology)	Field survey Statements of Heritage Impact Technical advice and review
Caroline Seawright	Bachelor of Archaeology (Honours)	Desktop assessment Field survey Statements of Heritage Impact Report preparation
Andrew Roberts	Bachelor of Arts (Archaeology and Palaeoanthropology) Graduate Diploma in Education Master of Letters (by thesis)	Statements of Heritage Impact

3. Existing environment

3.1 Historical context

The following discussion provides a history of the project region. This has been divided into local government areas as a way to understand the sites that occur within each region.

3.1.1 Inner West local government area

3.1.1.1 Initial occupation and settlement

The original people to occupy the Balmain area were the *Wangal*, a clan of the *Darug* tribe of the *Eora* language group, who occupied the region for about 20,000 years. They occupied the land from Darling Harbour, around the Balmain Peninsula, and across to just before Parramatta (City of Canada Bay n.d.). First contact was made between the *Wangal* and Captain John Hunter who explored the Parramatta River in 1788 at Breakfast Point (around five kilometres to the west of the present day Balmain Ward). An epidemic of smallpox from 1789-1790 killed over half of the *Darug* people, and violent conflicts over resources between settlers, conflicts, and soldiers and the Aboriginal population followed. Many of the Indigenous children were removed to a Native Institution at Parramatta in 1814, set up by Governor Lachlan Macquarie, while the adults were removed to reserves or missions on the western Cumberland Plain or on the Hawkesbury River (Tanner Architects 2011, pp. 9-10).

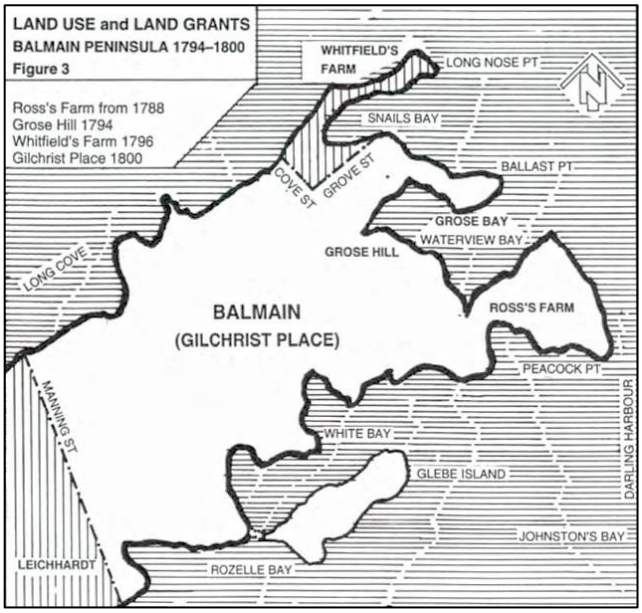


Figure 3-1 : Location of Gilchrist Place (Source: Reynolds (2003, p. 9))

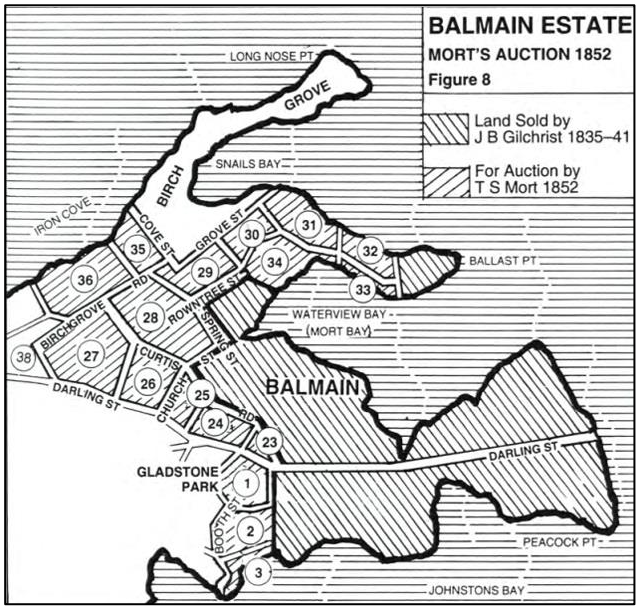


Figure 3-2 : Balmain Estate lots, dated 1852 (Source: Reynolds (2003, p. 47))

Between 1790 and 1819, land grants were made within the Balmain area to civilians, the military and the clergy. Two were granted within Balmain and Birchgrove, five in Lilyfield, six in Leichhardt, one in Annandale, and one in Glebe. The settlement and development of these properties was not a complete success, so by the 1800s these large estates were subdivided into country retreats housed with mansions for the wealthy. The land was unattractive to others due to a lack of reliable transport to the region (Thorp, 1990). This changed during the early 1800s, when increased subdivision occurred within the region, along with an improvement in transportation to the area (Tanner Architects 2011, pp. 14-15). This suburbanisation first started at Glebe in 1826, followed by Balmain in 1836, and the consolidation of the process throughout the 1840s and into the 1880s. Subdivision continued in Birchgrove until 1911 (Tanner Architects 2011, pp. 19-20). However, during the Depression in the 1920s-1930s, many of the 'fine old homes' which graced the area were taken over by

Government departments as institutions, by charities as offices, or by charitable hostels and boarding houses, as their owners could no longer afford to keep them (Tanner Architects 2011, p. 23). The waterfront of Rozelle, Glebe, and Balmain were used for maritime industry, and was fundamental to the development of these suburbs (Tanner Architects 2011, p. 26).

Gilchrist Place, 550 acres of land (Figure 3-1) comprising present day Rozelle and Balmain, was originally deeded to colonial surgeon William Balmain by Governor John Hunter in 1800 (Inner West Council 2013f). Balmain transferred the land to John Hay Borthwick Gilchrist, a former surgeon, in 1801 (Reynolds 2003, pp. vi, 8). The land was subdivided into six lots in 1833 and leased for farming and cattle grazing (GML Heritage Pty Ltd 2015). Upon Gilchrist's death in 1841, his nephew Walter Gilchrist Whicker filed a lawsuit against his disinheritance of Gilchrist Place (known as Balmain Estate in the lawsuit), but his case was dismissed in 1852. Further subdivisions (Figure 3-2) occurred throughout this time period (Reynolds 2003, p. 46). The Balmain Post Office opened in 1853 (Lawrence and Warne 1995, p. 21).

3.1.1.2 Rozelle

From the 1850s, the Rozelle area changed as the 1857 Pyrmont Bridge and the 1862 Glebe Island Bridge (later Glebe Island Bridge, dating to 1903, is listed on State Heritage Register 01914/RNE 15949) opened the area to newcomers. By 1861, much of the land to the east of Victoria Road was populated, while that to the west remained sparsely developed until the 1880s. Callan Park was another estate to the southwest of Gilchrist Place, which was formed from a number of different estates between 1789 and 1821 and stretched from Iron Cove to Rozelle Bay. In 1873 Callan Park was purchased by the NSW government for a 'hospital for the insane' in 1873. The park is now part of Lilyfield (Tanner Architects 2011, pp. 12-13). St Thomas' Church (Leichhardt Local Environmental Plan 2013 item I745) was built in 1874, designed by Edmund Blacket in an early English Gothic style (Williams 2010). The Balmain West public school opened in 1878, and the Balmain West post office in 1880 (Inner West Council 2013f). Darling Street, named after Governor Sir Ralph Darling, was constructed as the main street for Balmain Estate, and its eastern end was originally populated by stores. From the 1880s, the Iron Cove Bridge was constructed, and development spread west along Victoria Road, and into the western end of Balmain. The land surrounding the Balmain peninsula was populated by labourers, both skilled and unskilled, as Balmain's waterfront industry grew (GML Heritage Pty Ltd, 2015). The entire peninsula area had doubled from about 8,000 residents in 1880 to 16,928 in 1882 (Williams, 2010).

In 1890, a five acre area of flood-liable land from that granted to William Balmain in 1800 was proclaimed as public reserve, and is known as Easton Park (Leichhardt Local Environmental Plan 2013 Item I752) today (Inner West Council 2013a; 2013c). Balmain West was officially renamed as Rozelle in 1892, after the nearby Rozelle Bay, and the Balmain West Post Office changed its name to the Rozelle Post Office in 1894. The tram to the area which had been running on steam since 1892, was updated to electricity in 1902 (Inner West Council 2013f). The Rozelle Workingmen's Institute, later known as the Rozelle Mechanics' Institute (Leichhardt Local Environmental Plan 2013 ID I806), was established in 1907 (City of Sydney 2016c). In 1910, Rozelle was noted as a 'very popular business centre' populated by the middle class, and by the 1920s it was 'a closely populated industrial centre' with high standard facilities for its industrial workers (Tanner Architects 2011, pp. 19, 21). Broughton Hall, a mansion built in 1842 on the site of the failed township of Broughton, was turned into a psychiatric clinic in 1921 (Inner West Council 2013f; Tanner Architects 2011, p. 11). Discussions occurred throughout the 1920s regarding the potential widening of Victoria Road, and the Rozelle Post Office was eventually demolished in 1959 to make way for the roadworks. In 1976, Broughton Hall and Callan Park hospitals were merged to become Rozelle Hospital (Inner West Council 2013f; Tanner Architects 2011, p. 25). Throughout the 1980s, the reputation of the area as a working class suburb began to change as the area gentrified due to an influx of middle class, tertiary-educated owners. By the 1990s, the population expanded as the area's industrial zones underwent extensive redevelopment and transitioned to residential uses. Today, Rozelle comprises several areas, ranging from historical commercial and low-density housing to disused heavy industry, and medium-density modern housing (Leichhardt Municipal Council 2002).

3.1.1.3 Balmain

By the 1850s, the Balmain shipyards had grown enough to accommodate the ferries, steamships and other vessels coming to the area. The establishment of regular ferry connections between the city and Balmain attracted newcomers to the township. Along with the growing population, services such as shops, schools, police stations and hospitals were set up throughout the 1860s. By the 1880s, Balmain also boasted rowing, swimming, bowling and cricket clubs, and social groups such as the Balmain Literary Institute, the Balmain Working Men's Institute, and the Balmain School of Art. The Balmain Civic Group of buildings (listed under multiple registers, including the Leichhardt Local Environmental Plan 2013 I198) was built in the Victorian Free Classical style between 1885-1888, comprising courthouse and attached police station, post office and the Balmain town hall (Office of Environment and Heritage 2006; 2007a; 2007b; 2013a; 2016). The speedy growth of the area led to overpopulation as it grew from 8000 in 1880 to 16,928 in 1882, and a decline in the organisation of the township as factories were built next to homes and schools (Inner West Council 2013d). The population continued to grow, reaching 28,460 by 1895, and had reached 31,500 by 1910. By this period, Balmain was no longer considered a desirable location as the majority of its population were now low income, and its image changed to be that of a heavy industrial slum (Inner West Council 2013d; Tanner Architects 2011, pp. 20-21). Balmain was hit hard by the Depression of the 1930s, with 27.2 per cent of its workforce becoming unemployed, well above the average NSW unemployment rate of 18.4 per cent, and its population dropped from 33,540 in 1920 down to 28,268 in 1936 (Tanner Architects, 2011, p. 22). By 1947, the County of Cumberland Planning Scheme noted that many buildings had become dilapidated, and parks vanished due to industrialisation (Tanner Architects 2011, p. 23). Industries within the suburb included the Balmain Coal Loader and Balmain Power Station, which added to the noise and pollution within the suburb, degrading its image further (Inner West Council, 2013d).

The 1960s brought change, as a small number of tertiary-educated middle-class residents were attracted to Balmain due to its proximity to the city and harbour frontages. The Balmain Association was set up in 1965 to allow the residents a say in town planning and on heritage issues. With a growing middle-class population gentrifying the suburb continuing into the 1980s, along with the closure of much of its heavy industry, Balmain lost its former working-class image, and the foreshore became available for public use. From 1986 the population rose steadily from 10,239 to 10,915 in 1991. The 1990s housing boom continued, and much land was redeveloped into housing zones, and so by 2001, the population had reached 13,892 (Inner West Council, 2013d). Today, Balmain is a popular residential suburb due to its harbour and city views, with a population of 10,453 as of 2016 (Australian Bureau of Statistics, 2011a; 2016a; Leichhardt Municipal Council, 2003). The entire suburb is now a heritage conservation area (Leichhardt Municipal Council, 2003).

3.1.1.4 Birchgrove

Much of present-day Birchgrove is composed of a 30 acre plot of land which was granted to George Whitfield by Governor Hunt in 1796, known as Whitfield's Farm (Inner West Council, 2013b). This pastoral holding was characterised by small scale farming of dairying and orange orcharding. It was subsequently purchased by Lieutenant John Birch in 1810, and he built a stone house, the first residence to be built on the Balmain Peninsula, which he named Birchgrove House (Leichhardt Local Environmental Plan 2013 Item I550 and I551); the land subsequently became known as Birchgrove Estate. The land was then sold to Rowland Walpole Loan in 1814, who unsuccessfully attempted to subdivide it in 1833, and who then sold it to Captain John McLean in 1838. However, due to McLean's expansive debts, his holdings were sold to Henry Watson Parker in 1854, and then to Didier Numa Joubert later in the same year (Mayne-Wilson and Associates 2005, p. 3-4). It was Joubert who first successfully subdivided the land, with the present day layout of Birchgrove typically conforming to his 1860 plan (Mayne-Wilson and Associates 2005, p. 5). Land at Long Nose Point comprising Lot 9 of the subdivision, was purchased by Alexander William Cormack, a Sydney cooper who constructed a brick building and Cormack's Wharf. Cormack continued to use the site under the company name AW Cormack until 1906, when the land became a storage yard. The site continued as cooperage until 1908, when the company was renamed AW Cormack Ltd, timber merchants (Office of Environment and Heritage 2013b). Sales of these lots were fewer than expected, and Joubert surrendered his remaining property to the Bank of New South Wales in 1862. By 1878, the bank had only sold 23 lots, with 82 lots remaining unsold; these remaining lots were eventually purchased in 1876 by a syndicate created by three Sydney businessmen, McLean, McGregor and

Threlkeld, who ordered a new plan for subdivision including parks and recreation grounds, and a location for a church and a jetty (Mayne-Wilson and Associates 2005, p. 8). This sale was more successful, and all lots were sold. These lots were purchased by the Crown in 1881 for the 'Birchgrove Recreational Ground' – this parkland is now known as Birchgrove Park (Mayne-Wilson and Associates 2005, p. 10).

The western end of the Birchgrove harbour also attracted maritime industries, such as shipbuilders, and transport industries, such as timber yards, coal yards, and an oil refinery (Inner West Council 2013b). Raywell House (State Heritage Register ID 00093/Leichhardt Local Environmental Plan 2013 Item I830) was constructed in 1883 by Duncan Smith, then sold to produce-merchant William Ainsworth in 1885. The house became known as 'Raywell' when it was occupied by Rachel Cole Wells, who lived there from 1888-1928 (Office of Environment and Heritage 2010).

By 1902, a reclamation effort begun in the 1880s to transform the Snails Bay mud flats, was completed, allowing for the development of the Birchgrove Oval and recreation grounds, and is still in use today (Inner West Council 2013b; 2013e). Birchgrove House (later Birchgrove Estate) gardens were subdivided in 1900 by its then owner, John Lowry Adams, and then again in 1911 by Mary Scott, who had bought the lot containing Birchgrove House (Inner West Council 2013b; Mayne-Wilson and Associates 2005, p. 11). The Snails Bay Amateur Sailing Club was formed in 1911, and a tramline was installed in Birchgrove in 1917 (Thorp 1990, pp. 9, 40). Also in 1917, the Wallace Power Boat Co occupied the site of the former AW Cormack Ltd until 1920. In 1923, Morrison and Sinclair Pty Ltd established a shipyard on the site, which operated until 1971-1972 (Office of Environment and Heritage 2013b). By 1941, all of the land in Birchgrove had been taken up.

From the 1950s, the local residents banded together as a community. This can be seen in various movements, including the residents taking the local Birchgrove industries to court over pollution and noise, the formation of the Balmain Association in 1965, and a campaign to save Birchgrove House in 1967 (Thorp 1990, p. 27). However, Birchgrove House was nonetheless demolished to make way for a three-storey block of units, despite its standing as the second or third oldest residence in Sydney (Inner West Council 2013b; 2013e; Mayne-Wilson and Associates 2005, p. 3).

By the 1970s, the various maritime industries based in Birchgrove closed, leaving the land open for residential development. The land used by Caltex Oil Company for storing oil, located at Ballast Point, was closed in the 1980s (Inner West Council 2013b). Due to the closure of these industries, in combination with the suburb's harbour and city views, and its parks and recreation zones, the area's property prices have risen since the 1970s and it is now one of Sydney's most expensive suburbs (Inner West Council 2013e). The land occupied by Morrison and Sinclair Pty Ltd was purchased by the State Planning Authority for public recreation purposes in 1970, and once the occupants had cleared the premises, it became a public park. Long Nose Point Park was designed by Bruce Mackenzie and Associates, landscape architects, between 1971-1977. The park was awarded the 1982 merit award of the Royal Australian Institute of Architects due to its seminal design. It was renamed as Yurulbin Park (Leichhardt Local Environmental Plan 2013 ID I555) in 1994 (Office of Environment and Heritage 2013b).

3.1.2 North Sydney local government area

3.1.2.1 Initial occupation and settlement

The first people to occupy the North Sydney area were the *Cammeraygal* and the *Wallumedegal*, who were part of the larger *Kuring-gai* tribe, for at least 5800 years (Kohen n.d.; North Sydney Council 2007). The First Fleet noted the two Aboriginal tribes on their arrival in 1788. According to Governor Arthur Phillip in a letter to Lord Sydney in 1790, the *Cammeraygal* occupied the 'north-west part of this harbour' (Port Jackson Bay) while the *Wallumedegal* occupied 'the opposite shore' (North Sydney Council 2007). As with the *Wangal*, by the early 1800s, the social structure of the *Kuring-gai* had been negatively affected both by the colonists and diseases such as smallpox.

Former convict Samuel Lightfoot was granted *Cammeraygal* land in the area of present-day Kirribilli by Governor Phillip in 1794 (Hoskins 2008). Between the 1790s and 1831, thousands of hectares of land were

granted to politicians, merchants, ex-convicts, and settlers (North Sydney Council n.d.-a). Thomas Muir was the first to establish a farm in the area, on land he purchased from Lightfoot, which he named 'Hunters Hill'. After Muir left the colony in 1796, the land reverted to the government as the transaction had not been recorded in the Land Titles Office (Lenehan 1967, p. 12; North Shore Historical Society, 1994; North Sydney Council, 2007; n.d.-e; Wolfe 2014, pp. 5-6). Governor Hunter granted Robert Ryan 120 acres of land for service in the Marines and the NSW Corps in 1800 (North Sydney Council, n.d.-e). However, Ryan was not a farmer, so leased his land (most likely to businessman-settler James Milson), and the land was passed on to Sydney merchant, Robert Campbell, in 1828 after a legal dispute (North Shore Historical Society, 1994; North Sydney Council, n.d.-e). In the 1820s, James Milson received a grant for land around the location of today's Milsons Point by Governor Thomas Brisbane, and he purchased land in Kirribilli. Sandstone was quarried on his land, and he supplied ships in Sydney Cove with milk, fruit, and vegetables (North Shore Historical Society, 1994; North Sydney Council, n.d.-a; Park, 2008).

Another land grant in the area was that of 524 acres of coastal land given to Edward Wollstonecraft in 1821 by Governor Macquarie (Figure 3-3), called Wollstonecraft Estate or Crows Nest Estate, which comprised present day Wollstonecraft, Waverton and Crows Nest, and part of North Sydney (North Sydney Council, n.d.-i). It was subsequently known as the Berry Estate, after Wollstonecraft's brother-in-law and business partner, Alexander Berry, who inherited the land through Wollstonecraft's sister, Elizabeth (Leichhardt Municipal Council, 2002; North Sydney Council, n.d.-i; Spindler, 2011). During the 1860s, Aboriginal people visited the area and camped in the caves at Cremorne Reserve and near Kurraba Road at Neutral Bay, but by the 1890s, they had been completely displaced from the area (North Sydney Council, 2007; Wolfe, 2014, p. 6).

3.1.2.2 Waverton

Once part of Wollstonecraft's extensive estate, the suburb of Waverton represents part of the estate that was progressively subdivided during the late 19th century and into the early 20th century (Spindler, 2011). After his wife's death in 1845, the estate passed to Berry, who began subdividing sections of the estate (Hoskins, 2010). The western part of the estate was subdivided first, resulting in the largest and most prestigious blocks, with the Waverton area near the Bay Road train station being sold first, and Balls Head and Berry Island being set aside as public reserves (North Sydney Council, n.d.-i). Waverton House, after which the present-day suburb is named, was built by Joseph Purser in 1845 on land purchased from this subdivision of the estate. Alexander Berry lived in Crows Nest House until his death in 1873, when it was inherited by his brother, David Berry. On his death in 1889, it was passed on to his cousin, John Hay, who continued to subdivide the estate. A large strip of Berry Estate was given to the government for the construction of the Milsons Point to Hornsby railway. The line was completed in 1893, with Bay Road Station, now called Waverton Station (State Heritage Register ID 1284/North Sydney Local Environmental Plan 2013 ID I1051), attracting new people to the area (Hoskins, 2010). After Hay's death in 1909, his wife, Jessie Hay, continued to approve further sales until 1921. After her death in 1931, the remaining land, called Lady Hay Estate, was further subdivided until 1934.

Balls Head, named after Lieutenant Henry Lidgbird Ball of the First Fleet, comprises foreshore land originally part of Wollstonecraft Estate (North Sydney Council, 2016a). The land was acquired by the government from David Berry in 1906 for maritime industrial and commercial development, in exchange for the building and maintenance of a public hospital for the township of Berry, near Shoalhaven. Also in 1906, the North Shore Gas Company intended to set up a gas works in what was otherwise an exclusive residential neighbourhood, prompting the local residents to form the Bay Road Progress Association in 1911 in an attempt to oppose the construction. However, the Oyster Cove Gas Works were built, as was the Sydney Coal Bunkering Company coal loader (North Sydney Local Environmental Plan 2013 ID I1040/Register of the National Estate ID 19706) in 1917, but the residents succeeded in saving the bushland on Berry Island by having it declared a public park in 1926 (Hoskins, 2010; North Sydney Council, n.d.-h). Balls Head Reserve also became a public park in 1926 (North Sydney Council, 2016a).

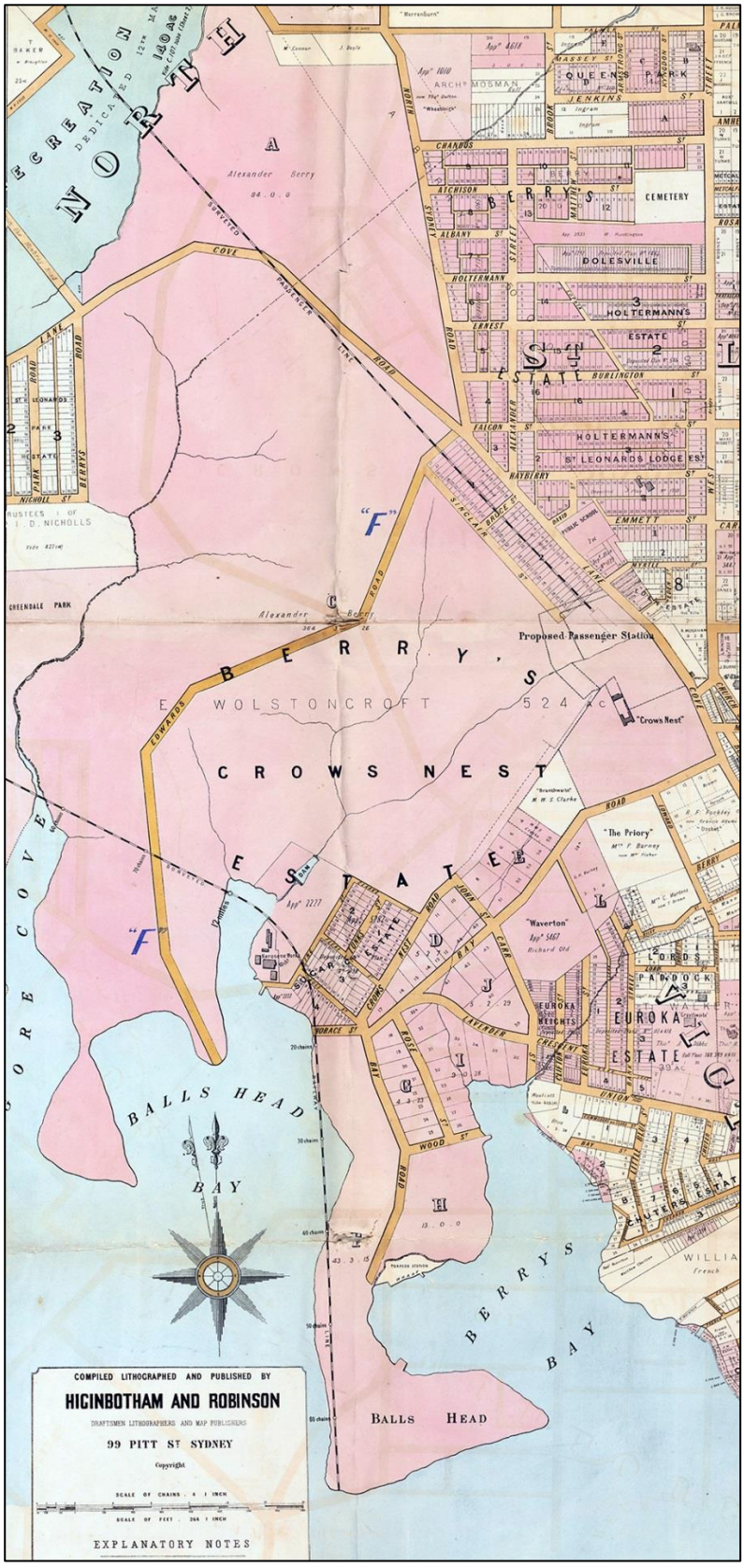


Figure 3-3 : Berry Estate map 1887 (Source: Stanton Library)

The Woodley family also leased some land in Balls Head around 1906 and used the site as a boatyard under the name Woodleys Limited. Woodleys Boatyard (Roads and Maritime section 170 heritage and conservation register/North Sydney Local Environmental Plan 2013 ID I1038) has continued operation until their lease was terminated by NSW Maritime after its expiry in 2009 (Hoskins, 2010; North Sydney Council, n.d.-g; NSW Maritime, 2007). Balls Head was claimed in 1912 by the Australian Government to establish a Quarantine Depot to service boats operating to and from the North Head Quarantine Station (North Sydney Council, 2016a). This depot was transferred to the Commonwealth Department of Health in 1921, under which it operated until the 1970s when it became redundant due to the control of smallpox and the decrease in shipping arrivals to Australia. The Anglo Persian Oil Company built an oil refinery on the western part of Berrys Bay in 1923, which was subsequently renamed the Commonwealth Oil Refineries as part of a joint venture between the Anglo Persian Oil Company and the Australian government. The refinery transferred ownership to British Petroleum in the 1950s, and the BP site (Roads and Maritime section 170 heritage and conservation register/North Sydney Local Environmental Plan 2013 ID I1036) continued operations until the 1980s. It was dismantled throughout the 1990s and the site was opened as part of Carradah Park in 2005 (Hoskins, 2010; Spindler, 2011). The Field Naturalists' Society, the Australian Forest League, the Waverton Precinct, and the North Sydney Council were involved in yearly tree plantings throughout the 1930s across Balls Head, transforming its formerly barren headland into a well-vegetated foreshore. *HMAS Waterhen* was established on the western side of the headland in the 1960s, an area previously used as a Boom Defence Depot by the Royal Australian Navy and the United States Navy during World War II (Hoskins, 2010). The Carradah Park and former coal loader site were declared public parkland in 1997, linking these foreshore areas with the Balls Head Reserve (North Sydney Council, 2016a; 2016c; n.d.-g).

Today, Waverton is a diverse residential neighbourhood, with low-density housing near the foreshore through to high-density living close to railway stations. The foreshore areas are protected by recreational and bushland buffers, excepting some areas of maritime industrial activities (Leichhardt Municipal Council 2002, p. C10-2). In 2011, the suburb had a population of 2807 (Australian Bureau of Statistics, 2011h). As of 2016, the population had risen to 3020, although this may be due to the enlargement of the suburb's boundaries (Australian Bureau of Statistics, 2016h).

3.1.2.3 North Sydney

Upon providing a report for James Milson in 1828, who had made a claim for land on the north shore of the Harbour after his property deeds were destroyed in a fire, Thomas Mitchell identified an eligible site for a township in the area which would become the current suburb of North Sydney. His recommendations included street layouts and subdivisions, a reserve, and a road heading north towards the colony at Broken Bay. However, his plan was discarded and the area was resurveyed in 1836 to allow for the sale of land in the area to petitioners.

The Township of St Leonards was gazetted in 1838, and its town centre was established in the same year, with a small rectangle of Crown land (which would become Lavender Bay), and 48 half-acre allotments were offered for purchase in three sections. The township was probably named by Mitchell after his 1828 survey (Masson, 2010). From 1843, sales of Crown lots occurred, especially to the north and northeast of The Reserve, which is now known as St Leonards Park (State Heritage Register ID 01941, North Sydney Local Environmental Plan 2013 ID I0916 and Register of the National Estate ID 19563). The Reserve was designed and set out by William Tunks in the 1870s as a centrepiece for the township, with the park's first pavilion being built in 1879. The W. Tunks Memorial Fountain (North Sydney Local Environmental Plan 2013 ID I1124) within the park was built in 1885 as a memorial to William Tunks, who died in 1883 – it was damaged by vandals in the 1980s, but restored in 1988.

By the 1850s, 35 sections of the St Leonards township were sold and the population expanded (Masson, 2010; North Sydney Council, 2016d). Churches were first established in the township between the 1840s and 1850s, including St Thomas's (North Sydney Local Environmental Plan 2013 ID I0885 and Register of the National Estate ID 2893) in 1843, St Peter's in 1844, and St Mary's in 1856. The township's original borough, the Borough of St Leonards, was formed in 1869, and provided the town with gas, water, and other essential services (Masson, 2010). The North Sydney Superior Public School (later called the North Sydney Technical

High School (State Heritage Register ID 00517/ North Sydney Local Environmental Plan 2013 ID I0892/ Register of the National Estate ID 2896), which became Greenwood Hotel) opened in 1878, along with other 19th century religious schools such as Wenona School (North Sydney Local Environmental Plan 2013 ID I0989), established in 1886, Monte Sant' Angelo Convent (North Sydney Local Environmental Plan 2013 ID I0894), moved to its present location in 1879, and SCEGS Shore, built in 1889 (Masson, 2010; Monte Sant' Angelo Mercy College, 2014; Wenona School, 2016). By the mid-1880s, the township had a commercial and civic centre, a cable tramway, and a ferry wharf at Milsons Point, which boosted development. The foundation stones of the North Sydney Post Office complex were laid out in 1885, and the buildings, comprising a post office, courthouse, and police station designed by government architect James Barnet, were opened in 1886. In 1890, a newly consolidated borough comprised an amalgamation of the Boroughs of East St Leonards, St Leonards and Victoria, and the name North Sydney was chosen over St Leonards as the new borough's name in an effort to sound prestigious. The township became a conglomeration of commercial and professional workers, skilled tradespeople and labourers, with a large middle-class population centred around St Leonards Park (Masson, 2010).

The Coliseum Theatre was opened in the town, built on the location of former cable tram winding sheds, in 1912 (Masson, 2010). It was subdivided in the 1930s, becoming the Hoyts Union De Luxe Cinema and Independent Theatre (National Heritage List 105905/ North Sydney Local Environmental Plan 2013 ID I0914). The Independent Theatre Company ran the theatre from 1939 until 1978, after which it was taken over by the Australian Elizabethan Theatre Trust in the 1980s, then the Seaborn, Broughton and Walford Foundation in 1993. The building was reopened in 1998 as the SBW Independent Theatre, and leased back to the Australian Elizabethan Theatre Trust in 2001 (North Sydney Council, 2001; Office of Environment and Heritage, 1993). It was sold to Wenona School in 2013, which continues to run the Independent Theatre today (The Australian Elizabethan Theatre Trust, n.d.; The Independent Theatre, 2016).

In 1926, the town hall was relocated from its original place in the township to the 'heart of middle-class suburban North Sydney' (Masson, 2010). However, the Great Depression, combined with the completion of the Sydney Harbour Bridge (National Heritage List ID 105888/ State Heritage Register ID 00781/ Roads and Maritime Section 170 heritage and conservation register/ North Sydney Local Environmental Plan 2013 ID I0530/ Register of the National Estate ID 1857) in 1932, caused building activity in the area to stall, resulting in the dropping of land values in North Sydney. Post-Depression development typically comprised rebuilding, with hotels such as the Albert, Federal and Union Hotels being rebuilt in the art deco style during the late 1930s. Many large Federation and Victorian homes were converted into boarding houses, with their verandahs and balconies being enclosed to provide additional rooms, while their servants' quarters were transformed into flats. Despite the additional housing, the population continued to decline until after World War II (Masson, 2010).

With the land prices dropping in the 1950s (in comparison to the cost of land in Sydney's central business district), companies such as Mutual Life and Citizens Assurance Company, and AMP, built large headquarters in North Sydney – the MLC building became the first high-rise office block in the suburb, which influenced subsequent high-rise design in the area. This set off a building boom through the 1960s, during which time cheap rent encouraged smaller firms to lease offices in North Sydney, which resulted in North Sydney's central business district being the 'Twin City' to that of Sydney. Originally intending to open the Stanton Memorial Library in 1945 in response to the *Library Act 1939*, delays in acquiring land upon which to build a new civic centre caused Stanton Library to open in 1964. The library was named after James Street Stanton, mayor of North Sydney from 1937-1939 (North Sydney Council, 2017d).

Commercial growth continued into the 1970s, with insurance, banking, advertising, and computing firms opening in North Sydney. During the 1980s, progress was renewed, with office towers being built in low-rise Victorian and Federation shopping centres, resulting in the loss of much 19th century architecture. This led to widespread disaffection with the local council by residents, and as much as two-thirds of the council being replaced during the 1980 elections. The change fostered a sense of community spirit, driven by the new council, which resulted in a North Sydney community identity being forged. This change is exemplified in renewed urban design for the area, including the design of the North Sydney Bus Shelters (North Sydney Local Environmental Plan 2013 ID I0407).

While development continues into the present day, there is a push towards conservation of the environmental quality of the central business district and its residential neighbourhoods (Masson, 2010). The suburb of North Sydney currently comprises the central business district of North Sydney, which is described as an '*iconic, attractive, and sustainable area, with the focus on the North Sydney Centre, which is identified under the Metropolitan Strategy 2036 as a global commercial centre*' (North Sydney Council, 2012a). In 2011, its population was 6258 (Australian Bureau of Statistics, 2011g). As of 2016, its population had reached 7705, with little expansion of its northernmost boundary (Australian Bureau of Statistics, 2016g).

3.1.2.4 Milsons Point

James Milson was an early occupier of the land around Milsons Point, to whom Governor Brisbane granted 50 acres of land during his term of office between 1821-1825. He used the area for fresh water supplies and ballast to sell to the shipping traders who frequented Port Jackson. His home, Brisbane Cottage was destroyed in a fire in 1826 so he replaced it with two larger houses, being Brisbane House facing Lavender Bay, and Grantham, located in Kirribilli. However, both homes were demolished in 1925-1926 to make way for the construction of the Sydney Harbour Bridge (National Heritage List ID 105888/ State Heritage Register ID 00781/Roads and Maritime Section 170 heritage and conservation register/ North Sydney Local Environmental Plan 2013 ID I0530/ Register of the National Estate ID 1857) in 1932 (Park, 2008).

Between the 1830s and the 1860s, ferry services in the area became substantial enough not only to carry people, but horses and carts across Port Jackson. James Milson Junior became part of the group who formed the North Shore Ferry Company (later called Sydney Ferries Limited) in the 1860s. Cable trams were installed between the ferry terminal in Milsons Point and North Sydney by 1886. The Milsons Point Ferry Arcade, a transit building for tram, train and ferry passengers, was demolished in 1924. In 1885, water was piped into Milsons Point from Dawes Point (Figure 3-4), providing water for the area, and in 1888 the Metropolitan Water Sewerage and Drainage Board was established, resulting in a link from the Ryde pipeline being installed during 1892 to provide water for its growing population (Park, 2008).

Milsons Point's first train station (State Heritage Register ID 01194/ Sydney Trains Section 170 heritage and conservation register/ *North Sydney Local Environmental Plan ID* I0539) was completed in 1893, but was relocated in 1924 due to the construction of the Sydney Harbour Bridge and moved to the site of a former station, Lavender Bay, with a remodelled terminus. The extant ferry terminal was also moved, with a new wharf being built in Kirribilli for vehicular ferry transport, and the passenger terminal moved to Lavender Bay. The site of the former Milsons Point station was remodelled for the construction workshops of Dorman Long and Company, who constructed the Sydney Harbour Bridge. After the bridge was completed in 1932, the construction workshops were redeveloped into Luna Park, which opened in 1935 (Office of Environment and Heritage, 2009; Park, 2008). Luna Park operated from 1932 to 1979 when a fire destroyed the Ghost Train, killing six children and one adult. The park has had three major refurbishments, operating between 1982-1988, 1995-1996, and from 2004 onwards (Luna Park Sydney, n.d.; Office of Environment and Heritage, 2012a).

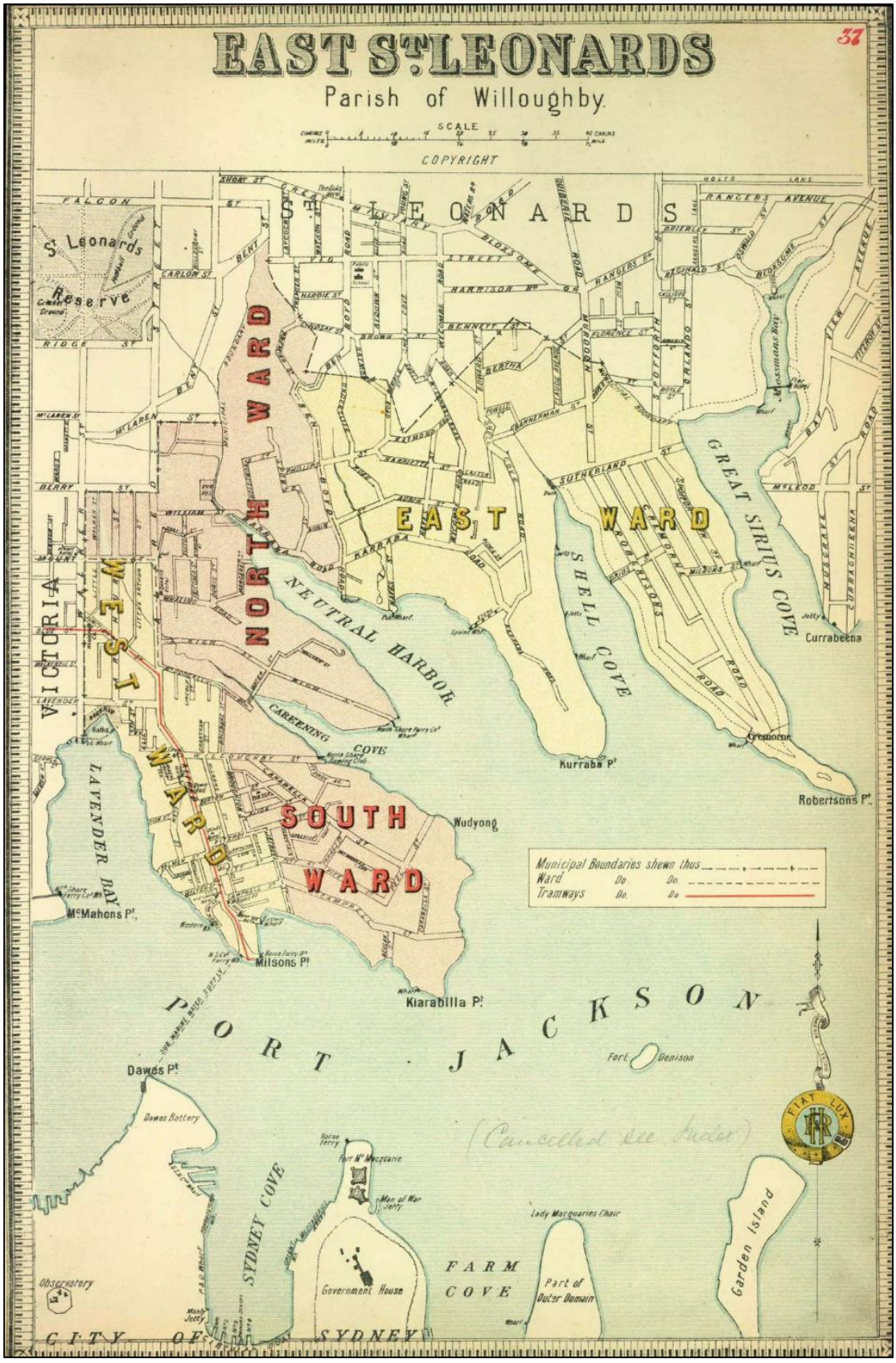


Figure 3-4 : East St Leonards map 1889-1890 (Source: City of Sydney Archives)

Part of the Dorman Long and Company workshops were also remodelled into the North Sydney Olympic Pool in 1936, and used to host swimming events for the 1938 Empire Games. The pool still operates today (North Sydney Council, 2017c; Park, 2008). The construction of the Sydney Harbour Bridge also affected local residents, causing some to gain employment during the Depression, while others lost their homes and jobs to the project with no compensation, and many shops, churches, hotels, historical homes, and other buildings (including the Milsons Point Ferry Arcade) within Milsons Point were also lost. The land underneath the Sydney Harbour Bridge approaches was declared a public park – Bradfield Park (North Sydney Local Environmental Plan 2013 ID I0538) – which was named after government engineer, JJC Bradfield (North Sydney Council, 2014; Park, 2008).

The housing boom that took place at Milsons Point during the 1970s and 1980s included the unchecked replacement of historical low-rise housing with high-rise buildings, dramatically reducing the area's heritage (Spindler, 2011). The suburb is now characterised by mixed residential and commercial towers at the base of Sydney Harbour Bridge, along with landmarks such as Luna Park and the North Sydney pool (North Sydney Council, 2012a). As of 2011, Milsons Point had a population of 2013 (Australian Bureau of Statistics, 2011d). In 2016, the population had reached 2158, possibly due to the suburb boundary being expanded in the south (Australian Bureau of Statistics, 2016d).

3.1.2.5 Neutral Bay

This area was named by Governor Arthur Phillip, 'when he decreed in 1789 that all non-British 'neutral' ships visiting Port Jackson were to anchor there' (Masson and Hoskins, 2008). However, by the late 1800s, the area came to be known as St Leonards East (Figure 3-4). Most of the area comprised a 700 acre lot, known as Thrupp's Farm, bought as a wedding present for Alfred Thrupp (Figure 3-5) by his father-in-law Captain John Piper (Masson and Hoskins, 2008; Slater, 1936). Thrupp never lived there, soon moving to Van Diemen's Land, and, after Piper went bankrupt, the land was sold to the merchant and land speculator, Daniel Cooper, in 1827. His nephew, John Cooper, became manager of the estate in 1854 (Masson and Hoskins, 2008). In 1831, James McLaren, who leased land from Daniel Cooper, built the Craignathan homestead on the foreshore. The whaler, trader and blackbirder, Benjamin Boyd, moved into Craignathan homestead during the 1840s where he built a wool store on the foreshore and a dam behind the house for wool washing (Department of Finance, 2015; Masson and Hoskins, 2008). Cooper continued to offer leases throughout the 1850s and into the 1860s, and a number of large residences were built on Neutral Bay and Kurraba Point. With the formation of roads through what was then called Cooper Estate, along with a regular ferry service from the 1870s and a tram service from the 1880s, more people began to take up the estate's subdivisions (North Sydney Council, n.d.-f). After water, gas, and sewerage had also been connected in 1885, trustees of the Cooper family estate further subdivided the land. By this time, the area comprised Neutral Bay Public School (built in 1886), post office, hotel, hall, local shops and churches (Masson and Hoskins, 2008; North Sydney Council, n.d.-c).

Growth in the area continued through the 1890s, and by the 1900s, Neutral Bay and Kurraba Point were considered to be a fashionable place for the wealthy (North Sydney Council, n.d.-f). From 1880-1891, Patrick Hayes' Oaks Steam Brick Company was one of the most prominent local businesses. The Oaks Hotel was opened next door in 1885. Architect Walter Liberty Vernon also leased land from the Cooper Estate, and he built Penshurst Manor, a copy of his Tudor-style home in England. Working with architect Howard Joseland, the two architects expanded their holdings by purchasing Patrick Hayes' property in the late 1880s, and released a prospectus including land with 33 pre-built houses in the Italianate and Queen Anne styles, by 1889. Their company folded in the 1890s during the financial depression (Masson and Hoskins, 2008).

By 1909, the tramway had been upgraded to an electric tramline, and the former Oaks Steam Brick Company was transformed into the Neutral Bay Tram Depot. It was the tram workers who were instrumental in introducing the working-class-based Rugby League football code to the area (Masson and Hoskins, 2008). In 1915, Neutral Bay was described as, '*a delightful watering suburb situated on the northern foreshores of Sydney Harbour, it is surrounded by undulating grassy lawns and gardens, connected with the City by an excellent ferry service from Circular Quay*' (North Sydney Council, n.d.-f). The writer May Gibbs lived in Neutral Bay between World War I and her death in 1969; her house, Nutcote, is now a museum, operated by the North Sydney Council (Masson and Hoskins, 2008; nutcote.org, 2011).

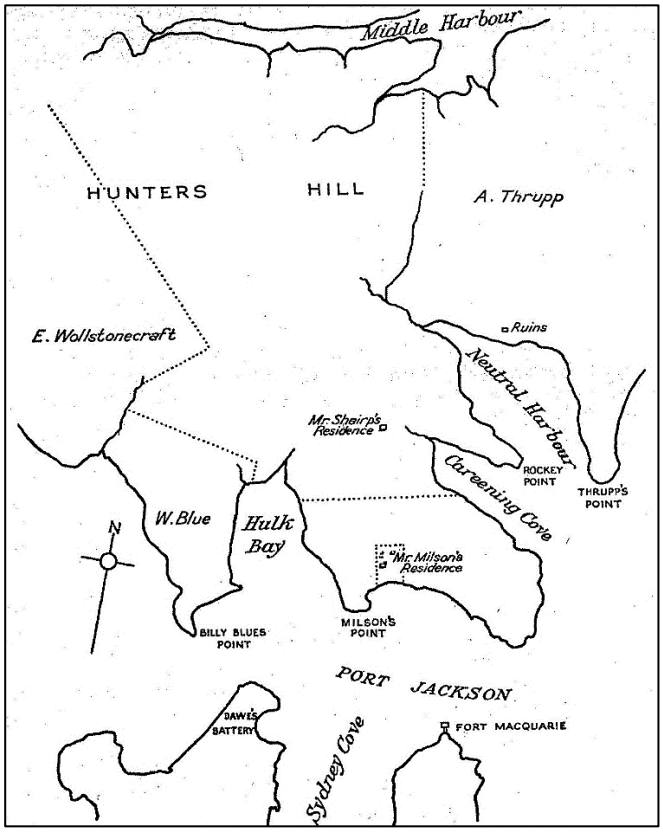


Figure 3-5 : A map showing land belonging to Alfred Thrupp, 1860 (Source: Crows Nest Chamber of Commerce)

By the 1930s, the area had become predominately populated by the middle-class, with a shopping centre, and a number of boarding houses, guesthouses, and private hotels (North Sydney Council, n.d.-c). The Oaks Hotel was replaced in 1938 by Tooth and Company Maltings Limited, on a design by architect JG Dalziel (Masson and Hoskins, 2008; North Sydney Council, n.d.-c). During the 1950s, when trams were being phased out of service, half of the Neutral Bay Tram Depot was turned into a bus depot, while the other half became one of Sydney's first self-service supermarkets (Masson and Hoskins, 2008).

Since the mid-1930s, local residents were alarmed at the increasing trend of building blocks of flats in Neutral Bay. However, by the 1960s new local development typically comprised apartment buildings and townhouses. This served to attract young, educated people to the area which, in turn, drove up property prices and rental costs steeply throughout the 1970s, and this growth continues today. Many of the old Federation and interwar residential buildings were replaced by medium-density apartments, to the detriment of Neutral Bay's historical heritage (Masson and Hoskins, 2008). Despite this, Neutral Bay is currently characterised as having mostly low-density residential areas, including conservation areas and heritage items, along with waterfront recreation areas (North Sydney Council, 2012c). In 2011, the population of Neutral Bay was 9384 individuals, but by 2016, the population had risen to 10,488 with only minor changes to the suburb boundary (Australian Bureau of Statistics, 2011f; 2016f).

3.1.2.6 Kirribilli

According to Hoskins (2008), the name for this suburb may come from the Aboriginal word *kiarabilli*, which refers to a good fishing spot. Bungaree, the Aboriginal negotiator who accompanied Matthew Flinders when he circumnavigated Australia between 1802-1803, camped by the harbour at Kirribilli with his family in the 1820s until his death in 1830 (Hoskins, 2008; Sydney Barani, 2013). In 1822, the land which had encompassed Kirribilli was part of James Milson's 50 acre land grant, on which, in the present-day Kirribilli suburb, he built Wia Wia house on the Careening Cove waterfront in 1834 (North Shore Historical Society, 1994; North Sydney Council, n.d.-e). Milson's land was subdivided between the late 1830s and early 1840s, when many sandstone

homes, known as ‘marine villas’, were constructed in the style made popular by English architects such as John Claudius Loudon (Hoskins, 2008; Read, 2016). James Milson Junior built Elamang House to the southeast of Wia Wia between 1851-1852; Elamang was purchased by the Loreto Sisters to use as a convent in 1907 (Hoskins, 2008; North Shore Historical Society, 1994; North Sydney Council, n.d.-e).

One of the 1840s sandstone homes was Wotonga House, built by Colonel JGN Gibbs after 1842 when he leased the land from Milson, and subsequently sold it to Sydney merchant JL Travers who in turn, sold part of the land to another merchant Adolf Feez who built Kirribilli House on it in 1855. Royal Engineer Colonel George Barney lived at Wotonga in the 1850s while supervising installation of harbour fortifications at Kirribilli Point. Wotonga was purchased by the State Government in 1885 to use it as a home for the Naval Commander in Chief and upon enlarging it in the 1890s, renamed it Admiralty House. The Commonwealth acquired Admiralty House in 1913 for the use of the Governor-General (Hoskins, 2008; North Shore Historical Society, 1994; North Sydney Council, n.d.-e).

The population of Kirribilli remained low until the 1880s, by which time the construction of a road network combined with the installation of essential services and the commencement of a reliable ferry service led to an increase in uptake of property, the construction of schools and churches in the area, and the promise of a harbour bridge or tunnel crossing. This led to small cottages and terrace houses being built away from the waterfront for local workers. The harbour was also used for an important small-scale waterfront industry which included Wrixton's Boatyard (opened in 1888) and for recreation, including the North Shore Rowing Club’s clubhouse (from 1879) and the reclamation of the Careening Creek mudflats (1890s) for Kirribilli Park, which was renamed as Milson Park in 1912 (Hoskins, 2008; North Sydney Council, 2017b).

One of the first blocks of flats was erected at the Kirribilli waterfront in 1907. As property prices rose, many of the larger disused mansions (such as Miandetta, the 1890s home to Australia’s first Prime Minister, Sir Edmund Barton) were subdivided and sold from the early to mid-1900s, making way for higher-density living, and population density increased (Hoskins, 2008). The construction of guesthouses and private hotels also followed.

By the 1920s, some parts of Kirribilli were considered to be too congested, but a number of these high density buildings on the westernmost boundary of the suburb were demolished to make way for the Sydney Harbour Bridge (National Heritage List ID 105888/ State Heritage Register ID 00781/ Roads and Maritime Section 170 heritage and conservation register / North Sydney Local Environmental Plan 2013 I0530/ Register of the National Estate, 1857) in 1926 – the bridge itself was built in 1932 (Hoskins, 2008; North Sydney Council, n.d.-e).

After the bridge was complete, Australia’s most significant public housing development, Greenway Flats (North Sydney Local Environmental Plan 2013 ID I0187) was built between 1948-1953 on vacant land cleared for the bridge’s construction. It was named after Australia’s first architect, the ex-convict Francis Greenway. Tenancy to these flats was granted via the Housing Commission lottery, due to a severe post-war housing shortage (Hoskins, 2008; North Sydney Council, n.d.-e). The Greenway Flats are extant, and still used as public housing today (Greenway Tenants Group, n.d.; North Sydney Council, n.d.-b).

Private development continued throughout the 1950s and 1960s, building new flats on old homes, which prompted local residents to question the impact of high rise buildings on the character of the neighbourhood and upon local identity. But by the 1970s, Kirribilli had one of the highest population densities in Australia and as of 2001, of all dwellings in Kirribilli, only 3.9 per cent (77) were separate houses compared to 85.4 per cent (1696) flats, units or apartments (Australian Bureau of Statistics, 2001; North Sydney Council, n.d.-e). By 2016 suburb boundary shifts had changed this slightly to 4.7 per cent (88) separate houses to 86.6 per cent (1637) flats, units or apartments (Australian Bureau of Statistics, 2016c). The suburb is now characterised by its foreshores and views of Sydney Harbour, by its active Kirribilli Village Centre surrounded by a predominantly residential neighbourhood and conservation areas (North Sydney Council, 2012d). As of 2011, Kirribilli’s population comprised 3668 people. In 2016, the population had risen to 3820, despite a contraction of the suburb’s boundaries (Australian Bureau of Statistics, 2011c; 2016c).

3.1.2.7 Cammeray

This area was slow to develop in comparison with the township of St Leonards due to its steep topography and remote location. Neither plans for a suspension bridge crossing Flat Rock Creek conceived in the 1880s nor the 1880s land boom managed to stimulate growth in the area beyond rural dairies and market gardens in the northern portion of present-day Cammeray and some boatmen's houses on the foreshore at Folly Point, with only limited urbanisation in the south. In 1886, Alderman Tunks, mayor of St Leonards from 1867 to 1883, dedicated a portion of land as a reserve (Figure 3-6) comprising present-day Cammeray Park and Cammeray Golf Club (North Sydney Local Environmental Plan 2013 I0024), Green Park, and ANZAC Park[1] (North Sydney Council, 2016b). The suspension bridge was completed in 1892, and the area soon came to be known as 'Suspension Bridge' (North Sydney Council, n.d.-d).

One of the early houses in the area was Tarella, home of Sir Joseph Palmer Abbott from 1886. Abbott was a speaker of the New South Wales Legislative Assembly (1880-1900), and a member of the Federation Conventions formed to frame a constitution for the Commonwealth of Australia (1891 and 1897-1898). He died in 1901. Tarella is a two-storey brick residence constructed in the Victorian Italianate style, restored in 1982 by John Hawkins who also added a pond, fountain, and relocated iron gates. He also built a sympathetic coachhouse at the rear of the premises (Office of Environment and Heritage, 2008; 2012b).

The 1890s depression saw the establishment of a shanty town, known as 'Tin Town', in bushland near Folly Point overlooking Quakers Hat Bay, which was still extant during the Great Depression of the 1930s, where the unemployed lived in humpies built out of materials such as corrugated iron and flattened kerosene tins (North Sydney Council, n.d.-d; Warne 2005, p. 123). Even the 1899 development of Cooliatta Estate, comprising land from a 23 acre grant given to Alexander Macarthur in 1853, saw little growth in the area until the early 1900s (North Sydney Council, 2012b; n.d.-d).

[1] Assessed as being of local significance as part of the current assessment. See Appendix A.

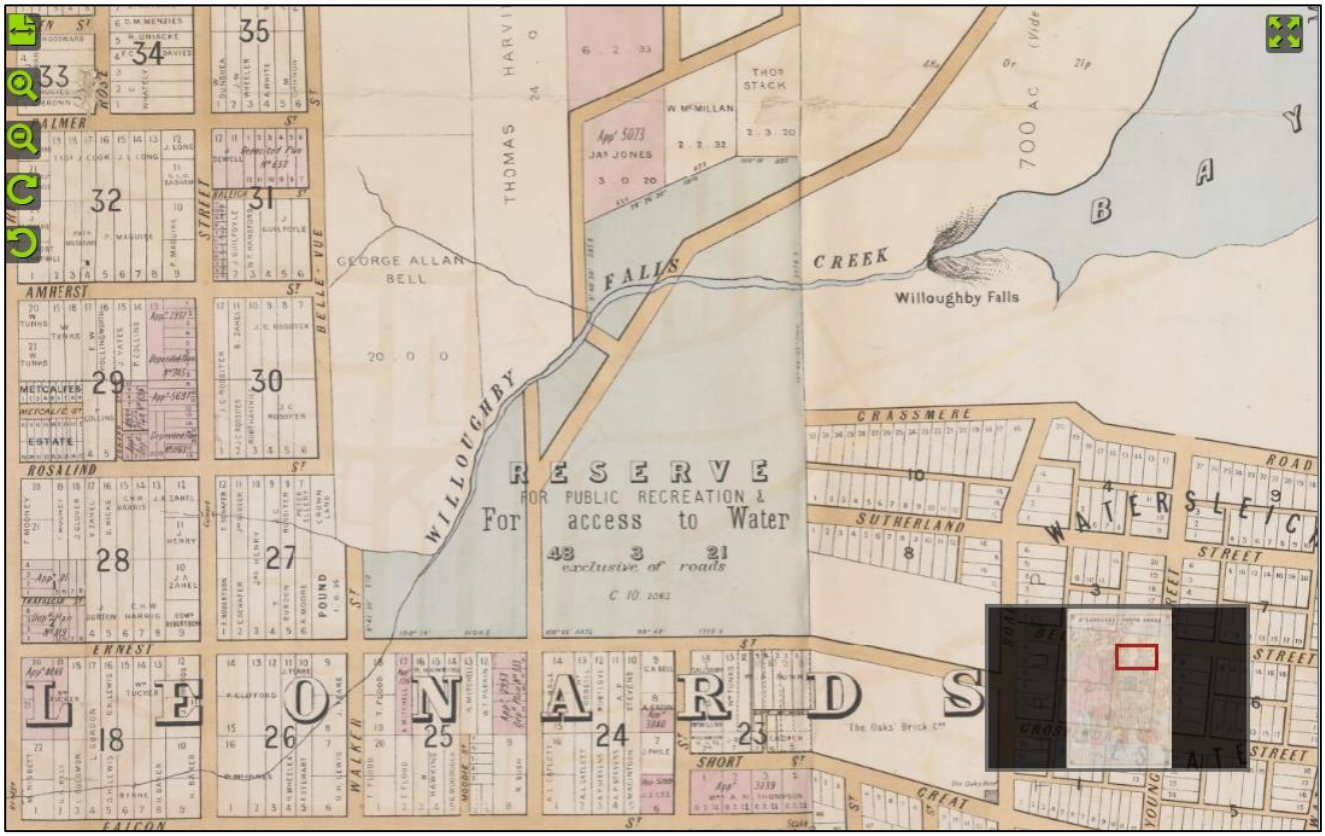


Figure 3-6 : Reserve for Public Recreation map 1886 (Source: National Library of Australia)

Land was taken up once the tramway was extended along Miller Street in 1909, and numerous subdivisions followed the new tramline section (North Sydney Council, 2012b; n.d.-d). Bells Estate, likely named after the southwestern section of Cooliatta Estate (named Bells Paddock), was one of them (North Sydney Council, 2012b, p. C4-16). In 1918, a World War I memorial statue was erected by the North Sydney Tramway Staff in the westernmost section of Cammeray Park (known today as ANZAC Park); the park was redesigned in 1995 by the North Sydney Council when they planted rows of turpentine trees behind the memorial, with a lone olive tree at their centre symbolising peace (Park, 2001). It was during the 1920s that the name 'Suspension Bridge' was finally replaced by 'Cammeray', the suburb being named after the local Aboriginal peoples, the *Cammeraygal*, who had previously inhabited the area (City of Sydney, 2016a).The land comprising Green Park, at the north of Cammeray Park, was donated by Henry Green, Mayor of North Sydney from 1921 to 1922 (North Sydney Council, 2017a).

Further estates opened in the 1930s, such as Morning Glow Estate (1921), Cammeray Estate (1932) and Green's Estate (1935). By the 1940s the area became more accessible due to motorised transport which added to a growing population. The Cammeray foreshore was an especially popular location for new housing. The final substantial subdivision was the Three Oaks Dairy (1942). During the 1950s Cammeray Park became Cammeray Golf Club (North Sydney Council, 2016b). Despite the growth, dairying continued in Cammeray until 1958 (North Sydney Council, n.d.-d). During the 1960s the construction of the Warringah Freeway cut the suburb into two, interrupting its residential growth. Parts of Cammeray Park and St Thomas' Cemetery, along with numerous homes, were negatively impacted by this construction (City of Sydney, 2016a; Hoskins, 2014, p. 33; North Sydney Council, 2016e).

Today, Cammeray is characterised by Cammeray Village, an active shopping precinct which is surrounded by diverse residential neighbourhoods of varying densities (North Sydney Council, 2012b). In 2011 it had a total population of 6784. By 2016, the population had risen to 7006 despite relatively minor changes to its suburb boundary (Australian Bureau of Statistics, 2011b; 2016b).

3.1.3 Willoughby local government area

3.1.3.1 Initial occupation and settlement

Land in the current location of the Willoughby municipality was first occupied by the *Cammeraygal* people of the *Kuring-gai* tribe, with the archaeological evidence for Aboriginal occupation exceeding 5,800 years. The *Wallumedegal* clan of the Dharug language group, also may have had a close association with the area (Phippen, 2008; Willoughby City Library Services, 2014). David Collins, an officer who arrived with the First Fleet, noted in 1788 that the *Cammeraygal* exercised a place of privilege and that they had a 'decided superiority'. By 1789, half the Aboriginal population of the Sydney area had been wiped out. The arrival of colonists from Europe further harmed the local population as settlers took over Indigenous land and resources, depleted fish stocks, reduced the local kangaroo population, cleared the land and massacred the people. This in combination with the disease brought to Australia by settlers, decimated the Aboriginal population by up to 80 – 90 per cent, the remainder of whom the colonists resettled on reservations and missions. In 1820, there is evidence that *Cammeraygal* people still lived within the area, but by the 1860s, the Indigenous community only rarely visited Sydney's north shore (Willoughby City Library Services, 2014; Willoughby District Historical Society Inc, 2011c).

David Collins also described the Willoughby area as being, '*high, rocky and barren, though it might add to the extent and beauty of the harbour, it did not promise to be of any benefit to the settlement*' (Collins, 1804, p. 27). As such, while a few 1794 land grants were taken up in the lower north shore, no settlers lived on the land. These land grants, located at '*Lane Cove on the North Side of the Harbour of Port Jackson*', comprised 30 acres each to discharged soldiers from the New South Wales Corps by Lieutenant Governor Francis Grose (Russell, 1966, p. 13). Timber-getters used the Lane Cove river as a thoroughfare to transport timber from the north shore to Sydney (LandArc Pty Limited, 2002, p. 145). In 1835, the area became a municipality, and was given the title of the Parish of Willoughby. It was named by Surveyor-General Thomas Livingston Mitchell (from 1828-1855) for his former superior officer, James Willoughby Gordon. Land grants continued until 1829, when rural settlement and timber-getting constituted the earliest settlement in this part of Sydney.

An 1841 census noted a population of 586 in the Parish. In May 1865, the 67 residents of the rural district of Willoughby petitioned Governor John Young for the incorporation of the Municipality of Willoughby, which resulted in the formal proclamation of the Municipality of North Willoughby in October 1865 (LandArc Pty Limited, 2002; Willoughby District Historical Society Inc, 2011c). By the 1880s, several tanneries and brickworks had been established in the area, however the population remained predominantly rural due to a lack of reliable transportation to the area. Despite the 1880 installation of the North Shore Railway, and the Willoughby Tramway in 1886, the 1890s economic depression did not bring about rapid expansion to the municipality, and the population of the Parish only numbered 5100 by 1900 (Willoughby District Historical Society Inc, 2011c).

3.1.3.2 Naremburn

Land near Naremburn was one of the first areas settled in the Willoughby City area, small land grants being taken up and settled from 1853. The land where the township developed was originally composed of two land grants, each consisting of a six acre lot, both awarded to Dugald MacPherson, one in 1853 and another in 1854 (Evans, 2008; Naremburn Progress Association, 2017). After MacPherson's death in 1854 his wife owned the land until her death in 1878. George Penkivil Slade, a solicitor and painter from Sydney, then purchased the land before selling it to surveyor George Bishop in 1879. Bishop then subdivided the land and sold it for development (Evans, 2008).

The township developed during the 1880s and into the 1910s, especially after the opening of the North Shore railway line in 1890 (City of Sydney, 2016b). Housing mostly consisted of workers' cottages and small houses constructed from weatherboard, bark or wattle and daub, and sandstone. The town's official name was Central Township. However, it was also known by several other names – Dog Town, Pension Town, and Struggle Town – which reflected its character as a working-class neighbourhood (Evans, 2008; Willoughby City Library Services, 2013; Willoughby District Historical Society Inc, 2011a). While the township was known as Central Town or Central Township, the area surrounding the town has been called Naremburn since the 1880s. The

origins of this name is unknown, although there are several theories: the first being that it was a corruption of Merrenburn, the name of the home of politician Alexander Dodds who lived in the area; the second being a corruption of 'near a burn', a Scottish term meaning fresh water which could refer to Flat Rock Creek; and the third being an anglicisation of the Aboriginal terms 'narra' (fork, forked, forking) and 'burren' (creek), which referred to a no-longer extant creek which created a fork as it joined Flat Rock Creek prior to development (Evans, 2008; Willoughby City Library Services, 2013).

Businesses in the township between the mid-1800s and the early 1900s were typically rural, and included orchards, a few dairies, horse-breakers, a piggery, and a slaughterhouse. Two sandstone quarries also operated in the area, as well as plasterworks and a small cabinet factory. By the 1880s, the township's main shopping precinct was located on Market Street. However, the establishment of the tramway in 1896 resulted in the shopping area moving to Willoughby Road (Evans, 2008; Willoughby District Historical Society Inc, 2011a). Naremburn Public School was opened in 1887 with 180 students by the end of its first year. Rapid population expansion in the 1920s caused the school to add extensions in 1927, and its enrolments peaked at 1,700 in 1930. The school went through various name changes over the years, changing from a primary school to a high school, and back again. The school eventually closed in 1990, and part of its grounds were redeveloped into housing. From 1992, the smaller school was used for special needs students as part of the North Harbour Unit, and was repurposed in 2002 as the current Naremburn School (Willoughby City Council, n.d.).

The suspension toll bridge, situated at the border of Naremburn, Northbridge and North Sydney, was installed in 1892, however by 1912 it was in such a state of deterioration that the company who owned it, the North Sydney Investment and Transport Company, offered it to the state government on the condition that the bridge was repaired and the tolls removed (Evans, 2008). In 1914 the government completed a tramway extension across the bridge (Willoughby District Historical Society Inc, 2011b). However, by 1936 the bridge was designated as unsafe for vehicles and fit for pedestrians only. Instead of demolishing the bridge as originally planned, public outcry ensured that the bridge, when it was reopened in 1939, kept its original stanchions along with the addition of a new concrete arch (Evans, 2008). During the 1920s a private bus company began operation to provide for the transportation needs of the local population. In 1927, the Cascade Cordial factory was opened in Naremburn (Willoughby District Historical Society Inc, 2011a).

The Australian poet, Henry Lawson, stayed in Naremburn periodically through part of the early 1900s. During this period of his life, he was an alcoholic and was unwelcomed by the majority of the township's residents. However, he lived at the house of Mrs Isabel Byers, a widow, on Market Street from June 1906 to January 1907 (Evans, 2008). He took up residence again after World War I. He would often retreat to Flat Rock Gully when in an alcoholic state; his letters mention '*a deep rocky gully running to Middle Harbour*', near where he stayed in Naremburn, in a house belonging to '*a Mrs McGill*' (Lawson and Roderick 1968, p. 390). The gully was Flat Rock Gully, through which Flat Rock Creek flowed. Another resident of Naremburn who often visited the gully, and the associated Naremburn Falls, was the historian and conservationist Eric Wilksch who, with his wife Violet, built their home, Barossa, in Market Street, Naremburn in the 1950s. He documented the indigenous flora of the area, prior to the gully and creek's use as a rubbish tip, and his recordings are now kept at the Willoughby City Library (Willoughby District Historical Society Inc, 2011a).

In 1978, the section of the Warringah Freeway linking the Sydney Harbour Bridge to Willoughby Road was completed, followed by the 1992 additional Gore Hill Link between Naremburn and Lane Cove. This resulted in many of the former workers' cottages being demolished and replaced with medium and high density housing for the suburb's growing population (City of Sydney, 2016b; Willoughby City Library Services, 2013). In an effort to provide guidelines for the new development, the National Trust of Australia (NSW) classified Naremburn as an urban conservation area in 1984 (Evans, 2008). Between 2006 and 2011, the population increased from 4951 to 5474 individuals, and has only slightly increased in 2016 to 5884 (Australian Bureau of Statistics, 2006; 2011e; 2016e).

3.1.4 Historical themes

Historical context provides a framework with which to understand local site histories. It is also used to establish the significance of the historical values associated with particular sites, making it easier to understand the

history of the site as it is seen through the lens of the broader histories of both Australia and New South Wales. Historical themes have been established by the Heritage Council of NSW (Heritage Council of NSW, 2001) and the Australian Heritage Commission (Australian Heritage Commission, 2001). Relevant themes for the study area are outlined in Table 3-1.

Table 3-1 : Relevant historical themes for the study area

Australian theme (Australian Heritage Commission, 2001)	NSW theme (Heritage Council of NSW, 2001)	Local theme	Site types
Peopling Australia	Aboriginal cultures and interactions with other cultures	Activities associated with demonstrating distinctive ways of life; and with interactions demonstrating race relations	Camp sites, shelters and habitation sites, middens, ceremonial places, spiritual places, rock engravings, place names, conflict or massacre sites, missions and institutions, removed children's homes, and Aboriginal reserves
Developing local, regional and national economies	Exploration	Activities associated with making places previously unknown to a cultural group known to them	Explorers' routes, camp sites, water sources, Aboriginal trade routes, and landing sites
Building settlements, towns and cities	Land Tenure	Activities and processes for identifying forms of ownership and occupancy of land and water	Subdivision patterns, land title documents, and survey marks
Developing local, regional and national economies	Agriculture	Activities relating to the cultivation and rearing of plant and animal species, usually for commercial purposes	Rural landscapes, farmsteads, orchards, market gardens, and dairy farms
Developing local, regional and national economies	Pastoralism	Activities associated with the breeding, raising, processing and distribution of livestock for human use	Pastoral stations, homesteads, pastoral landscapes, grasslands, and wool stores
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	Town plans, streetscapes, village reserves, civic centres, subdivision patterns, commercial buildings, residential houses, and shanty towns
Peopling Australia	Migration	Activities and processes associated with the resettling of people from one place to another (international, interstate, intrastate)	Quarantine station, quarantine depot
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	Railway stations, highways, streets, roads, lanes, trains, ferries, wharves, bridges, footpaths, harbours, bus shelters, and shipping
Developing local, regional and national economies	Commerce	Activities relating to buying, selling and exchanging goods and services	Banks, shops, inns, shopping centres, and trade routes

Australian theme (Australian Heritage Commission, 2001)	NSW theme (Heritage Council of NSW, 2001)	Local theme	Site types
Developing local, regional and national economies	Communication	Activities relating to the creation and conveyance of information	Post offices
Building settlements, towns and cities	Accommodation	Activities associated with the provision of accommodation, and particular types of accommodation	Terraces, apartments, semi-detached houses, hostels, mansions, humpies, caves, hotels, homesteads, cottages, boarding houses, guesthouses, and slums
Educating	Education	Activities associated with teaching and learning by children and adults, formally and informally	Primary schools, high schools, mechanics institutes, sports fields, and libraries
Developing local, regional and national economies	Health	Activities associated with preparing and providing medical assistance and/or promoting or maintaining the wellbeing of humans	Hospitals, sanatoriums, and asylums
Developing local, regional and national economies	Industry	Activities associated with the manufacture, production and distribution of goods	Factories, workshops, depots, shipbuilding yards, slipways, wharfs, jetties, and potential archaeological deposits relating to shipbuilding activities
Developing local, regional and national economies	Utilities	Activities associated with the provision of services, especially on a communal basis	Water pipelines, water channels, canals, sewage tunnels, gas lines, and bridges
Governing	Defence	Activities associated with defending places from hostile takeover and occupation	War memorials, naval base
Governing	Government and administration	Activities associated with the governance of local areas, regions, the State and the nation, and the administration of public programs	Municipal chambers, legislative documents, places acquired/disposed of by the state, missions, Aboriginal reserves, and public infrastructure
Governing	Law and order	Activities associated with maintaining, promoting and implementing criminal and civil law and legal processes	Courthouses, and police stations
Governing	Welfare	Activities and process associated with the provision of social services by the state or philanthropic organisations	Public housing, and public hospitals
Developing Australia's cultural life	Creative endeavour	Activities associated with the production and performance of literary, artistic, architectural and other imaginative, interpretive or inventive works	Theatres, cinemas, exemplars of architectural styles, art schools, and libraries

Australian theme (Australian Heritage Commission, 2001)	NSW theme (Heritage Council of NSW, 2001)	Local theme	Site types
Developing Australia's cultural life	Leisure	Activities associated with recreation and relaxation	Swimming pools, hotels, parks, clubhouses, fishing spots, amusement parks, golf courses and sports clubs
Developing Australia's cultural life	Religion	Activities associated with particular systems of faith and worship	Churches, rectories, halls, and graveyards
Developing Australia's cultural life	Social institutions	Activities and organisational arrangements for the provision of social activities	Masonic halls, art schools, mechanics' institutes, and public libraries
Developing Australia's cultural life	Sport	Activities associated with organised recreational and health promotional activities	Ovals, swimming pools, bowling clubs, and bowling greens

3.2 Physical context

3.2.1 Historical heritage register search

Historical heritage items identified on the relevant historical heritage registers and schedules within or adjacent to the study area are presented in Table 3-2 and mapped on Figure 3-11.

Some heritage items are listed on more than one register. There are historical heritage items listed on the National Heritage List, State Heritage Register, Local Environmental Plans, Section 170 Heritage and Conservation Registers, Commonwealth Heritage List, and the Register of the National Estate.

The southern end of the construction footprint associated with Warringah Freeway Upgrade is within 50 metres of the Opera House World Heritage buffer zone. No other World Heritage items are within or adjacent to the study area.

Table 3-2: Results of historical heritage register searches

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Glebe Island Bridge; RMS Bridge No. 61; RTA Bridge No. 61; Glebe Island Bridge, including abutments	State Heritage Register	01914	Bank Street/Victoria Road	Pyrmont	Leichhardt/Sydney	State
	Roads and Maritime Section 170 Register	4301666	James Craig Road	Rozelle		
	Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005	68	Blackwattle Bay	Pyrmont/ Rozelle		
	Register of the National Estate – Registered, Historic	15949	Banks Street and former Victoria Road			
	National Trust of Australia (NSW)	7749				
Whites Creek Stormwater Channel No 95; Whites Creek SWC No 95	Sydney Water Section 170 Heritage and Conservation Registers	4570343	Railway Parade to Parramatta Road	Annandale	Leichhardt	Local
Avenue of *Phoenix canariensis*	Leichhardt Local Environmental Plan 2013	I79	Railway Parade	Annandale	Leichhardt	Local
Former Unilever copra store, including interiors	Leichhardt Local Environmental Plan 2013	I306	9 Rosebery Place	Balmain	Leichhardt	Local
Brennan's Estate Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C16	Lilyfield	Lilyfield	Leichhardt	Local
Rozelle Public School, including interiors; Rozelle Public School	Leichhardt Local Environmental Plan 2013	I743	663 Darling Street	Rozelle	Leichhardt	Local
	Register of the National Estate – Registered, Historic	1695	660 Darling Street			
	National Trust of Australia (NSW)	S9583	660, 663 Darling Street			
St Paul's Church and neighbourhood centre, including interiors; St Paul's Church— Neighbour-hood Centre; St Paul's Presbyterian Church (former)	Leichhardt Local Environmental Plan 2013	I744	665A Darling Street	Rozelle	Leichhardt	Local
	Register of the National Estate – Registered, Historic	1692				

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Former police station, including interiors	Leichhardt Local Environmental Plan 2013	I747	707 Darling Street	Rozelle	Leichhardt	Local
	National Trust of Australia (NSW)	S7689				
Easton Park Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C18	-	Rozelle	Leichhardt	Local
Former Tower of London Hotel, including interiors	Leichhardt Local Environmental Plan 2013	I805	76 Victoria Road	Rozelle	Leichhardt	Local
St Joseph's Catholic Church and former school, including interiors	Leichhardt Local Environmental Plan 2013	I768	Gordon Street	Rozelle	Leichhardt	Local
Hornsey Street Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C19	-	Rozelle	Leichhardt	Local
Former shop, including interiors	Leichhardt Local Environmental Plan 2013	I780	21 Mackenzie Street	Rozelle	Leichhardt	Local
House, 'Hornsey', including interiors	Leichhardt Local Environmental Plan 2013	I771	42 Hornsey Street	Rozelle	Leichhardt	Local
St Joseph's Presbytery, including interiors	Leichhardt Local Environmental Plan 2013	I788	15 Quirk Street	Rozelle	Leichhardt	Local
Hannaford Senior Citizen Centre, including interiors	Leichhardt Local Environmental Plan 2013	I741	608 Darling Street	Rozelle	Leichhardt	Local
Former bank building, including interiors	Leichhardt Local Environmental Plan 2013	I742	661 Darling Street	Rozelle	Leichhardt	Local
The Valley Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C7	Rozelle/Balmain	Rozelle/ Balmain	Leichhardt	Local
Exchange Hotel, including interiors; Exchange Hotel	Leichhardt Local Environmental Plan 2013	I116	94 Beattie Street	Balmain	Leichhardt	Local
	Register of the National Estate	1684				
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I117	40 Rowntree Street	Balmain	Leichhardt	Local
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I118	93 Beattie Street	Balmain	Leichhardt	Local
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I119	95 Beattie Street	Balmain	Leichhardt	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I120	97 Beattie Street	Balmain	Leichhardt	Local
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I121	99 Beattie Street	Balmain	Leichhardt	Local
Street trees-various species	Leichhardt Local Environmental Plan 2013	I160	Carrington Street	Balmain	Leichhardt	Local
Commercial building, including interiors	Leichhardt Local Environmental Plan 2013	I199	363–377 Darling Street	Balmain	Leichhardt	Local
Balmain Courthouse and Post Office; Balmain Police Station; Balmain Post Office, including interiors; Balmain Courthouse and Police Station, including interiors; Balmain Town Hall, including interiors; Balmain Courthouse, Police Station and Post Office; Balmain Civic Group; Post box; Former post office mail box	Leichhardt Local Environmental Plan 2013	I197	366B Darling Street	Balmain	Leichhardt	Local
	Leichhardt Local Environmental Plan 2013	I198	368-370, 391-393 Darling Street			
	Leichhardt Local Environmental Plan 2013	I200	370 Darling Street			
	Attorney General's Department Section 170 Heritage and Conservation Registers	3080138	368-370, 391-393 Darling Street			
	NSW Police Service Section 170 Heritage and Conservation Registers	4180266				
	Register of the National Estate – Registered, Historic	1693				
	Register of the National Estate – Registered, Historic	1707				
	National Trust of Australia (NSW)	6669				
Terrace, including interiors	Leichhardt Local Environmental Plan 2013	I214	8 Evans Street	Balmain	Leichhardt	Local
Terrace, including interiors	Leichhardt Local Environmental Plan 2013	I215	10 Evans Street	Balmain	Leichhardt	Local
Former Masonic Hall, including interiors	Leichhardt Local Environmental Plan 2013	I253	27A Llewellyn Street	Balmain	Leichhardt	Local
Street trees, Brush Box and *Ficus hillii* sp	Leichhardt Local Environmental Plan 2013	I254	Llewellyn Street	Balmain	Leichhardt	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Street trees-Brush Box and palms	Leichhardt Local Environmental Plan 2013	I256	Macquarie Terrace	Balmain	Leichhardt	Local
Rowntree Memorial	Leichhardt Local Environmental Plan 2013	I257	Macquarie Terrace	Balmain	Leichhardt	Local
Former Masonic Hall, including interiors	Leichhardt Local Environmental Plan 2013	I258	6 Montague Street	Balmain	Leichhardt	Local
Former Masonic Hall, including interiors	Leichhardt Local Environmental Plan 2013	I259	8 Montague Street	Balmain	Leichhardt	Local
Former Central Methodist Mission, including interiors	Leichhardt Local Environmental Plan 2013	I260	19 Montague Street	Balmain	Leichhardt	Local
Balmain Co-op Society Limited, including interiors;	Leichhardt Local Environmental Plan 2013	I261	28-30A Montague Street	Balmain	Leichhardt	Local
Balmain Cooperative Society Building (former)	Register of the National Estate	14049	28 Montague Street			
House, including interiors	Leichhardt Local Environmental Plan 2013	I307	40 Rowntree Street	Balmain	Leichhardt	Local
Former corner shop and residence, including interiors	Leichhardt Local Environmental Plan 2013	I308	45 Rowntree Street	Balmain	Leichhardt	Local
Raywell;	State Heritage Register	00093	144 Louisa Road	Birchgrove	Leichhardt	State
House, 'Raywell', including interiors	Leichhardt Local Environmental Plan 2013	I830				
	National Trust of Australia (NSW)	9456				
St John the Evangelist Anglican Church, including interiors;	Leichhardt Local Environmental Plan 2013	I522	125 Birchgrove Road	Birchgrove	Leichhardt	Local
St John the Evangelist Anglican Church	National Trust of Australia (NSW)	S9845				
Terrace house, including interiors	Leichhardt Local Environmental Plan 2013	I531	9 Cove Street	Birchgrove	Leichhardt	Local
Terrace house, including interiors	Leichhardt Local Environmental Plan 2013	I532	11 Cove Street	Birchgrove	Leichhardt	Local
Terrace house, including interiors	Leichhardt Local Environmental Plan 2013	I533	13 Cove Street	Birchgrove	Leichhardt	Local
Terrace house, including interiors	Leichhardt Local Environmental Plan 2013	I534	15 Cove Street	Birchgrove	Leichhardt	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Birchgrove Park	Leichhardt Local Environmental Plan 2013	I535	Grove Street	Birchgrove	Leichhardt	Local
House, 'Leopoldville', including interiors	Leichhardt Local Environmental Plan 2013	I547	14 Louisa Road	Birchgrove	Leichhardt	Local
Remnants of Birchgrove House	Leichhardt Local Environmental Plan 2013	I550	65 Louisa Road	Birchgrove	Leichhardt	Local
		I551	67 Louisa Road			
House, 'Douglas', including interiors	Leichhardt Local Environmental Plan 2013	I552	76 Louisa Road	Birchgrove	Leichhardt	Local
House, 'Geierstein', including interiors	Leichhardt Local Environmental Plan 2013	I553	85 Louisa Road	Birchgrove	Leichhardt	Local
	National Trust of Australia (NSW)	S8078				
House, 'Carlowrie', including interiors	Leichhardt Local Environmental Plan 2013	I554	115 Louisa Road	Birchgrove	Leichhardt	Local
	National Trust of Australia (NSW)	S9456				
House, 'Glenarvon', including interiors	Leichhardt Local Environmental Plan 2013	I591	1 Thomas Street	Birchgrove	Leichhardt	Local
(Balmain) Birchgrove Colliery, including interiors	Leichhardt Local Environmental Plan 2013	A9	2-8 Water Street	Birchgrove	Leichhardt	Local
Birchgrove and Ballast Point Road Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C8	Birchgrove	Birchgrove	Leichhardt	Local
Town of Waterview Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C4	Birchgrove/Balmain	Birchgrove/ Balmain	Leichhardt	Local
Railway electricity tunnel under Sydney Harbour; Sydney Harbour (Balmain to Greenwich) Railway Electricity Tunnel; Balmain to Greenwich Electric Cable Tunnel, including interiors	State Heritage Register	01231	146A and 146B Louisa Road	Birchgrove/ Greenwich	Leichhardt	State
	Leichhardt Local Environmental Plan 2013	A2				
	RailCorp Section 170 Heritage and Conservation Registers	5062542				
Beattie Street Stormwater Channel No. 15	Sydney Water Section 170 Heritage and Conservation Registers	4570329	Robert Street to Beattie Street	Rozelle/ Balmain	Leichhardt	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Iron Cove Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C6	Rozelle/Balmain/Birchgrove	Rozelle/ Balmain/ Birchgrove	Leichhardt	Local
Yurulbin Park; Long Nose Point (Birchgrove) Wharf Site and Shelter	Roads and Maritime Section 170 Heritage and Conservation Registers	4920097	Louisa Road	Birchgrove	Leichhardt	Local
	Leichhardt Local Environmental Plan 2013	I555				
	Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005	Schedule 4				
Sydney Harbour Landscape Area	Register of the National Estate – Indicative Place	14308	-	-	-	
House	North Sydney Local Environmental Plan 2013	I0023	280 West Street	Cammeray	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0007	1 Lytton Street	Cammeray	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0008	3 Lytton Street	Cammeray	North Sydney	Local
'Wieewa'	North Sydney Local Environmental Plan 2013	I0016	336-338 Miller Street	Cammeray	North Sydney	Local
'Franklea'	North Sydney Local Environmental Plan 2013	I0017	336–338 Miller Street	Cammeray	North Sydney	Local
St Thomas Rest Park (including Sexton's Cottage and cemetery fence)	North Sydney Local Environmental Plan 2013	I0180	250 West Street	Crows Nest	North Sydney	Local
	National Trust of Australia (NSW)	9981				
Cammeray Park (including golf course)	North Sydney Local Environmental Plan 2013	I0024	Cammeray	Cammeray	North Sydney	Local
Cammeray; Cammeray Conservation Area	North Sydney Local Environmental Plan 2013	CA01	Cammeray	Cammeray	North Sydney	Local
	Register of the National Estate - Indicative Place, Historic	100866				

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Electricity Substation No 217; Electricity Substation No. 217	North Sydney Local Environmental Plan 2013	I0183	Bligh Street	Kirribilli	North Sydney	Local
	Ausgrid Section 170 Heritage and Conservation Registers	3430354				
St John the Baptist Anglican Church	North Sydney Local Environmental Plan 2013	I0185	7-9 Broughton Street	Kirribilli	North Sydney	Local
The Fantasia Preschool; Former St. Johns Anglican Church Hall	North Sydney Local Environmental Plan 2013	I0186	5 Broughton Street	Kirribilli	North Sydney	Local
Greenway Flats	North Sydney Local Environmental Plan 2013	I0187	Corner Broughton and McDougall Streets	Kirribilli	North Sydney	Local
Illingullin; 'Illingullin'	North Sydney Local Environmental Plan 2013	I0217	14 Fitzroy Street	Kirribilli	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0252	44 Jeffreys Street	Kirribilli	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0253	46 Jeffreys Street	Kirribilli	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0254	48 Jeffreys Street	Kirribilli	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0255	50 Jeffreys Street	Kirribilli	North Sydney	Local
Bratton; 'Bratton'	North Sydney Local Environmental Plan 2013	I0283	38 Pitt Street	Kirribilli	North Sydney	Local
Careening Cove; Careening Cove Conservation Area	North Sydney Local Environmental Plan 2013	CA10	1-15 (odd numbers only) Winslow Street; 2-26 (even numbers only) Winslow Street; 4 Winslow Lane; 64-110 (even	Kirribilli	North Sydney	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
	Register of the National Estate - Indicative Place, Historic	100859	numbers only) Carabella Street; 111-149 (odd numbers only) Carabella Street, 31 Burton Street; 17-55 (odd numbers only) Willoughby Street; 26-62 (even numbers only) Willoughby Street; 15-57 (odd numbers only) McDougall Street; 44-80 (even numbers only) McDougall Street; 22-34 (even numbers only) Elamang Avenue; 41-47 (odd numbers only) Elamang Avenue; 2-18A (odd numbers only) Hipwood Street, 1-5 (odd numbers only); Hipwood Street, 4-14 (even numbers only) Bradly Avenue; 1 Bradly Avenue; 2-8 (even numbers only) Stannards Place; 85-183 (odd numbers only) High Street; 110-116 (even numbers only) High Street			
Jeffreys Street	North Sydney Local Environmental Plan 2013	CA26	Kirribilli	Kirribilli	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0302	23 Arthur Street	Lavender Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0305	27 Arthur Street	Lavender Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0306	28 Arthur Street	Lavender Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0307	29 Arthur Street	Lavender Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0308	30 Arthur Street	Lavender Bay	North Sydney	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
House	North Sydney Local Environmental Plan 2013	I0309	31 Arthur Street	Lavender Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0310	32 Arthur Street	Lavender Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0311	33 Arthur Street	Lavender Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0312	34 Arthur Street	Lavender Bay	North Sydney	Local
House; Houses and Terraces	North Sydney Local Environmental Plan 2013	I0383	37 Walker Street	Lavender Bay	North Sydney	Local
	Register of the National Estate – Registered, Historic	2881	9-37 Walker Street			
Walker Street Group	Register of the National Estate – Registered, Historic	2880	Walker Street	Lavender Bay	North Sydney	Local
Lavender Bay; Lavender Bay Conservation Area	North Sydney Local Environmental Plan 2013	CA12	1-14 Wilona Avenue; 16-22 (even numbers only) Mackenzie Street; 19 Mackenzie Street; 1-37 (odd numbers only) Walker Street, 2-30 (even numbers only) Walker Street; 1-45 Lavender Street; 1-1A Lavender Crescent; 32-46 (even numbers only) Waiwera Street; 21-23 (odd numbers only) Waiwera Street; 2-8 (even numbers only) King George Street; 10-60 (even numbers only) Lavender Street; 2-34 (even numbers only) Arthur Street; 23-33 (odd numbers only) Arthur Street	Lavender Bay	North Sydney	Local
	Register of the National Estate - Indicative Place, Historic	100855				
	State Heritage Register	01194	North Shore railway, Alfred Street	Milsons Point	North Sydney	State

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Milsons Point Railway Station group; Milsons Point Railway Station; Milsons Point Railway Station Group	North Sydney Local Environmental Plan 2013	I0539	Alfred Street			
	RailCorp Section 170 Heritage and Conservation Registers	4801026	North Shore railway, Alfred Street			
Milsons Point (Fitzroy Street) Underbridge	RailCorp Section 170 Heritage and Conservation Registers	4801822	Concrete Arch Over Fitzroy Street	Milsons Point	North Sydney	State
Milsons Point (Lavender Street) Railway Underbridge	RailCorp Section 170 Heritage and Conservation Registers	4801823	Concrete Arch Over Lavender Street	Milsons Point	North Sydney	State
Chinese Christian Church	North Sydney Local Environmental Plan 2013	I0528	100 Alfred Street South	Milsons Point	North Sydney	Local
	Register of the National Estate - Registered, Historic	2911				
Bradfield Park (including northern section)	North Sydney Local Environmental Plan 2013	I0538	Alfred Street South	Milsons Point	North Sydney	Local
Flat building	North Sydney Local Environmental Plan 2013	I0542	439 Alfred Street North	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0582	1 Byrnes Avenue	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0583	2 Byrnes Avenue	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0584	3 Byrnes Avenue	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0585	4 Byrnes Avenue	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0586	5 Byrnes Avenue	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0587	6 Byrnes Avenue	Neutral Bay	North Sydney	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
House	North Sydney Local Environmental Plan 2013	I0588	7 Byrnes Avenue	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0589	8 Byrnes Avenue	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0590	9 Byrnes Avenue	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0591	10 Byrnes Avenue	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0592	12 Byrnes Avenue	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0593	14 Byrnes Avenue	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0594	16 Byrnes Avenue	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0595	5 Darley Street	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0596	6 Darley Street	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0619	317 Ernest Street	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0620	319 Ernest Street	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0621	321 Ernest Street	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0622	323 Ernest Street	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0623	325 Ernest Street	Neutral Bay	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0633	2 Kurraba Road	Neutral Bay	North Sydney	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
House	North Sydney Local Environmental Plan 2013	I0634	4 Kurraba Road	Neutral Bay	North Sydney	Local
Former Neutral Bay tram depot and water tower; Big Bear Markets	North Sydney Local Environmental Plan 2013	I0674	116 Military Road	Neutral Bay	North Sydney	Local
	National Trust of Australia (NSW)	S11154				
House, sandstone rock wall and cliff face	North Sydney Local Environmental Plan 2013	I0735	2 Winter Avenue	Neutral Bay	North Sydney	Local
Whaling Road; Whaling Road Conservation Area	North Sydney Local Environmental Plan 2013	CA21	North Sydney	Neutral Bay	North Sydney	Local
	Register of the National Estate - Indicative Place, Historic	100858		North Sydney		
Oaks Avenue; Park and Oaks Avenues Conservation Area	North Sydney Local Environmental Plan 2013	CA05	North Cremorne/Cremorne	North Cremorne/ Cremorne	North Sydney	Local
	Register of the National Estate - Indicative Place, Historic	100864	North Cremorne			
North Sydney Technical High School (former); Greenwood (former North Sydney Technical High School); Greenwood/former North Sydney Technical High School	State Heritage Register	00517	36 Blue Street and 101–103 Miller Street	North Sydney	North Sydney	State
	North Sydney Local Environmental Plan 2013	I0892				
	Register of the National Estate - Registered, Historic	2896				
	National Trust of Australia (NSW)	7619				
North Sydney Post Office; North Sydney Post Office and court house (former police station); North Sydney Post Office Group; North Sydney Courthouse	State Heritage Register	01417	92-94 Pacific Highway	North Sydney	North Sydney	State
	North Sydney Local Environmental Plan 2013	I0953				
	Commonwealth Heritage List - Listed, Historic	106144				
	Register of the National Estate - Registered, Historic	2897	92-96 Pacific Highway			

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
	Register of the National Estate - Registered, Historic	2898	94 Pacific Highway			
	National Trust of Australia (NSW)	9331	92-94 Pacific Highway			
North Sydney Sewer Vent; Sewer Vent North Sydney; Sewer vent; Sewer Vent Shaft; Sydney Sewerage System Lewisham Sewer Ventilation Shaft	State Heritage Register	01641	Falcon Street (southwest of Warringah Freeway)	North Sydney	North Sydney	State
	North Sydney Local Environmental Plan 2013	I0839				
	Sydney Water Section 170 Heritage and Conservation Registers	285047				
	Register of the National Estate - Indicative Place, Historic	101165	Falcon Street			
	National Trust of Australia (NSW)	S10072				
St Leonards Park; North Sydney Oval; St Leonards Park and North Sydney Oval	State Heritage Register	01941	283A Miller Street	North Sydney	North Sydney	State
	North Sydney Local Environmental Plan 2013	I0916	Miller Street			
	North Sydney Local Environmental Plan 2013	I1125				
	Register of the National Estate - Indicative Place, Historic	19563				
	National Trust of Australia (NSW)	S9878				
W. Tunks Memorial Fountain	North Sydney Local Environmental Plan 2013	I1124				
War memorial	North Sydney Local Environmental Plan 2013	I1123	Ridge Street			
St Thomas, Church; St Thomas' Church Rectory; St Thomas' Kindergarten Hall; Memorial Hall of St Thomas;	North Sydney Local Environmental Plan 2013	I0885	34 McLaren Street	North Sydney	North Sydney	Local
	North Sydney Local Environmental Plan 2013	I0886				

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
St Thomas Anglican Church Group; St Thomas Anglican Church; St Thomas Kindergarten Hall; St Thomas Anglican Church Rectory; St Thomas Anglican Church Memorial Hall	North Sydney Local Environmental Plan 2013	I0887				
	North Sydney Local Environmental Plan 2013	I0888				
	Register of the National Estate - Registered, Historic	2891	Church Street			
	Register of the National Estate - Registered, Historic	2893				
	Register of the National Estate - Registered, Historic	2894				
	Register of the National Estate - Registered, Historic	2895	McLaren Street			
	Register of the National Estate - Indicative Place, Historic	102412				
	National Trust of Australia (NSW)	9969	34 McLaren Street			
Independent Theatre; The Independent Theatre	National Heritage List - Indicative Place, Historic	105905	269 Miller Street	North Sydney	North Sydney	Local
	North Sydney Local Environmental Plan 2013	I0914				
	National Trust of Australia (NSW)	7471				
North Sydney Telephone Exchange; Telephone exchange	North Sydney Local Environmental Plan 2013	I1030	1 Wheeler Lane	North Sydney	North Sydney	Local
	Register of the National Estate - Registered, Historic	103758	Mount Street			
North Sydney (Arthur Street) Railway Underbridge	RailCorp Section 170 Heritage and Conservation Registers	4801824	Concrete Arch Over Arthur Street	North Sydney	North Sydney	State
North Sydney bus shelters	North Sydney Local Environmental Plan 2013	I0407	North Sydney	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0794	2 Bray Street	North Sydney	North Sydney	Local
North Sydney Boys High School	North Sydney Local Environmental Plan 2013	I0830	127 Falcon Street	North Sydney	North Sydney	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
'Winstone'	North Sydney Local Environmental Plan 2013	I0831	182 Falcon Street	North Sydney	North Sydney	Local
Flat building	North Sydney Local Environmental Plan 2013	I0832	184 Falcon Street	North Sydney	North Sydney	Local
Flat building	North Sydney Local Environmental Plan 2013	I0833	186 Falcon Street	North Sydney	North Sydney	Local
Flat building	North Sydney Local Environmental Plan 2013	I0834	188 Falcon Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0835	210 Falcon Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0836	212 Falcon Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0837	214 Falcon Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0838	216 Falcon Street	North Sydney	North Sydney	Local
'Torwood'	North Sydney Local Environmental Plan 2013	I0876	3 McLaren Street	North Sydney	North Sydney	Local
'Grahwey'	North Sydney Local Environmental Plan 2013	I0877	9 McLaren Street	North Sydney	North Sydney	Local
'Kelvin'	North Sydney Local Environmental Plan 2013	I0878	11 McLaren Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0879	12 McLaren Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0880	21-23 McLaren Street	North Sydney	North Sydney	Local
MLC Building	North Sydney Local Environmental Plan 2013	I0893	105–153 Miller Street	North Sydney	North Sydney	Local
Monte Sant Angelo Group	North Sydney Local Environmental Plan 2013	I0894	128 Miller Street	North Sydney	North Sydney	Local
	National Trust of Australia (NSW)	S9032				

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
The Rag and Famish Hotel	North Sydney Local Environmental Plan 2013	I0901	199 Miller Street	North Sydney	North Sydney	Local
North Sydney Council Chambers (including fountain in park adjacent to Council Chambers); North Sydney Council Chambers, Wyllie Wing	North Sydney Local Environmental Plan 2013	I0902	200 Miller Street	North Sydney	North Sydney	Local
	North Sydney Local Environmental Plan 2013	I0903				
	National Trust of Australia (NSW)	S11240				
Shop	North Sydney Local Environmental Plan 2013	I0905	232–232A Miller Street	North Sydney	North Sydney	Local
Shop	North Sydney Local Environmental Plan 2013	I0908	243 Miller Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0912	255–257 Miller Street	North Sydney	North Sydney	Local
North Sydney Hotel	North Sydney Local Environmental Plan 2013	I0915	292 Miller Street	North Sydney	North Sydney	Local
Former Bank of NSW	North Sydney Local Environmental Plan 2013	I0919	51 Mount Street	North Sydney	North Sydney	Local
Facade of S. Thompson Building (No 67A)	North Sydney Local Environmental Plan 2013	I0920	67–69 Mount Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0921	67–69 Mount Street	North Sydney	North Sydney	Local
Gates and fence of former Crows Nest House; Gates and Fence of North Sydney Demonstration School	North Sydney Local Environmental Plan 2013	I0957	182 Pacific Highway	North Sydney	North Sydney	Local
	Register of the National Estate	2920	176-186 Pacific Highway			
Shop	North Sydney Local Environmental Plan 2013	I0959	265 Pacific Highway	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0977	63 Ridge Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0978	81 Ridge Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0979	85 Ridge Street	North Sydney	North Sydney	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
House	North Sydney Local Environmental Plan 2013	I0980	87 Ridge Street	North Sydney	North Sydney	Local
'St Helen's'	North Sydney Local Environmental Plan 2013	I0981	91 Ridge Street	North Sydney	North Sydney	Local
'St Malo'	North Sydney Local Environmental Plan 2013	I0982	95 Ridge Street	North Sydney	North Sydney	Local
Stone wall	North Sydney Local Environmental Plan 2013	I0996	Walker Street (near Hampden Street)	North Sydney	North Sydney	Local
Wenona Girls, School Group, Wenona; Wenona Girls, School Group, Ralston House; Wenona Girls, School Group, 79 Ridge Street; Wenona Girls, School Group, 83 Ridge Street; Wenona Girls, School Group, Karakatta	North Sydney Local Environmental Plan 2013	I0989	186 Walker Street (182 Walker Street)	North Sydney	North Sydney	Local
	North Sydney Local Environmental Plan 2013	I0990	186 Walker Street (184 Walker Street)			
	North Sydney Local Environmental Plan 2013	I0991	186 Walker Street (79 Ridge Street)			
	North Sydney Local Environmental Plan 2013	I0992	186 Walker Street (83 Ridge Street)			
	North Sydney Local Environmental Plan 2013	I0993	186 Walker Street			
House	North Sydney Local Environmental Plan 2013	I0994	207 Walker Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0995	209 Walker Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1007	1 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1008	3 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1009	5 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1010	7 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1011	9 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1012	11 Whaling Road	North Sydney	North Sydney	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
House	North Sydney Local Environmental Plan 2013	I1013	15 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0842	6 Hampden Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0843	8 Hampden Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0844	10 Hampden Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0845	12 Hampden Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0846	14 Hampden Street	North Sydney	North Sydney	Local
Shop	North Sydney Local Environmental Plan 2013	I0898	187 Miller Street	North Sydney	North Sydney	Local
Commercial building	North Sydney Local Environmental Plan 2013	I0904	201 Miller Street	North Sydney	North Sydney	Local
Trewyn Terraces	North Sydney Local Environmental Plan 2013	I0906	240 Miller Street	North Sydney	North Sydney	Local
Trewyn Terraces	North Sydney Local Environmental Plan 2013	I0907	242 Miller Street	North Sydney	North Sydney	Local
Trewyn Terraces	North Sydney Local Environmental Plan 2013	I0909	244 Miller Street	North Sydney	North Sydney	Local
Trewyn Terraces	North Sydney Local Environmental Plan 2013	I0910	246 Miller Street	North Sydney	North Sydney	Local
Trewyn Terraces	North Sydney Local Environmental Plan 2013	I0911	248 Miller Street	North Sydney	North Sydney	Local
Old GPO column	North Sydney Local Environmental Plan 2013	I0922	Mount Street Plaza	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0923	1 Napier Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0798	1 Doohat Avenue	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0925	5 Napier street	North Sydney	North Sydney	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
House	North Sydney Local Environmental Plan 2013	I0927	7 Napier street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0924	3 Napier street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0929	18 Neutral Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0931	20 Neutral Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0975	49 Ridge Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0976	51 Ridge Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0988	185 Walker Street	North Sydney	North Sydney	Local
Stone wall	North Sydney Local Environmental Plan 2013	I0996	Walker Street (near Hampden Street)	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1014	17 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1015	19 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1016	21 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1017	23 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1018	25 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1019	27 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1020	29 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1022	41 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1023	45 Whaling Road	North Sydney	North Sydney	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
House	North Sydney Local Environmental Plan 2013	I1024	47 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1025	49 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1026	51 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1027	53 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1028	55 Whaling Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1029	57 Whaling Road	North Sydney	North Sydney	Local
Edward Street; Edward Street Conservation Area	North Sydney Local Environmental Plan 2013	CA17	12-20 (even numbers only) Bay Road; 11-67 Edward Street; 2-15 Oak Street; 6 Napier Street; Oak Lane, 3-5 (odd numbers only) Berry Street; 7-27 Riley Street.	North Sydney	North Sydney	Local
	Register of the National Estate - Indicative Place, Historic	100853				
McLaren Street Conservation Area; McLaren Street	North Sydney Local Environmental Plan 2013	CA19	North Sydney	North Sydney	North Sydney	Local
	Register of the National Estate - Indicative Place, Historic	100851				
Walker and Ridge Streets; Walker / Ridge Streets Conservation Area	North Sydney Local Environmental Plan 2013	CA20	North Sydney	North Sydney	North Sydney	Local
	Register of the National Estate - Indicative Place, Historic	100852				
Union, Bank and Thomas Streets	North Sydney Local Environmental Plan 2013	CA15	McMahons Point	North Sydney/ Waverton	North Sydney	Local
Waverton Railway Station group (including booking office, hut and tunnel)	North Sydney Local Environmental Plan 2013	I1051	Bay Road	Waverton	North Sydney	Local
	National Trust of Australia (NSW)	9423				
Former coal loader; Coal loader;	North Sydney Local Environmental Plan 2013	I1040	Waverton	Waverton	North Sydney	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Balls Head Coal Loader	Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005	Schedule 5				
	Register of the National Estate - Indicative Place, Historic	19706	Balls Head Drive			
Woodleys Boatyard; Woodleys Shipyard	North Sydney Local Environmental Plan 2013	I1038	1 Balls Head Road	Waverton	North Sydney	Local
	Roads and Maritime Section 170 Heritage and Conservation Registers	4920101				
	Sydney Regional Environmental Plan No 23—Sydney and Middle Harbours 2005	Schedule 5				
BP Site (Former), Waverton; BP site	North Sydney Local Environmental Plan 2013	I1036	3A Balls Head Road	Waverton	North Sydney	Local
	Roads and Maritime Section 170 Heritage and Conservation Registers	4920094				
	Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005	Schedule 1	Berrys Bay			
Former Quarantine Boat Depot	North Sydney Local Environmental Plan 2013	I1039	Balls Head Drive	Waverton	North Sydney	Local
Balls Head Reserve	North Sydney Local Environmental Plan 2013	I1041	Balls Head Drive	Waverton	North Sydney	Local
HMAS Waterhen, cliff face	North Sydney Local Environmental Plan 2013	I1042	Balls Head Road	Waverton	North Sydney	Local
Priory Road Conservation Area	North Sydney Local Environmental Plan 2013	CA24	Waverton	Waverton	North Sydney	Local
Balls Head Foreshore Relics Group, remains of windlass spindle; Balls Head Foreshore Relics Group, ring bolt and iron screen;	North Sydney Local Environmental Plan 2013	I1044	Balls Head Drive	Waverton	North Sydney	Local
	North Sydney Local Environmental Plan 2013	I1045				

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Balls Head Foreshore Relics Group, ring bolt; Balls Head Foreshore Relics Group - steps to former harbour pool; Balls Head Foreshore Relics Group, Uncle Tom's Cabin	North Sydney Local Environmental Plan 2013	I1046				
	North Sydney Local Environmental Plan 2013	I1047				
	North Sydney Local Environmental Plan 2013	I1048				
House	North Sydney Local Environmental Plan 2013	I1053	22 Carr Street	Waverton	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1054	24 Carr Street	Waverton	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I1056	47 Carr Street	Waverton	North Sydney	Local
Oakhill; 'Oakhill'	North Sydney Local Environmental Plan 2013	I1075	40 Larkin Street	Waverton	North Sydney	Local
Flat building	North Sydney Local Environmental Plan 2013	I1080	26 Toongarah Road	Waverton	North Sydney	Local
Crows Nest Road Conservation Area; Crows Nest Road	North Sydney Local Environmental Plan 2013	CA23	Crows Nest Road	Wollstonecraft/Waverton/ North Sydney	North Sydney	Local
	Register of the National Estate - Indicative Place, Historic	100850				
Sydney Harbour Bridge; Sydney Harbour Bridge, approaches and viaducts (road and rail); Sydney Harbour Bridge approach viaducts, arches and bays under Warringah Freeway	National Heritage List - Listed Place, Historic	105888	Bradfield Highway	Dawes Point/ Milsons Point	Sydney/North Sydney	National
	State Heritage Register	00781	Bradfield Highway and North Shore Railway	Milsons Point/ Dawes Point	Sydney	
	North Sydney Local Environmental Plan 2013	I0530	Bradfield Highway, Dawes Point/Milsons Point	Dawes Point/ Milsons Point	Sydney/North Sydney	
	Roads and Maritime Section 170 Heritage and Conservation Registers	4301067	Sydney Harbour Bridge and approach viaducts, including 2-4 Ennis Road and 2-74 Middlemiss Street	Milsons Point	North Sydney	
	Register of the National Estate - Registered, Historic	1857	Bradfield Highway	Sydney	Sydney	

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
	National Trust of Australia (NSW)	C6075			Sydney/North Sydney	
Sydney Opera House – Buffer Zone	World Heritage List – Declared Property, Cultural	105914	2 Circular Quay East	Sydney	Sydney	World
Northern Suburbs Ocean Outfall Sewer	Sydney Water Section 170 Heritage and Conservation Registers	4570286	Flushcombe Road, Blacktown to Ocean Outfall at North Head (runs through Anzac Park)	Various	Manly/Hunters Hill/ Ku-Ring-Gai/Blacktown/ Mosman/Ryde/The Hills/Warringah/ Parramatta/Lane Cove	Local
Holtermann Estate Conservation Area (A); Holtermann Estate A Conservation Area	North Sydney Local Environmental Plan 2013	CA07	Crows Nest	Crows Nest	North Sydney	Local
	Register of the National Estate - Indicative Place, Historic	100845				
Tarella	State Heritage Register	00270	3 Amherst Street	Cammeray	North Sydney	State
Naremburn Central Township	Willoughby Local Environmental Plan 2012	C9	-	Naremburn	Willoughby	Local
House (including original interiors)	Willoughby Local Environmental Plan 2012	I169	40 Slade Street, Naremburn	Naremburn	Willoughby	Local
House (including original interiors)	Willoughby Local Environmental Plan 2012	I170	42 Slade Street, Naremburn	Naremburn	Willoughby	Local
St Cuthbert's Anglican Church (including original interiors)	Willoughby Local Environmental Plan 2012	I172	205 Willoughby Road	Naremburn	Willoughby	Local
Group of shops	Willoughby Local Environmental Plan 2012	I174	272–276 Willoughby Road	Naremburn	Willoughby	Local
Shops	Willoughby Local Environmental Plan 2012	I175	284 and 284A Willoughby Road	Naremburn	Willoughby	Local
Conservation Area – General	Willoughby Local Environmental Plan 2012	C1	-	Artarmon	Willoughby	Local

3.2.2 Previous heritage assessments

3.2.2.1 WestConnex M4-M5 Link Environmental Impact Statement

The *WestConnex M4-M5 Link Technical working paper: Non-Aboriginal heritage* (GML Heritage Pty Ltd, 2017) presents the heritage impact assessment for the approved M4-M5 Link. The heritage study area for the M4-M5 Link overlaps with the project study area in Annandale, Lilyfield and Rozelle.

The M4-M5 Link will construct the Rozelle Interchange, which is predominately underground. This includes the civil works (tunnelling) for the interchange ramps that would connect to the Western Harbour Tunnel mainline tunnel, as well as works within the Rozelle Rail Yards and surface road works along the City West Link and The Crescent.

A summary of the M4-M5 non-Aboriginal Heritage impact assessment is presented in Table 3-3.

Table 3-3: Summary of previous heritage assessments for M4-M5 Link

Author	Summary
Roads and Maritime (2017)	The approved M4-M5 Link is a new multi-lane road link between the M4 East Motorway at Haberfield and the New M5 Motorway at St Peters, along with an interchange at Lilyfield and Rozelle (Rozelle interchange) and a tunnel connection between Anzac Bridge and Victoria Road to the east of the Iron Cove Bridge (Iron Cove Link). The M4-M5 Link also includes civil construction works for future connections to the Western Harbour Tunnel at the Rozelle Interchange. The M4-M5 Link project involves a combination of both surface and tunnelling works. The technical working paper identified six areas of disturbance, of which Area 3 (Annandale, Lilyfield and Rozelle) overlaps the project study area. The history of Area 3 identified that the area is characterised by 'light industrial development, interspersed with parkland constructed above areas of 19th century reclamation and bisected by a network of modern roads. Late 19th century residential developments surround the northern boundary of the area. Area 3 was divided into 11 Historical Archaeological Management Units (HAMU), two of which are within the current study area – HAMU 4 and HAMU 5. HAMU 4 was assessed as having low to moderate archaeological potential, and had no significance level as heritage items do not meet the threshold for significance. HAMU 5 was assessed as having low to high archaeological potential, and has no significance level as heritage items do not meet the threshold for significance. As such, no further archaeological investigation was required, but an unexpected finds procedure is to be implemented. The potential impacts on the heritage listed items within the current study area were assessed as: • Minor adverse impacts due to setting, vibration, and settlement on the Easton Park Heritage Conservation Area (*Leichhardt Local Environmental Plan 2013* ID C18) • Minor adverse impacts due to setting (tree root disturbance, temporary visual impacts), vibration, and settlement on Easton Park (*Leichhardt Local Environmental Plan 2013* ID I752). • Moderate adverse impact due to partial demolition on sandstone cutting within the Rozelle Rail Yards, Rozelle. • Minor adverse impacts due to setting, and vibration from tunnelling on Smith's Hall (*Leichhardt Local Environmental Plan 2013* ID I732) and House 'Rotherhithe Cottage' (*Leichhardt Local Environmental Plan 2013* ID I755). The M4-M5 Link project was assessed to have an overall moderate heritage impact due to the majority of works being subterranean in nature. The surface infrastructure was located and designed to reduce impacts upon heritage places. However, the overall cumulative

Author	Summary
	impact of past WestConnex works on heritage items was described as being major and irreversible, given the scale of the construction project. As such, the heritage impacts from the project were to be managed through the implementation of a range of environmental mitigation measures such as archival recording, heritage interpretation and urban design, and landscape initiatives.

3.2.2.2 Local heritage studies

Previous historical heritage and archaeological assessments in the study area provide relevant information relating to the nature and extent of historical heritage and archaeological sites and places. Previous studies for the Inner West local government area are summarised in Table 3-4, and those of the North Sydney local government area are in Table 3-5.

Table 3-4: Inner West local government area

Author	Summary
Godden Mackay Logan (2004)	Godden Mackay Logan was commissioned by the Leichhardt Municipal Council to carry out Stage 2 of the Leichhardt Heritage Review. Stage 1 comprised a thematic history by David Lewis and Sasha Jenkins, upon which Stage 2 was based. Stage 3 comprised a review of the existing Development Control Plan. This volume involved a review of conservation areas, existing conservation area boundaries, the identification of thresholds for subsequent assessments of conservation areas, and a review of the Local Environmental Plan. Of the conservation areas identified, Easton Park (Area 10) and The Valley (Area 12) in Rozelle, and Iron Cove (Area 13), Birchgrove and Ballast Point Road (Area 14), and Town of Waterview (Area 15) in Balmain, are within the current study area. Each area was noted for its significant characteristics, and given a statement of significance and management recommendations.

Table 3-5 : North Sydney local government area

Author	Summary
Latona Masterman and Associates (1981)	Latona Masterman and Associates produced the *North Sydney Heritage Study* for the North Sydney Municipal Council and the Heritage Council of New South Wales. This was produced in a single volume with two parts, which included an exploration of historical themes in the first section, followed by the identification of significant heritage places, and their assessment of significance in terms of: individual significance; contribution to the character of the area; parks and open spaces; and Aboriginal sites. This involved the investigation of land titles and mapping, historical research, and the development of historical themes. This produced an inventory of heritage items and heritage areas which may be re-assessed or extended with future research. In the study, Latona Masterman and Associates divided the municipality into 13 sectors, comprising Cammeray, Willoughby Bay, Wollstonecraft, Holtermann, Cremorne, Waverton, Central, Neutral Bay, Berrys Bay, Lavender Bay, Kirribilli, Careening Cove, and Shell Cove. A number of heritage places, including Balls Head heritage area (including the former coal loader), St Leonards Park heritage area, Wenona Girls' School, North Sydney Technical High School, St Thomas' Church group, the Rag and Famish hotel and Waverton station, are located within the current study area.
Godden Mackay (1993)	Godden Mackay published the *North Sydney Heritage Study Review* for the North Sydney Council to update the original 1981 *North Sydney Heritage Study*. This report was produced in two parts, the first being the review itself, while the second comprised the inventory of heritage places. Their methodology involved fieldwork which covered the entire Council area, background research, a review of the existing planning data and policies, and an

Author	Summary
	analysis of future directions and potential threats. It investigated both heritage items and conservation areas. The evaluation criteria for heritage places was based on the New South Wales State Heritage Inventory Project (SHIP). While the review was limited based on the funds available, the study was considerably comprehensive. Of the sites identified, MLC Building, Gates and Fence of Former Crows Nest House, Wenona, Monte Sant Angelo Group, Rag and Famish Hotel, Independent Theatre, St Thomas' Church and St Thomas Rectory, Sewer Vent, Technical High School, St. Leonards Park, W. Tunks Memorial Fountain, War Memorial, St. Helens, North Sydney Council Chambers, Former Bank of NSW, North Sydney Boys High School, St Malo, Cammeray Park including Golf Course, Greenway Flats, Bradfield Park, Woodleys Shipyard, Balls Head Coal Loader, Waverton Railway Station, and the North Sydney bus shelters, along with numerous residences, are within the current study area.

3.3 Field survey results

Field survey was carried out on foot and from vehicle from 4 to 8 September 2017, in accordance with the methodology outlined in Section 2.6. The known heritage items were inspected and condition and details noted. Detailed descriptions, photographs, curtilage, and significance assessments of the known heritage items are presented in Appendix A.

Two potential historical heritage items were investigated on foot during the survey, and are summarised in Table 3-6. The significance assessment for these items is presented in Appendix A:Seating area (with sandstone walls), North Sydney; and Item 12: ANZAC Park, Cammeray. No additional historical heritage items or areas of archaeological potential were identified during the field survey.

Table 3-6: Potential historical heritage items

Name	Location	Description
ANZAC Park	Corner of Anzac Avenue and Ernest Street, Cammeray	ANZAC Park is an expanse of gently sloping grassed land, with the North Sydney Tramway Depot War Memorial and associated tree plantings along the park's western boundary at Anzac Avenue. There are informal tree plantings to the south, north and east of the grassed parkland (Figure 3-7 and Figure 3-8).
Seating area (with sandstone walls)	Eastern end of Ridge St, North Sydney	The seating area (with sandstone walls) is a small observation point overlooking the Warringah Freeway and the Sydney skyline, likely built in 1968 along with the Warringah Freeway. A plaque commemorating the opening of the Warringah Freeway is located on the eastern wall of the seating area's sandstone enclosure (Figure 3-9 and Figure 3-10).

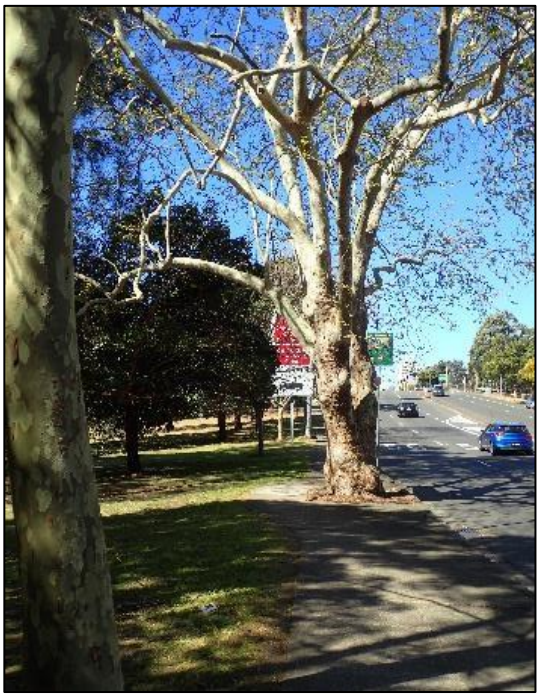


Figure 3-7 : ANZAC Park, facing east along Ernest Street

Figure 3-8 : North Sydney Tramway Depot War Memorial

Figure 3-9 : Seating area (with sandstone walls)

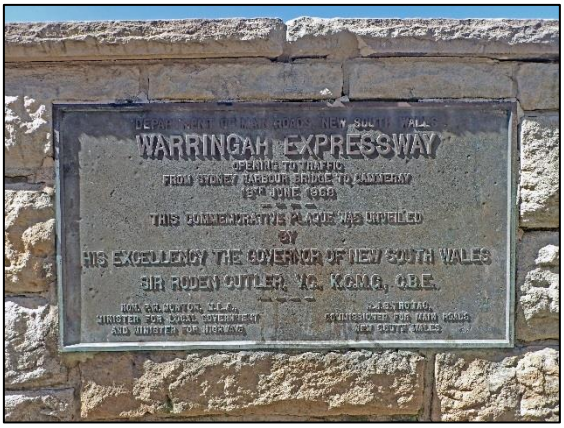


Figure 3-10 : Seating area plaque facing Warringah Expressway

3.4 Summary of historical and physical contexts

There are 246 historical heritage items and two potential historical heritage items identified during previous studies, surveys, heritage register searches, and the September 2017 field survey within the study area. A full listing of the heritage items is presented in Table 3-2 and Table 3-6, and a summary of significance assessments is presented in Table 4-1. All heritage items are mapped in Figure 3-11 to Figure 3-14.

For those heritage items situated above the tunnel alignment within the study area, only a summary is provided. For the rest of the heritage items within the study area, full details, including item name, location, local government area, a detailed description, and references are provided in Appendix A.

Figure 3-11 : Location of all heritage items and potential heritage items within the study area (Map 1)

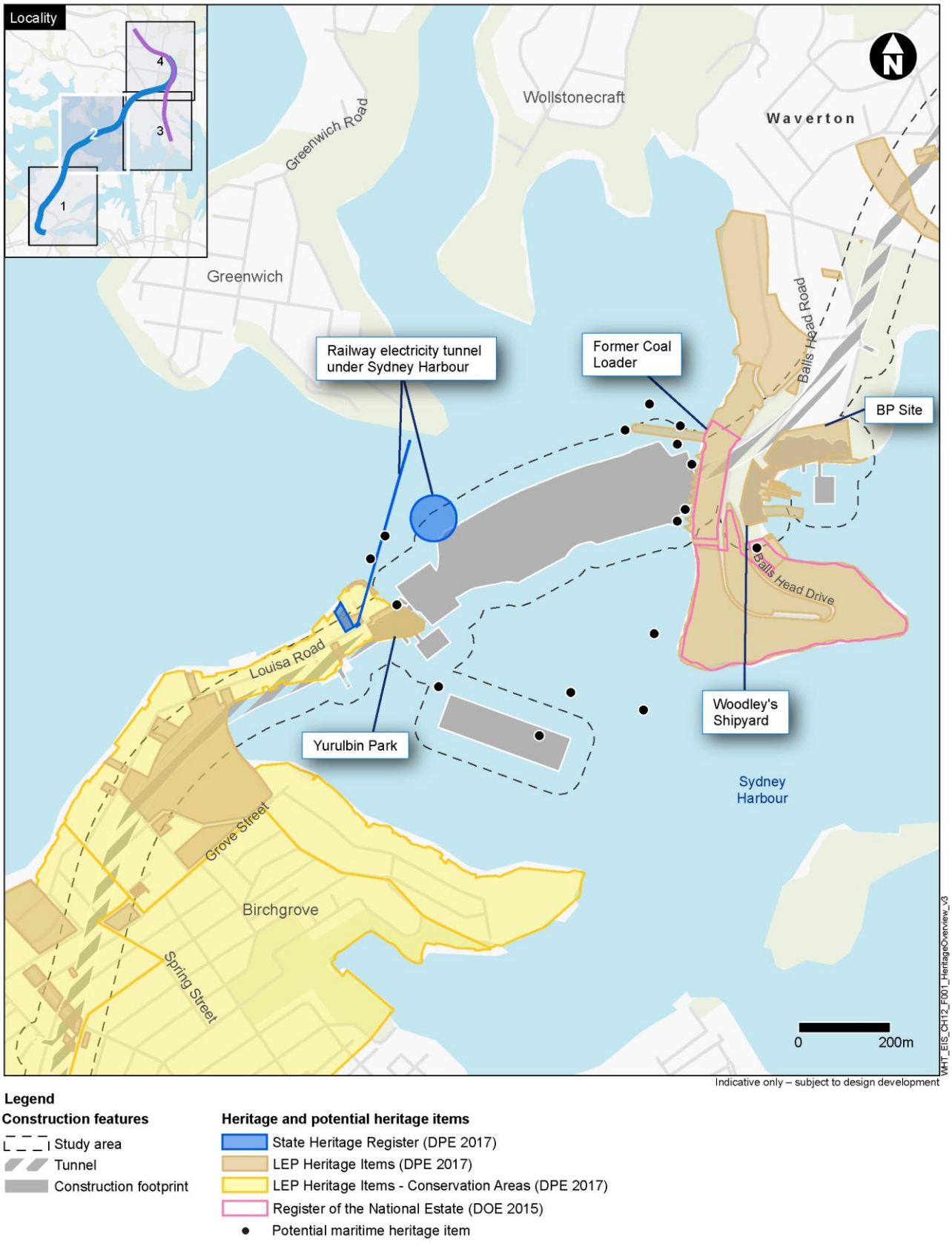


Figure 3-12: Location of all heritage items and potential heritage items within the study area (Map 2)

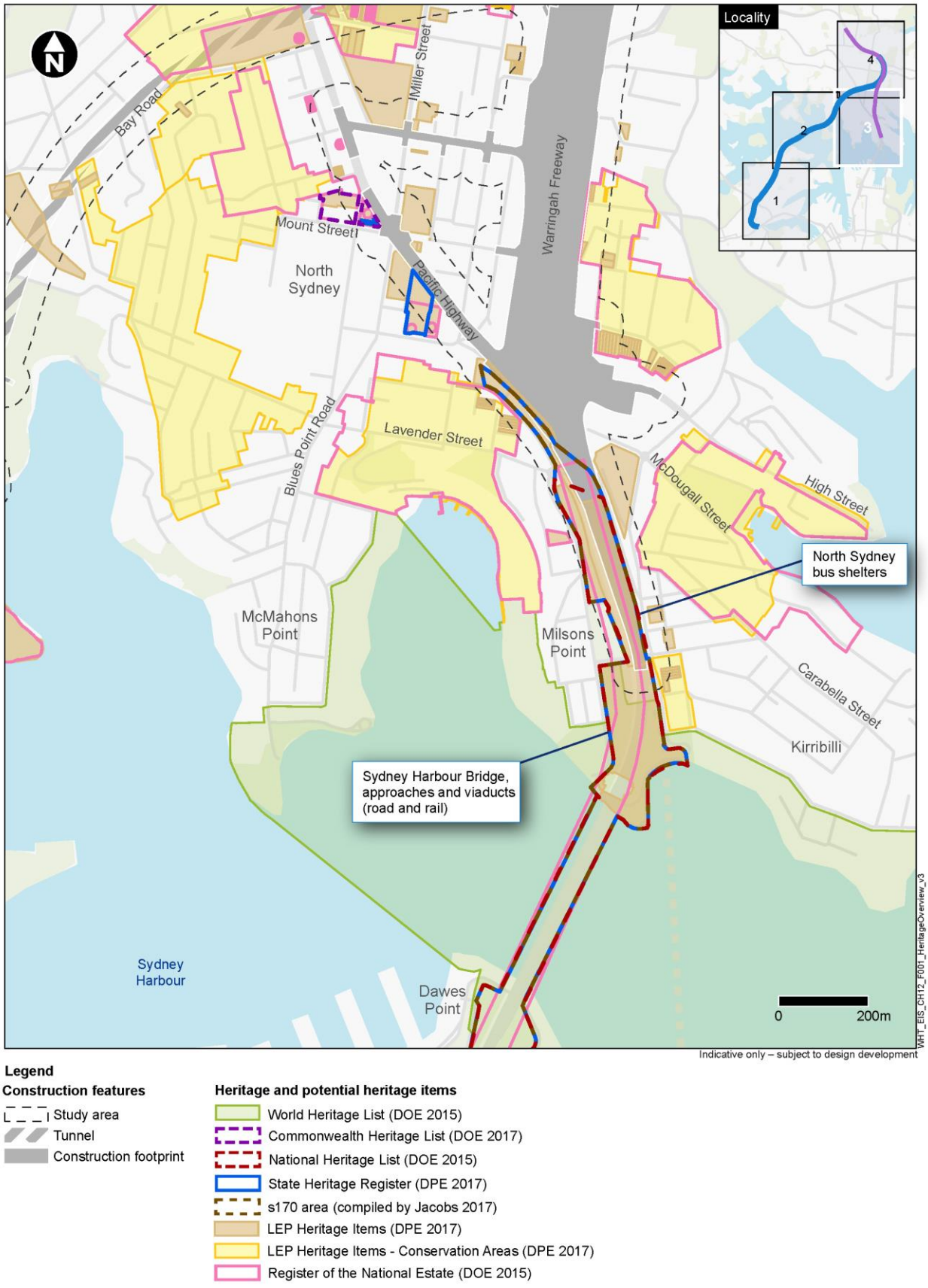


Figure 3-13 : Location of all heritage items and potential heritage items within the study area (Map 3)

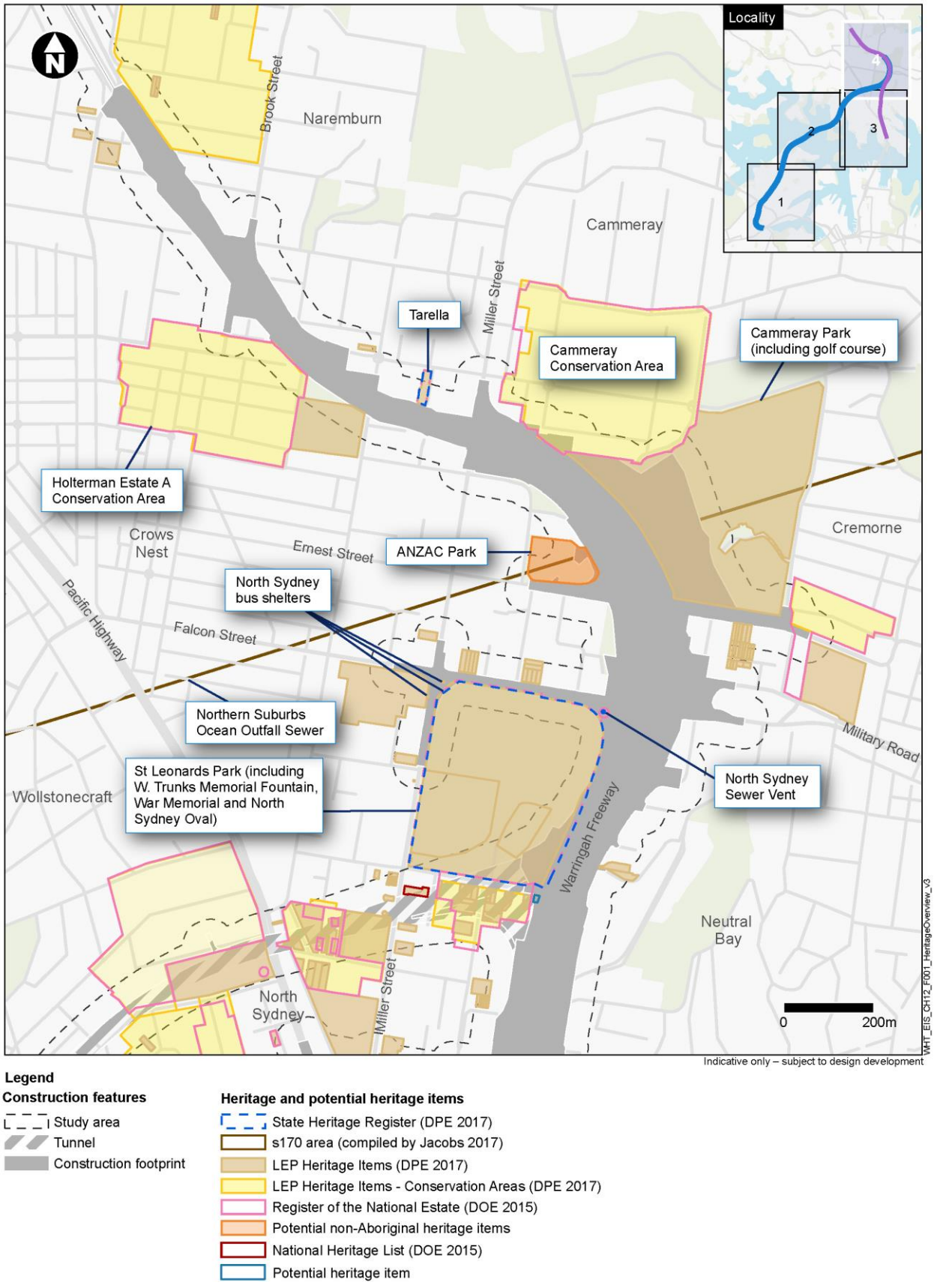


Figure 3-14 : Location of all heritage items and potential heritage items within the study area (Map 4)

4. Significance assessment

A statement of significance has been provided for each of the heritage items identified within the study area, both known heritage items and those potential heritage items identified during the field survey, with the exception of those places that are only within the study area due to their being located above the tunnel alignment. These are summarised in Table 4-1. A detailed history, description, significance assessment and archaeological assessment (where required) is provided in Appendix A.

Table 4-1: Summary of heritage significance of heritage items

Item no	Item name	Level of significance
1	Glebe Island Bridge	The Glebe Island Bridge, across Johnstons Bay, is of state significance as it demonstrates one of the earliest examples of an electric-powered swing bridge in Australia. Technically, it is a complementary structure to the already acclaimed Pyrmont Swing Bridge, and has all the same significant features, including the electrically-driven swing span. Both bridges were designed by Percy Allan, a highly-regarded Australian bridge designer of the late 19th and early 20th century. Both represent the only examples of such types of bridges in New South Wales and are still operable. This site is of **state heritage significance**.
2	The Valley Heritage Conservation Area	The Valley Heritage Conservation Area is one of a number of conservation areas which collectively illustrate the nature of Sydney's early suburbs and Leichhardt's suburban growth particularly between 1871 and 1891, with pockets of infill up to the end of the 1930s (ie prior to World War II). This area is important for illustrating development for workers' and artisan housing particularly from 1871–1891 which forms the major element of its identity. Through the mixture of shops, pubs and industrial buildings it demonstrates the nature of a Victorian suburb, and the close physical relationship between industry and housing in nineteenth century cities before the advent of the urban reform movement and the separation of land uses. This site is of **local heritage significance**.
3	Railway electricity tunnel under Sydney Harbour	The tunnel was a major technological and engineering achievement and was the first such venture to be carried out in Australia without overseas assistance. It was a major link in the power supply to the railway and tramway system between Sydney and the North Shore and although flooded is an important element of the development of public transport in Sydney. This site is of **state heritage significance**.
4	Yurulbin Park	Yurulbin Park is of high local historic, aesthetic and technological significance and of local social significance as an open park that retains evidence of the early use and character of the area and as a foreshore park established in the 1970s. The Point is associated with a number of early local land speculators and developers and early maritime activities of Birchgrove. It is also associated with Bruce Mackenzie and Associates who designed the park and contributed to the formation of a relatively rare cultural landscape that demonstrates landscape philosophies of the 1970s. This site is of **local heritage significance**. Yurulbin Park has an area of historical archaeological potential.
5	Former coal loader	One of the oldest coal loaders and the last facility of comparable size that operated in Sydney Harbour. A major structure with landmark qualities and a high aesthetic interest. An important local industry and a feature in the development of Balls Head. Retains evidence of a range of technologies employed since establishment. This site is of **local heritage significance**.
6	Woodleys shipyard	Woodleys Boatyard is a key part of the Berrys Bay ship building and repair tradition, with Berrys Bay containing the remnants of an industry that was once an important and thriving industry around the harbour shores, particularly on the Balmain peninsula and around Lavender and Berrys Bays. Woodleys Boatyard is associated with the Woodley family and the site demonstrates the robust attractions of a vernacular artisan workplace. Woodleys Boatyard is one of the few remaining examples of the once numerous small

Item no	Item name	Level of significance
		boat building and repair yards that have dotted the Sydney Harbour foreshores since the mid-nineteenth century. This site is of **local heritage significance**.
7	BP site	The BP site is significant for its long use as an industrial site, which commenced in the early nineteenth century and continued through to the late twentieth century. Both in its early period as a warehouse and manufacturing site and its latter use as an oil products depot, the BP site has been a significant place of industrial activity on the foreshores of Sydney Harbour. It is a relic of Australia's heavy dependence upon maritime transportation within Sydney Harbour in its first two centuries. The BP site is associated with merchants Edward Wollstonecraft and Alexander Berry and retains sandstone masonry which was originally cut in the 1830s for a warehouse. The site demonstrates the physical characteristics of an oil storage facility and the majority of the former site is now valued by the local community as a public open space. This site is of **local heritage significance**. The BP Site has areas of historical archaeological potential.
8	Sydney Harbour Bridge, approaches and viaducts (road and rail)	The building of the Sydney Harbour Bridge was a major event in Australia's history, representing a pivotal step in the development of modern Sydney as one of Australia's most important cities. The bridge is significant as a symbol of the aspirations of the nation, a focus for the optimistic forecast of a better future following the Great Depression. With the construction of the Sydney Harbour Bridge, Australia was felt to have truly joined the modern age, and the bridge was significant in fostering a sense of collective national pride in the achievement. The bridge is also significant for its aesthetic values. Since its opening in 1932, the Sydney Harbour Bridge has become a famous and enduring national icon, and remains Australia's most identifiable symbol. In its harbour setting, it has been the subject for many of Australia's foremost artists, and has inspired a rich and diverse range of images in a variety of mediums – paintings, etchings, drawings, linocuts, photographs, film, poems, posters, stained glass – from its construction phase through to the present. The Sydney Harbour Bridge is also significant as one of the world's greatest arch bridges. Although not the longest arch span in the world, its mass and load capacity are greater than other major arch bridges, and no other bridge in Australia compares with the Sydney Harbour Bridge in its technical significance. Although designed more than 80 years ago, the bridge has still not reached its loading capacity. The bridge is also significant for its important association with the work of John Job Crew Bradfield, principal design engineer for the New South Wales Public Works Department, who ranks as one of Australia's greatest civil, structural and transport engineers. This site is of **national heritage significance**.
9	North Sydney Bus Shelters	Small and effective functional buildings of handsome design and good workmanship. They are traditional and conservative in form and detail and designed to suit their varied locations. Historical interest as elements of a particular and controversial attempt at municipal civic design. This site is of **local heritage significance**.
10	St Leonards Park	St Leonards Park is of state heritage significance for its historical values as one of the earliest established public parks in NSW being set aside as a recreation reserve in 1838 and gazetted as a public park in 1867. It also contains one of Australia's oldest, continuously used cricket grounds and bowling clubs established in 1867 and 1887 respectively. St Leonards Park is of state heritage significance as a surviving and relatively intact example of a Victorian public park in the gardenesque style. It retains many of its original aesthetic characteristics including an axial layout, formal pathways culminating in memorials, including an ornate Victorian style memorial fountain to Mayor William Tunks, and picturesque vistas. The park also includes distinctive examples of early 20th century architecture and Modern Movement architecture which are aesthetically distinctive and demonstrate a high level of creative and technical achievement. St Leonard's Park has state significant historical associations with Mr Edgar Herbert, a noted pioneering specialist in physical education who was involved in the

Item no	Item name	Level of significance
		establishment of the playground and educational programs at the park in the 1930s and early 1940s. This site is of **state heritage significance**.
11	North Sydney Sewer Vent	The North Sydney Sewer Vent is an excellent representative example of the tall brick sewer ventilation shafts which were constructed around the turn of the century to facilitate the efficient functioning of the major outfall sewers. Its functional design is embellished by a successful application of architectural motifs, such as line and texture which lend the structure an element of formalism and classical detail including entasis. In addition, it displays high quality workmanship in the brickwork. It currently serves the Northern Suburbs Ocean Outfall Sewer in the manner for which it was originally designed. This site is of **state heritage significance**.
12	ANZAC Park	ANZAC Park is of social value due to the war memorial and its association with the former North Sydney Tramway Depot and its personnel who served during World Wars I and II, and with the North Sydney ANZAC Memorial Club and its members, and for the park's provision of open space to the local community. Although the parkland was originally part of an early reservation to protect water supply related to the nearby Willoughby Falls, within ANZAC Park no plantings or historical items dated to the mid- to late-1800s are extant. This site is of **local heritage significance**.
13	Ocean Outfall	The Northern Suburbs Ocean Outfall Sewer is of historical significance as it was the third major sewerage system to be built to service Sydney's rapidly growing wastewater needs. It has been a major historical event in the development of the North Shore and inner and northwestern suburbs of Sydney. The aesthetic significance is evident in the range of styles, design, details and materials used in its construction. The architectural styles and engineering qualities of the associated pumping stations, aqueducts, vent stacks, syphons and surface fittings make a contribution to Sydney suburban townscapes. In particular, the syphons at Middle Harbour and Lane Cove have aesthetic significance. Collectively the different components which make up Northern Suburbs Ocean Outfall Sewer are culturally significant as evidence of the growth of Sydney's sewerage system, the rapid development of the northern suburbs, and the substantial improvement of sanitary conditions for Sydney's inhabitants for which it is likely to be held in high regard by the broad community. This site is of **local heritage significance**.
14	Cammeray Park (including golf course)	Of social value for its general recreational facilities and open space. Of historical interest as a relatively intact early reservation to protect water supply and associated with the nearby Willoughby Falls. An example of early twentieth century reclamation of watercourses in urban areas. This site is of **local heritage significance**.
15	Cammeray Conservation Area	The Cammeray Conservation Area is significant: a) for the unity of its subdivision history which is evident in the built form of the area that overlays its sloping and stepped topography; b) as an area of modest Federation speculative builder housing set out in a geographically defined area that has survived without large-scale intrusion; and c) for its landscape quality defined by street trees, stone boundary walls, rock escarpments, raised and front garden plantings that combine to give an impression of a landscaped garden suburb. This site is of **local heritage significance**.
16	Tarella	Fine example of a grand Victorian Mansion. Residence of important public figure of the nineteenth century. One of the earliest buildings established in the vicinity and one of the earliest still in existence. Fine garden and entry to house. The exterior, landscape setting and interior and this property are of significance. This item is assessed as aesthetically and socially representative regionally. This site is of **State heritage significance.**
17	St Thomas Rest Park	This item is assessed as significant for its association with significant early residents of Sydney. Important local cemetery and repository of the remains of many famous colonial identities, among whom are several pioneers of the North Shore. Remaining graves and monuments, the gates and fence to West Street and to Sexton's cottage are important

Item no	Item name	Level of significance
		historical remnants of the original cemetery (now a Rest Park). The interior of the cottage is in original condition and is of significance. This site is of **local heritage significance**.
18	Holtermann Estate A Conservation Area	This item is assessed as significant for its association with significant early residents of Sydney; and as historically representative regionally. The Holtermann Estate A Conservation Area is significant for its consistent late 19th and early 20th century residential character and the unity of its low-scale built form that derives from its regular grid subdivision pattern and its single storey, detached and attached dwelling houses in a mixture of late Victorian and early Federation styles. This site is of **local heritage significance**.
19	Heritage items situated above the tunnel alignment	The heritage items in this groups span the full range of urban heritage site types including commercial premises (shops and hotels), civic buildings (court house, post office, police station, council chambers), churches and schools. Heritage items also include trees and streetscapes, railway station, parks and a theatre. It also includes two industrial/maritime sites (Birchgrove Colliery, and Former Quarantine Boat Depot). Many of the heritage items are significant for their early construction and association with the historical development of northern Sydney, and for their architectural qualities (including Victorian and Federation styles). Some are also significant for their representativeness and rarity. There is one item of **State heritage significance**, and the remainder are of **local heritage significance**.
20	Seating area (with sandstone walls)	This observation area (c.1968) was used for a 'small function' which involved the unveiling of a plaque commemorating the opening Warringah Expressway. However, this was not a formal opening of the expressway. While the area affords views of the Sydney skyline, it is not aesthetically significant. This item **does not meet the significance criterion thresholds** for local or state listing.

5. Assessment of potential impacts

5.1 Impact avoidance and minimisation

During design development, opportunities to avoid temporary and permanent impacts to heritage items have been considered alongside other design considerations. These include:

- Avoidance of direct impacts by design
- Reduction in the footprint or scale of project components
- Mitigation in the potential scale of impacts through the selection of construction methodologies.

As detailed in Chapter 4 (Project development and alternatives) of the environmental impact statement, the project has avoided or minimises impacts to heritage in the following ways:

- The majority of the project would be located underground and would avoid impacts through subsurface tunnelling
- Birchgrove Oval would not be used as a construction support site, but the use of Yurulbin Park, which is also a heritage item, is required
- At Sydney Harbour, the mainline tunnel alignment and cofferdam structure at Balls Head have been located to avoid and minimise impacts to the Coal Loader Wharf
- Heritage buildings within Woodley's Shipyard would not be demolished but would be reused for suitable construction uses (ie site offices)
- The Warringah Freeway Upgrade has been designed to require only minor works within the Sydney Harbour Bridge curtilage
- The Warringah Freeway and Falcon Street interchange has been designed along the existing road alignment as much as possible to avoid and minimise impacts on the State heritage curtilage of St Leonards Park or the North Sydney Sewer Vent. No permanent infrastructure would be located within St Leonards Park, with disturbed areas returned to areas of open space at the completion of construction
- At Cammeray, the construction and permanent footprint for the program of works has been designed to utilise as much as possible the existing Warringah Freeway corridor and to enable the remaining land to continue to function as a recreational area (golf course). Residual land (ie in excess of operational requirements) would be returned to enable incorporation into the golf course at the completion of construction
- Works within ANZAC Park have been designed as much as possible to minimise impacts to the potential heritage item.

5.2 Potential impacts and key management measures

The majority of the potential impacts to heritage items as a result of the project would occur at the surface and at the following locations:

- At the Rozelle Interchange, where the project would carry out modifications and additions to the Rozelle Interchange
- At Sydney Harbour where works are required to support the construction of the immersed tube tunnels. This includes the installation of cofferdams
- At the Warringah Freeway, where connections to and from Western Harbour Tunnel are proposed, and surface works associated with the Warringah Freeway Upgrade, which would extend from the northern end of the Sydney Harbour Bridge to Willoughby Road, Crows Nest
- Surface works within the surrounding road network within North Sydney, Neutral Bay, Cammeray and Crows Nest

- Where permanent or temporary ancillary facilities (construction and operation) are proposed within or adjacent to heritage items. This includes ventilation facilities and construction support sites.

The types of direct impacts expected as a result of the project include:

- Direct impacts due to works within heritage curtilages including demolition or modification to the heritage item, or a change in use
- Direct impacts due to acoustic treatment of heritage items
- Potential direct impacts due to the use of construction machinery and vehicles within or in close proximity to the heritage item.

The types of indirect impact expected as a result of the project include:

- Visual impacts due to temporary or permanent changes in the visual landscape or setting of the heritage item. This could be due to the removal of vegetation, construction activities (including construction support sites), construction of new road or operational ancillary infrastructure, or new noise barriers
- Risk of damage to heritage items due to vibration-intensive activities at the surface or underground due to tunnelling activities
- Risk of damage to heritage items due to ground settlement (eg subsidence) caused by tunnelling activities
- Impacts associated with the change in use, association or access, resulting in social-related heritage impacts
- Impacts to coastal heritage sites due to increased shore wash during construction
- Risk of damage to heritage items due to the generation of dust during construction.

Further discussion of some of these impacts, where management measures would be implemented and considered in the heritage impact assessment are outlined in the following sections.

5.2.1 Direct impact – At-property treatment

Those listed heritage items that are properties may qualify for at-property acoustic treatment. This could impact the heritage fabric or significance of the heritage item. Eligibility would be confirmed during detailed design and in consultation with the landowner.

Should at-property treatment be required, this would be done in such a way to minimise heritage impacts, while preserving owner amenity. Any treatment would be sympathetic to the heritage values of the item and would be carried out in accordance with the Burra Charter (in that any changes that reduce cultural significance should be reversible). If noise treatment within the heritage structure is required, the advice of a conservation architect would be sought.

5.2.2 Potential direct impacts

Physical impact may occur due to the use of construction machinery and vehicles within or in close proximity to the heritage item. Standard construction measures (such as fencing of active construction areas and delineation of ‘no-go’ areas) would manage this risk.

5.2.3 Indirect impact – Vibration

Vibration from construction activities has the potential to result in physical damage to heritage sites. Depending on the outcomes of vibration modelling, the vibration levels may exceed the minimum working distance to achieve a screening level of 2.5 millimetres per second for heritage. The vibration screening level of 2.5 millimetres per second for avoiding damage is a conservative figure as it assumes that sites are structurally unsound.

The estimated risk of structural damage on structurally unsound heritage buildings is based on the *British Standard BS 5228-2:2009 – Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration*. The vibration level threshold for damage is designated as 2.5 millimetres per second, as based on the *German Standard DIN 4150-3:1999 – 02 Vibration in buildings – Part 3: Effects on structures*.

If the potential vibration levels are expected to exceed this goal, and subject to a structural review of the heritage item, mitigation and management measures should be considered to control and minimise vibration impacts from the construction activities. The mitigation and management measures would include the following as part of the construction planning process:

- Building condition surveys for structures at risk from vibration impacts, which would also help in identifying the appropriate vibration criteria for the corresponding building structure
- Review the proposed construction methodology and where appropriate consider alternative tunnelling methods (eg alternatives to the use of a rock-hammer)
- Vibration monitoring carried out in order to determine that the activities are meeting the established structural damage vibration levels.

5.2.4 Indirect impact – Settlement

Ground movement may occur as a result of:

- Tunnel-induced movement caused by the relief of stress from tunnelling through intact rock
- Settlement induced from groundwater drawdown.

The risk to individual structures would be dependent on the geotechnical conditions, the depth of the tunnel, the number of storeys of the building, and the position, condition, and masonry of the structure itself. Table 5-1 provides typical impacts which would be expected in relation to potential ground movement values and typical associated impacts for settlement. As described in Chapter 16 (Geology, soils and groundwater) of the environmental impact statement, 'very slight' damage is predicted at some buildings along the alignment. There were no buildings found to be in the 'slight', to 'very severe' damage categories.

Building/structure condition surveys would be carried out as applicable prior to commencement of construction within the zone of influence of tunnel settlement (for example within the five-millimetre predicted surface settlement contour and within 50 metres of surface works). Any impacts from settlement caused by the project would be rectified to the condition prior to construction works. An Independent Property Impact Assessment Panel, comprising of geotechnical and engineering experts, would also be established prior to the commencement of works to independently verify building condition survey reports, resolve any property damage disputes and establish ongoing settlement monitoring requirements.

Table 5-1: Building and structure settlement damage classification

Maximum settlement of building (mm)	Degree of severity	Typical impact
	Negligible	Hairline cracks less than 0.1 millimetres.
Less than 10	Very slight	Damage generally restricted to internal wall finishes. Cracks (0.1 to one millimetres) may be visible on external brickwork or masonry.
10 to 50	Slight	Cracks easily filled. Redecoration probably required. Recurrent cracks can be masked by suitable linings. Cracks may be visible externally and some repointing may be required to ensure weather-tightness. Doors and windows may stick slightly. Typical crack widths between one to five millimetres.
50 to 75	Moderate	Cracks may require some opening and may be patched by a mason. Repointing of external brickwork and possibly a small amount of brickwork to be replaced. Doors and

Maximum settlement of building (mm)	Degree of severity	Typical impact
		windows may stick. Service pipes may fracture. Weather-tightness often impaired. Typical crack widths between five to 15 millimetres.
Greater than 75	Severe	Extensive repair work involving break-out and replacing sections of walls, especially over doors and windows. Windows and door frames distorted, floor sloping noticeably. Walls leaning or bulging noticeably; some loss of bearing in beams. Utilities disrupted. Typical crack widths between 15 to 25 millimetres.
Greater than 75	Very severe	Impacts require a major repair job involving partial or complete rebuilding. Beams lose bearing; walls lean badly and require shoring. Windows broken with distortion. Danger of instability. Typical crack widths greater than 25 millimetres.

Note: Degree and typical impact adopted from Burland et al. (1977), and Boscardin and Cording (1989).

5.2.5 Indirect impact – Visual (noise barriers)

At a number of locations, noise barriers have been proposed. The final height and design of the noise barrier (eg materials) would be determined during detailed design and in consultation with the immediately affected community. This would consider urban design responses to minimise visual impacts.

5.2.6 Indirect impact – Dust

Air quality and dust controls as detailed in the Technical working paper: Air quality (Pacific Environment Limited, 2020) would be implemented and as such, the potential impacts of dust or other materials blowing or spilling onto the heritage item have not been considered further in this assessment.

Sediment controls would also be put in place in between areas of construction work and heritage items prior to construction commencing and would remain in place until the conclusion of the work in the vicinity of these heritage items. Potential impacts related to sediment and runoff from construction sites have also not been considered further in this assessment.

5.2.7 Indirect impact – Shore wash

Shore wash from on-water construction activities has the potential to impact coastal heritage sites.

The likely shore wash deriving from on-water construction activity for the project has been assessed (Technical working paper: Navigation impact assessment (Royal Haskoning DHV, 2020). The effects of the shore wash on heritage sites has been determined to be negligible. In order to ensure that marine construction traffic does not create wash that could impact on the wave climate, a speed limit has been recommended to ensure that vessels do not operate at or near the critical threshold speed that could cause shore wash impact (Royal Haskoning DHV 2020, p. 40).

As such, shore wash has not been considered further as it would have no impact upon heritage items.

5.3 Summary of impacts

5.3.1 Heritage items in the vicinity of works in Annandale and Rozelle

Thirteen heritage items are located within 50 metres of works in Annandale and Rozelle and are listed in Table 5-2. Works in these areas would generally include:

- Pavement works, linemarking and road furniture adjustments
- Tunnelling for ventilation shafts

- Installation of operational ancillary infrastructure (eg tolling, lighting and signage), surface drainage infrastructure and landscaping
- The use of the Victoria Road construction support site (WHT2) within the former Balmain Leagues Club at Rozelle, including installation of access declines to connect to and from the mainline tunnel.

The majority of items in Table 5-2 are located more than 25 metres from proposed construction work. Construction work would be carried out with consideration of the minimum working distances for vibration-intensive construction activities and other standard construction management measures.

Visual impact due to temporary changes in the visual landscape or setting of the heritage item are likely for several heritage items. Any works in the vicinity of heritage items would be carried out within the existing road reserve and would be temporary in nature. The distance to permanent infrastructure and the retained mature vegetation provides a visual barrier to the majority of the project-related infrastructure.

As such, impacts to these heritage items have not been carried forward for further detailed assessment.

There are no known or suspected areas of archaeological potential within the study area at this location to be impacted by the project, therefore no further archaeological investigations are proposed.

A Statement of Heritage Impact (Section 5.4.2) has been prepared for the Valley Heritage Conservation Area which is located within the proximity of surface works in Annandale and Rozelle.

Heritage items located near works in Annandale and Rozelle are outlined in Table 5-2.

Table 5-2: Heritage items in the vicinity of surface works in Annandale and Rozelle

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
Whites Creek Stormwater Channel No 95 (4570343)	Railway Parade to Parramatta Road, Annandale	Sydney Water Section 170 Heritage and Conservation Registers	Local	Indirect – vibration	No impact
Avenue of *Phoenix canariensis* (I79)	Railway Parade, Annandale	Leichhardt Local Environmental Plan 2013	Local	Indirect – vibration	No impact
Former Unilever copra store, including interiors (I306)	9 Rosebery Place, Balmain	Leichhardt Local Environmental Plan 2013	Local	Indirect – vibration	No impact
Brennan's Estate Heritage Conservation Area (C16)	Lilyfield	Leichhardt Local Environmental Plan 2013	Local	Indirect – visual	Negligible
Rozelle Public School, including interiors (I743)	660, 663 Darling Street, Rozelle	Leichhardt Local Environmental Plan 2013 Register of the National Estate - Registered, Historic National Trust of Australia (NSW)	Local	Indirect – vibration Indirect – visual	Negligible

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
St Paul's Church and neighbourhood centre, including interiors (I744)	665A Darling Street, Rozelle	Leichhardt Local Environmental Plan 2013 Register of the National Estate - Registered, Historic	Local	Indirect – vibration Indirect – visual	Negligible
Former police station, including interiors (I747)	707 Darling Street, Rozelle	Leichhardt Local Environmental Plan 2013 National Trust of Australia (NSW)	Local	Indirect – vibration Indirect – visual	Negligible
Easton Park Heritage Conservation Area (C18)	Rozelle	Leichhardt Local Environmental Plan 2013	Local	Indirect – visual	Negligible
Former Tower of London Hotel, including interiors (I805)	76 Victoria Road, Rozelle	Leichhardt Local Environmental Plan 2013	Local	Indirect – vibration	No impact
Former shop, including interiors (I780)	21 Mackenzie Street, Rozelle	Leichhardt Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House, 'Hornsey', including interiors (I771)	42 Hornsey Street, Rozelle	Leichhardt Local Environmental Plan 2013	Local	Indirect – vibration	No impact
St Joseph's Presbytery, including interiors (I788)	15 Quirk Street, Rozelle	Leichhardt Local Environmental Plan 2013	Local	Indirect – vibration	No impact
Hannaford Senior Citizen Centre, including interiors (I741)	608 Darling Street, Rozelle	Leichhardt Local Environmental Plan 2013	Local	Indirect – vibration	No impact

5.3.2 Heritage items in the vicinity of surface works in North Sydney

Thirty-one heritage items are located within 50 metres of surface works in North Sydney that are not directly associated with the Warringah Freeway Upgrade (see Section 5.3.3). Works would be located on the Pacific Highway (south of Berry Street), Berry Street, Miller Street and Falcon Street (adjacent to St Leonards Park). Surface works in these areas would generally include:

- Capacity and configuration works carried out along the Pacific Highway and Berry Street, such as changes to medians, reallocation of lanes and an additional eastbound lane and a new section of clearway on Berry Street
- Intersection works at the intersection of the Pacific Highway and Walker Street, Pacific Highway and Miller Street, and Falcon Street and Miller Street. Kerb and footpath adjustment works would occur on Miller Street southbound around the intersection with Falcon Street. These works would provide a new dedicated

lane for left turning traffic from Falcon Street westbound to Miller Street southbound. Further review of the impacts in this area is currently being carried out and permanent impacts to St Leonards Park would be minimised or, where possible eliminated.

- Surface works at these locations would be carried out within the existing road corridors.

Individual Statements of Heritage Impact (Section 5.4) have been prepared for Sydney Harbour Bridge, approaches and viaducts, and St Leonards Park (which borders the Falcon Street and Miller Street construction works). No other direct impacts to heritage items have been identified in proximity to surface works in North Sydney.

Impacts to heritage items could potentially occur from vibration associated with construction works. The construction works have been assessed as having **negligible** impact to those items within 25 metres of works and **no impact** to items more than 25 metres from works. Construction works would be carried out with consideration of the minimum working distances for vibration-intensive construction activities and other standard construction management measures.

Those listed heritage items that are properties may qualify for at-property acoustic treatment. This could impact the heritage fabric or significance of the heritage item. Eligibility would be confirmed during detailed design and in consultation with the landowner. Further detail is provided in Section 5.2.1.

As such, impacts to these heritage items have not been carried forward for further detailed assessment.

There are no known or suspected areas of archaeological potential within the study area at this location to be impacted by the project, therefore no further archaeological investigations are proposed.

Heritage items located near surface works in North Sydney are outlined in Table 5-3.

Table 5-3: Heritage items in the vicinity of surface works in North Sydney

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
North Sydney Technical High School (former); Greenwood (former North Sydney Technical High School); Greenwood/former North Sydney Technical High School (00517, I0892)	36 Blue Street and 101–103 Miller Street, North Sydney	State Heritage Register, North Sydney Local Environmental Plan 2013, Register of the National Estate - Registered, Historic	State	Indirect – vibration	Negligible
North Sydney Post Office; North Sydney Post Office and court house (former police station) (01417, I0953)	92-94 Pacific Highway, North Sydney	State Heritage Register, North Sydney Local Environmental Plan 2013, Commonwealth Heritage List (Historic), Register of National Estate (Historic)	State	Indirect – vibration	Negligible
Former Bank of NSW (I0919)	51 Mount Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
Facade of S. Thompson Building (No 67A) (I0920)	67–69 Mount Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I0921)	67–69 Mount Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
MLC Building (I0893)	105–153 Miller Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
Monte Sant Angelo Group (I0894, S9032)	128 Miller Street, North Sydney	North Sydney Local Environmental Plan 2013, National Trust of Australia (NSW)	Local	Indirect – vibration	No impact
Shop (I0898)	187 Miller Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
The Rag and Famish Hotel (I0901)	199 Miller Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
Commercial building (I0904)	201 Miller Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
North Sydney Hotel (I0915)	292 Miller Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
'Wieewa' (I0016)	336-338 Miller Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
'Franklea' (I0017)	336–338 Miller Street	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I0798)	1 Doohat Avenue, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
House (I0923)	1 Napier Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0924)	3 Napier Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0927)	5 Napier Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0925)	7 Napier Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
North Sydney Telephone Exchange; Telephone exchange (I1030)	1 Wheeler Lane, North Sydney	North Sydney Local Environmental Plan 2013, Register of the National Estate - Registered, Historic	Local	Indirect – vibration	No impact
Old GPO column (I0922)	Mount Street Plaza, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
North Sydney Boys High School (I0830)	127 Falcon Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
Flat building (I0832)	184 Falcon Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
Flat building (I0833)	186 Falcon Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
Flat building (I0834)	188 Falcon Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I0835)	210 Falcon Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I0836)	212 Falcon Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
House (I0837)	214 Falcon Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I0838)	216 Falcon Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I0007)	1 Lytton Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0008)	3 Lytton Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
'Winstone' (I0831)	182 Falcon Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible

5.3.3 Heritage items in the vicinity of Warringah Freeway Upgrade and the communication cable

Eighty-seven heritage items are located within 50 metres of the proposed Warringah Freeway Upgrade from immediately north of the Sydney Harbour Bridge through to the intersection of the Warringah Freeway with Willoughby Road at Naremburn. An additional two heritage items are located within 50 metres of the proposed communication link between the Western Harbour Tunnel mainline tunnel at Cammeray and the motorway control centre at Waltham Street in Artarmon.

The Warringah Freeway Upgrade would involve significant surface road works along the freeway and existing interchanges with High Street, Falcon Street and Ernest Street. It would also require upgrade, relocation and/or realignment works to road bridges that currently cross the Warringah Freeway, and minor upgrades to parts of the surrounding road network. Key aspects of the Warringah Freeway Upgrade are shown in Chapter 5 (Project Description) of the environmental impacts statement.

Trenching would be required for a communication cable between the Western Harbour Tunnel mainline tunnel at Cammeray and the motorway control centre at Waltham Street in Artarmon. The preferred method would be through the use of existing conduits and would be subject to further design development. Where the use of existing conduits is not feasible, trenching within the road corridor may be required.

For the purpose of this assessment, heritage items in the vicinity of Warringah Freeway Upgrade and communication cable have been assessed within three geographical zones to assist in understanding the unique impacts associated with construction works along the Warringah Freeway alignment. The zones are:

- **Zone 1** – Between the Sydney Harbour Bridge and the High Street interchange, North Sydney (see Figure 5-1)
- **Zone 2 –** From north of the High Street interchange to the Falcon Street interchange, North Sydney (see Figure 5-2
- **Zone 3 –** From north of the Falcon Street interchange to the motorway control centre at Waltham Street in Artarmon (see Figure 5-3 and Figure 5-4).

Zone 1 – Between the Sydney Harbour Bridge and the High Street interchange, North Sydney

Key construction works in Zone 1 would include:

- Surface road works to reconfigure part of the Warringah Freeway to optimise the road corridor to and from the Sydney Harbour Bridge and Sydney Harbour Tunnel
- The High Street interchange would be upgraded, including widening of the High Street bridge, a new on ramp to the Warringah Freeway, conversion of the roundabout at the High Street/Alfred Street North intersection to traffic signals, and provision of new and upgraded active transport infrastructure
- Conversion of the roundabout at the High Street and Alfred Street North intersection to traffic signals
- Installation of operational ancillary facilities (eg tolling, lighting and signage), new active transport infrastructure, surface drainage infrastructure and landscaping
- A permanent noise barrier located on the proposed on ramp from High Street to the approach of the Sydney Harbour Bridge
- The establishment and use of the construction support sites at Blue Street (WFU1) and High Street south (WFU2).

Individual Statements of Heritage Impact (Section 5.4) have been prepared for Sydney Harbour Bridge, approaches and viaducts, and St Leonards Park (which borders the Falcon Street and Miller Street construction works). No other direct impacts to heritage items have been identified in in Zone 1.

The southern extent of the project is within 50 metres of the Sydney Opera House Buffer Zone, a World Heritage listed item, and has been considered in the context of potential impacts on views and vistas between the Opera House and other public places. The nearest construction works to the Opera House Buffer Zone would be minor surface works associated with reconfiguring part of the Warringah Freeway and these works would not have any impact on this World Heritage property's setting in a 'remarkable waterscape'.

One heritage item (Milsons Point Railway Station Group (SHR 01194)) is likely to be directly impacted by construction works. The Blue Street construction support site (WFU1) is proposed to be located on the flat, asphalted surface bound by the Pacific Highway to the east and south, North Shore railway line to west and Blue Street to the north. The site would be used for site offices, project management compound, staff amenities, car park and laydown facilities. As the existing site is currently used as a laydown facility and car park by Roads and Maritime, the potential impact of the WFU1 site on the Milsons Point Railway Station Group is expected to be minor. WFU1 is also within the State heritage boundary of the Sydney Harbour Bridge, and is assessed in the Statement of Heritage Impact in Section 5.4.8.

The Greenway Flats building (LEP I0187), located on the corner of Broughton and McDougall Streets, Kirribilli has been assessed as having negligible visual impact due to its proximity to the permanent noise barrier proposed for the High Street on ramp. The noise barrier would be constructed using transparent materials to maintain views to the heritage item and to comply with project urban design objectives. The final height and design of the noise barrier would be confirmed during detailed design. The Heritage Council of NSW would be consulted on all works within the State Heritage Register or National Heritage Register listed curtilage of the Sydney Harbour Bridge, as well as any that are visually or physically proximate, to ensure that heritage impacts are minimised. Further detail regarding the impacts of the noise barrier on the Sydney Harbour Bridge is provided in the Statement of Heritage Impact in Section 5.4.8.4.

Those listed heritage items that are properties may qualify for at-property acoustic treatment. This could impact the heritage fabric or significance of the heritage item. Eligibility would be confirmed during detailed design and in consultation with the landowner. Further detail is provided in Section 5.2.1.

All other heritage items within Zone 1 have been assessed as having '**no impact**' as they are either located more than 25 metres from the nearest construction works, or in the case of properties to the east of Ennis Road and Broughton Street they are located at a different level to the surface works on the Cahill expressway and vibration impacts are considered unlikely. Construction works would be carried out with consideration of the minimum working distances for vibration-intensive construction activities and other standard construction management measures.

There are no known or suspected areas of archaeological potential within Zone 1 to be impacted by the project, therefore no further archaeological investigations are proposed.

As such, impacts to these heritage items have not been carried forward for further detailed assessment. Heritage items located within Zone 1 are listed in Table 5-4 and shown in Figure 5-1.

Table 5-4 : Heritage items in the vicinity of Warringah Freeway Upgrade– Zone 1

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
Sydney Opera House – Buffer Zone (105914)	Sydney	World Heritage List – Declared Property, Cultural	World	Indirect – visual	No impact
Milsons Point Railway Station group; Milsons Point Railway Station; Milsons Point Railway Station Group (01194, I0539, 4801026)	North Shore railway, Alfred Street, North Sydney	State Heritage Register, North Sydney Local Environmental Plan 2013, RailCorp Section 170 Heritage and Conservation Registers	State	Direct Indirect – vibration Indirect – visual	Minor
Jeffreys Street (CA26)	Kirribilli	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
Lavender Bay; Lavender Bay Conservation Area (CA12, 100855)	Lavender Bay	North Sydney Local Environmental Plan 2013, Register of the National Estate - Indicative Place, Historic	Local	Indirect – vibration	No impact
Careening Cove; Careening Cove Conservation Area (CA10, 100859)	Kirribilli	North Sydney Local Environmental Plan 2013, Register of the National Estate - Indicative Place, Historic	Local	Indirect – vibration	No impact
Electricity Substation No 217 (I0183, 3430354)	Bligh Street, Kirribilli	North Sydney Local Environmental Plan 2013, Ausgrid Section 170 Heritage and Conservation Registers	Local	Indirect – vibration	No impact
St John the Baptist Anglican Church (I0185)	7-9 Broughton Street, Kirribilli	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
The Fantasia Preschool; Former St. Johns Anglican Church Hall (I0186)	5 Broughton Street, Kirribilli	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
Greenway Flats (I0187)	Corner Broughton and McDougall Streets, Kirribilli	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration Indirect – visual	Negligible
'Illingullin' (I0217)	14 Fitzroy Street, Kirribilli	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0252)	44 Jeffreys Street, Kirribilli	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0253)	46 Jeffreys Street, Kirribilli	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0254)	48 Jeffreys Street, Kirribilli	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0255)	50 Jeffreys Street, Kirribilli	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
Bratton (I0283)	38 Pitt Street, Kirribilli	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0302)	23 Arthur Street, Lavender Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0305)	27 Arthur Street, Lavender Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0306)	28 Arthur Street, Lavender Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0307)	29 Arthur Street, Lavender Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0308)	30 Arthur Street, Lavender Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0309)	31 Arthur Street, Lavender Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0310)	32 Arthur Street, Lavender Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0311)	33 Arthur Street, Lavender Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
House (I0312)	34 Arthur Street, Lavender Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House; Houses and Terraces (I0383, 2881)	37 Walker Street, Kirribilli	North Sydney Local Environmental Plan 2013, Register of the National Estate – Registered, Historic	Local	Indirect – vibration	No impact
Walker Street Group (2880)	Walker Street	Register of the National Estate – Registered, Historic	Local	Indirect – vibration	No impact
Chinese Christian Church (I0528, 2911)	100 Alfred Street South, Milsons Point	North Sydney Local Environmental Plan 2013, Register of the National Estate – Registered, Historic	Local	Indirect – vibration	No impact
Bradfield Park (including northern section) (I0538)	Alfred Street South, Milsons Point	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact

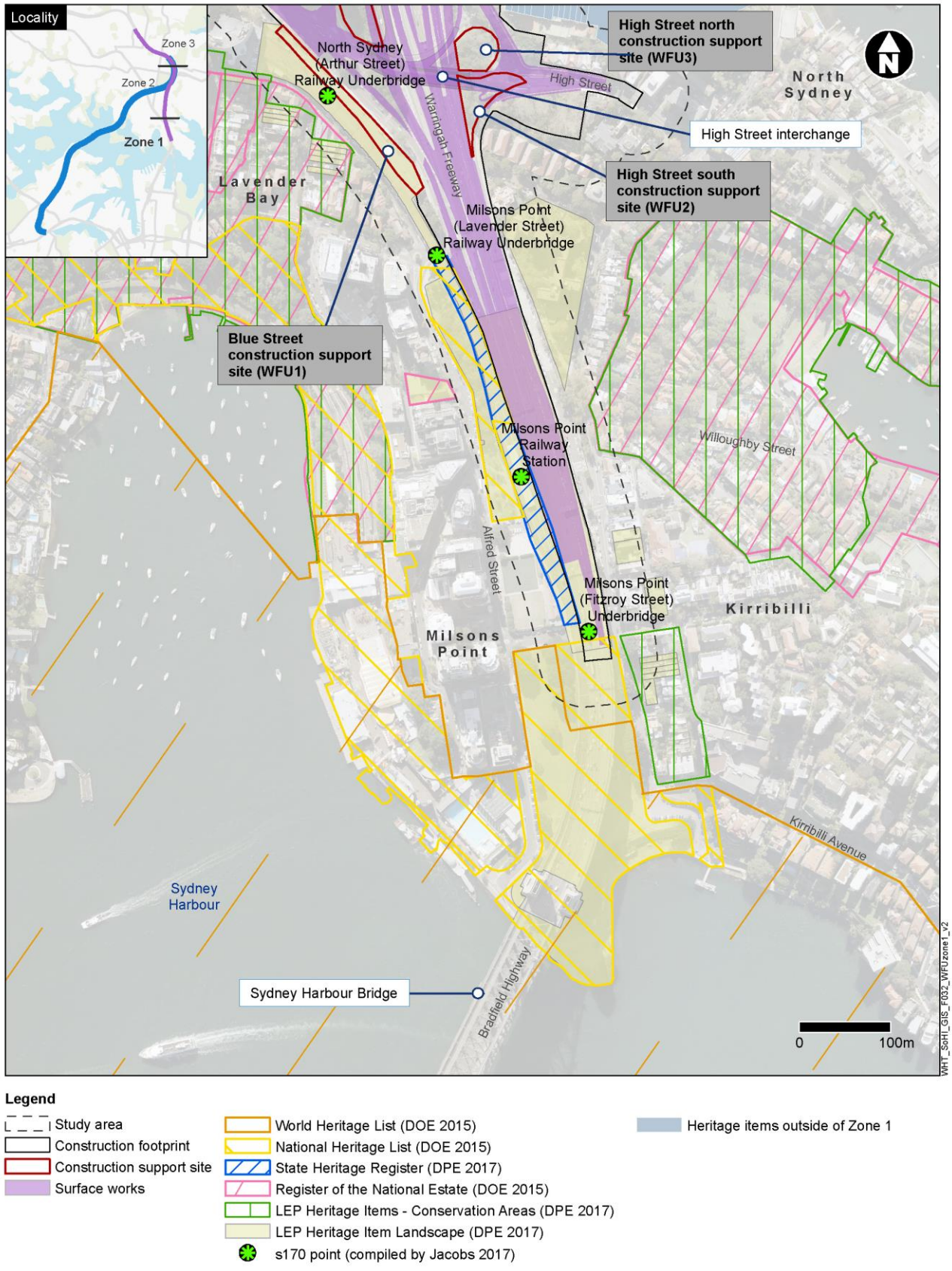


Figure 5-1: Heritage items in the vicinity of Warringah Freeway Upgrade – Zone 1

Zone 2 – From North of the High Street interchange to the Falcon Street interchange, North Sydney

Key construction works in Zone 2 would include:

- Surface road works to reconfigure part of the Warringah Freeway to optimise the road corridor
- Connections between the Warringah Freeway and motorway tunnels including ramps at Berry Street, North Sydney and adjacent to St Leonards Park and Falcon Street, North Sydney
- Connections between the Warringah Freeway and surface roads including:
  - ramps connecting Arthur Street from the east to Alfred Street North in the west
  - an on ramp at Berry Street with connections to North Sydney CBD
- The Falcon Street interchange would be upgraded to a diverging diamond interchange configuration with reconfiguration of traffic lanes and replacement and upgrade of active transport infrastructure
- New and upgraded road bridges at Mount Street bridge, Mount Street underpass and Alfred Street north overpass
- Installation of operational ancillary infrastructure (eg tolling, lighting and signage), new active transport infrastructure, surface drainage infrastructure and landscaping
- Permanent noise barrier located at various locations east and west of the Warringah Freeway between Berry Street and Falcon Street
- The establishment and use of the following construction support site:
  - High Street north (WFU3)
  - Arthur Street (WFU4)
  - Berry Street east (WFU5)
  - Ridge Street east (WFU6)
  - Merlin Street (WFU7)
  - Berry Street north (WHT8)
  - Ridge Street north (WHT9).

Individual Statements of Heritage Impact (Section 5.4) have been prepared for St Leonards Park, North Sydney Sewer Vent, and Northern Suburbs Ocean Outfall Sewer. No other direct impacts to heritage items have been identified in Zone 2.

Impacts to heritage items could potentially occur from vibration associated with construction works. The construction works for the project have been assessed as having **negligible** impact to those items within 25 metres of works and **no impact** to items more than 25 metres from works. Construction works would be carried out with consideration of the minimum working distances for vibration-intensive construction activities and other standard construction management measures.

Those listed heritage items that are properties may qualify for at-property acoustic treatment. This could impact the heritage fabric or significance of the heritage item. Eligibility would be confirmed during detailed design and in consultation with the landowner. Further detail is provided in Section 5.2.1.

There are no known or suspected areas of archaeological potential within Zone 2 to be impacted by the project, therefore no further archaeological investigations are proposed.

As such, impacts to these heritage items have not been carried forward for further detailed assessment.

Heritage items located within Zone 2 are listed in Table 5-5 and shown in Figure 5-2.

Table 5-5: Heritage items in the vicinity of Warringah Freeway Upgrade– Zone 2

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
Flat building (I0542)	439 Alfred Street North, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration Indirect – visual	Negligible
House (I0595)	5 Darley Street, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0596)	6 Darley Street, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0633)	2 Kurraba Road, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I0634)	4 Kurraba Road, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
Former Neutral Bay tram depot and water tower; Big Bear Markets (I0674, S11154)	116 Military Road, Neutral Bay	North Sydney Local Environmental Plan 2013, National Trust of Australia (NSW)	Local	Indirect – vibration	Negligible
House, sandstone rock wall and cliff face (I0735)	2 Winter Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0794)	2 Bray Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I0929)	18 Neutral Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0931)	20 Neutral Street, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
Whaling Road; Whaling Road Conservation Area (CA21)	North Sydney	Register of the National Estate - Indicative Place, Historic	Local	Indirect – vibration	Negligible
House (I1007)	1 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I1008)	3 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I1009)	5 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
House (I1010)	7 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I1011)	9 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I1012)	11 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I1013)	15 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I1014)	17 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1015)	19 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1016)	21 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1017)	23 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1018)	25 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1019)	27 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1020)	29 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1022)	41 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1023)	45 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1024)	47 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
House (I1025)	49 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1026)	51 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1027)	53 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1028)	55 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I1029)	57 Whaling Road, North Sydney	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact

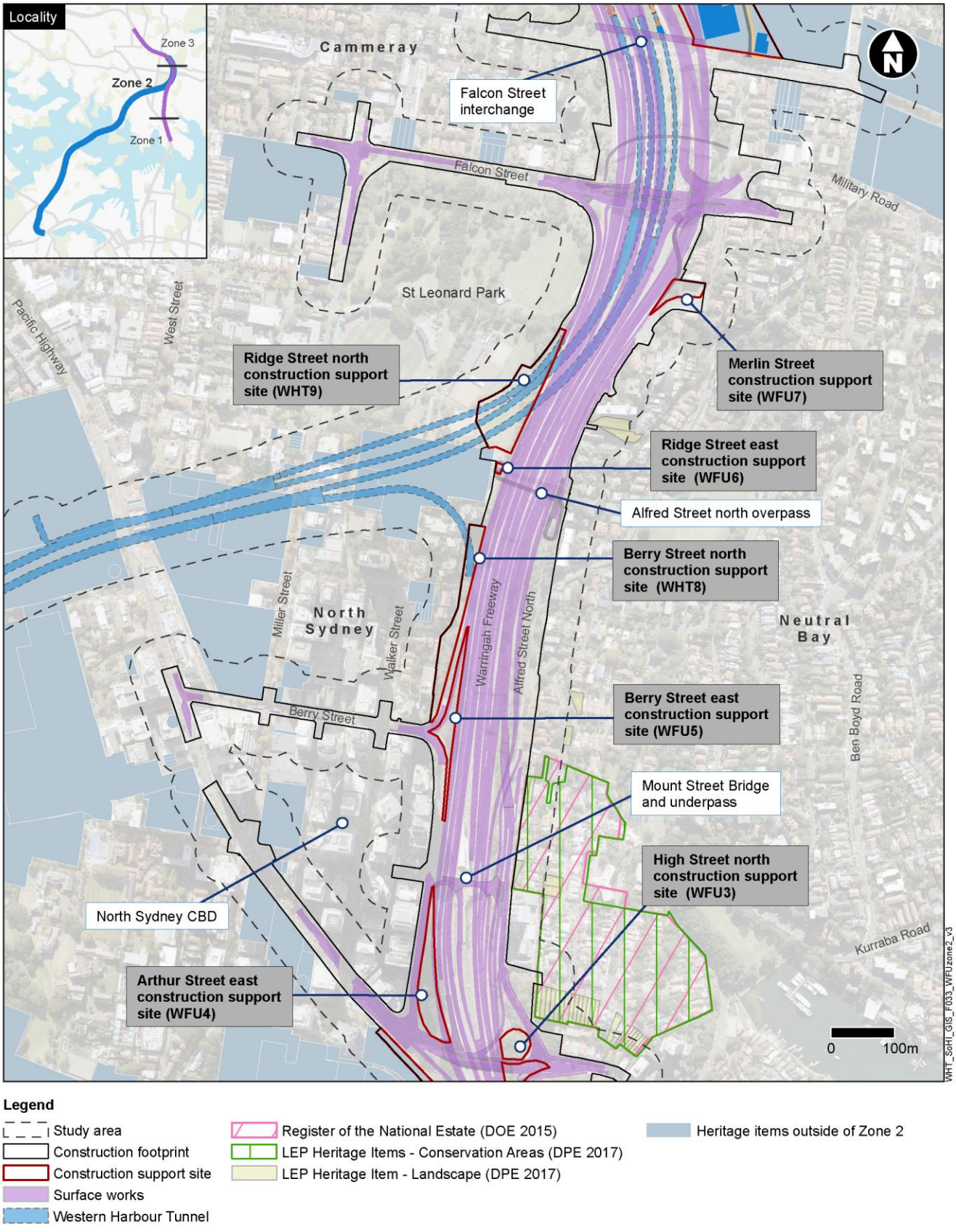


Figure 5-2: Heritage items in the vicinity of Warringah Freeway Upgrade– Zone 2

Zone 3 – From north of the Falcon Street interchange to the motorway control centre at Waltham Street in Artarmon

Key construction works in Zone 3 would include:

- Connections between the Warringah Freeway and the proposed motorway tunnels, north of Ernest Street
- Connections between the Warringah Freeway and surface roads including:
  - Ernest Street interchange - east–west connection over Warringah Freeway between Neutral Bay and Cammeray
  - Miller Street interchange - ramps would connect Miller Street, Cammeray, with Warringah Freeway northbound and southbound
  - Brook Street interchange - ramps would connect Brook Street, Crows Nest/Cammeray, with Warringah Freeway northbound and southbound
- Construction of new shared user bridge and underpass at Ernest Street
- Surface road works to reconfigure part of the Warringah Freeway to optimise the road corridor
- Operational facilities forming part of the Western Harbour Tunnel component of the project would include tunnel ventilation systems and tunnel support facilities at Cammeray Golf Course
- Relocation, adjustment and/or protection of utilities and services, particularly within and around surface connections and surface road works
- Installation of operational ancillary infrastructure (eg tolling, lighting and signage), new active transport infrastructure, surface drainage infrastructure and landscaping
- Permanent noise barriers located on the east and west sides of the Warringah Freeway and on some on and off ramps
- The establishment and use of the construction support sites at Cammeray Golf Course (WHT10 / WFU 8) and Rosalind Street east (WFU9)
- Construction and operation of motorway control centre at Waltham Street in Artarmon
- Installation of communication cable between the Western Harbour Tunnel mainline tunnel at Cammeray and the motorway control centre, using the existing conduits or trenching within the road corridor.

Individual Statements of Heritage Impact have been prepared for Cammeray Park (including Golf Course), Cammeray Conservation Area, ANZAC Park, and Holtermann Estate Conservation Area (A), which are all within Zone 3 (see Section 5.4).

Those listed heritage items that are properties may qualify for at-property acoustic treatment. This could impact the heritage fabric or significance of the heritage item. Eligibility would be confirmed during detailed design and in consultation with the landowner. Further detail is provided in Section 5.2.1.

Impacts to heritage items could potentially occur from vibration associated with construction work. The construction works for the project have been assessed as having **negligible** impact to those items within 25 metres of works and **no impact** to items more than 25 metres from works. Construction work would be carried out with consideration of the minimum working distances for vibration-intensive construction activities and other standard construction management measures.

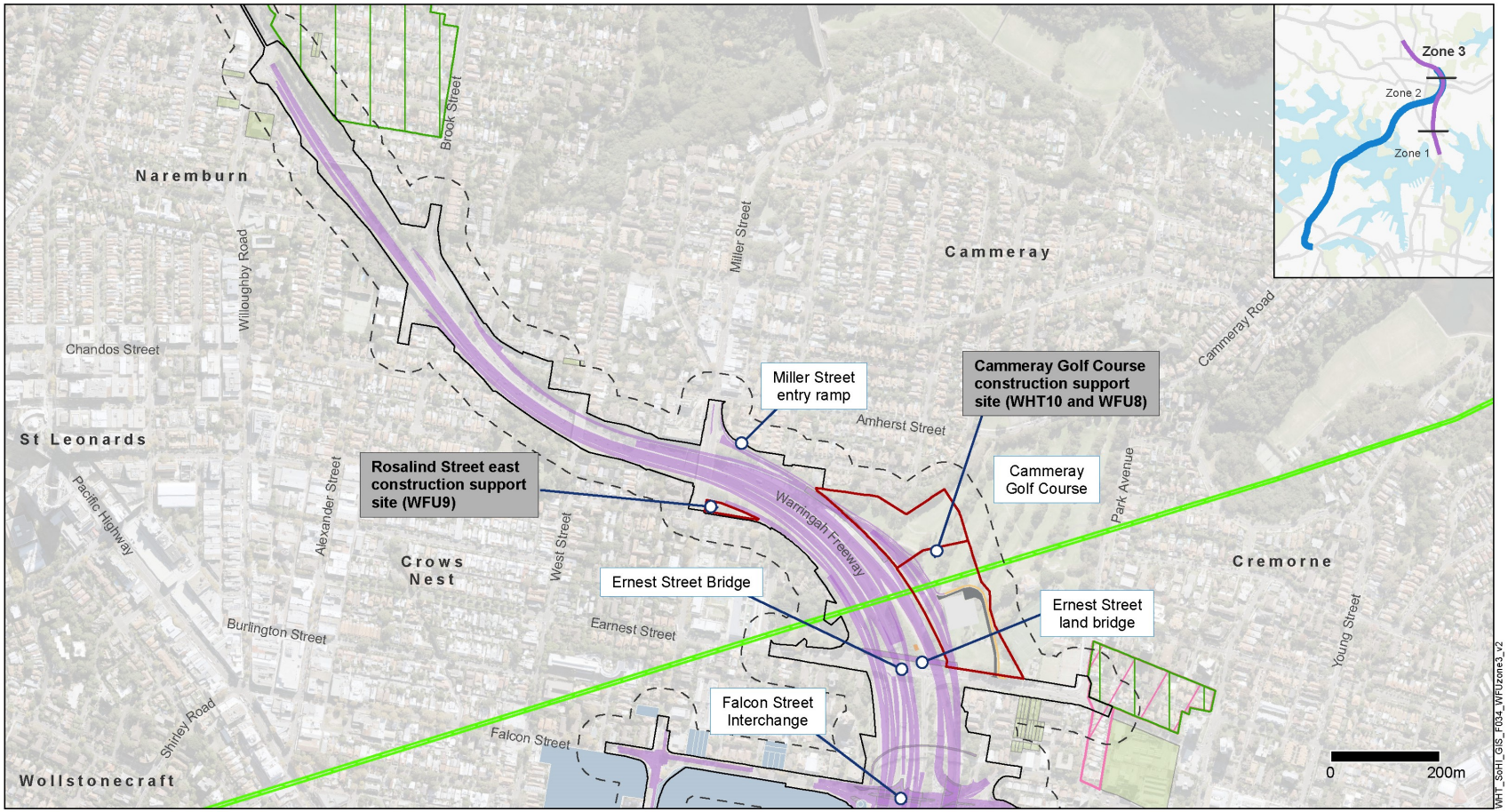
There are no known or suspected areas of archaeological potential within Zone 3 to be impacted by the project, therefore no further archaeological investigations are proposed.

As such, impacts to these heritage items have not been carried forward for further detailed assessment. Heritage items located within Zone 3 are listed in Table 5-6 and shown in Figure 5-3 and Figure 5-4.

Table 5-6: Heritage items in the vicinity of Warringah Freeway Upgrade and the communication cable – Zone 3

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
Warringah Freeway Upgrade					
House (I0582)	1 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0583)	2 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0584)	3 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0585)	4 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0586)	5 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0587)	6 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0588)	7 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0589)	8 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0590)	9 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0591)	10 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0592)	12 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0593)	14 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0594)	16 Byrnes Avenue, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	No impact
House (I0619)	317 Ernest Street, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible

Item name (heritage ID)	Location	Listing	Heritage significance	Potential type of impact	Level of impact
House (I0620)	319 Ernest Street, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I0621)	321 Ernest Street, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I0622)	323 Ernest Street, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I0623)	325 Ernest Street, Neutral Bay	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
House (I0023)	280 West Street, Cammeray	North Sydney Local Environmental Plan 2013	Local	Indirect – vibration	Negligible
Oaks Avenue; Park and Oaks Avenues Conservation Area (CA05, 100864)	North Cremorne	North Sydney Local Environmental Plan 2013, Register of the National Estate - Indicative Place, Historic	Local	Indirect – vibration	Negligible
House (including original interiors) (I169)	40 Slade Street, Naremburn	Willoughby Local Environmental Plan 2012	Local	Indirect – vibration	No impact
House (including original interiors) (I170)	42 Slade Street, Naremburn	Willoughby Local Environmental Plan 2012	Local	Indirect – vibration	No impact
Naremburn Central Township (C9)	Naremburn	Willoughby Local Environmental Plan 2012	Local	Indirect – vibration	No impact
St Cuthbert's Anglican Church (including original interiors) (I172)	205 Willoughby Road, Naremburn	Willoughby Local Environmental Plan 2012	Local	Indirect – vibration	Negligible
Group of shops (I174)	272–276 Willoughby Road, Naremburn	Willoughby Local Environmental Plan 2012	Local	Indirect – vibration	Negligible
Shops (I175)	284 and 284A Willoughby Road, Naremburn	Willoughby Local Environmental Plan 2012	Local	Indirect – vibration	No impact
Communication connection cable					
Conservation Area – General (C1)	Artarmon	Willoughby Local Environmental Plan 2012	Local	Potential direct	Negligible
Conservation Area – General (C9)	Naremburn Central Township	Willoughby Local Environmental Plan 2012	Local	Potential direct	Negligible



Legend

- Study area
- Construction footprint
- Construction support site
- Surface works
- s170 area (compiled by Jacobs 2017)
- Register of the National Estate (DOE 2015)
- LEP Heritage Items - Conservation Areas (DPE 2017)
- LEP Heritage Item - Landscape (DPE 2017)
- Heritage items outside of Zone 3

Figure 5-3: Heritage items in the vicinity of Warringah Freeway Upgrade – Zone 3

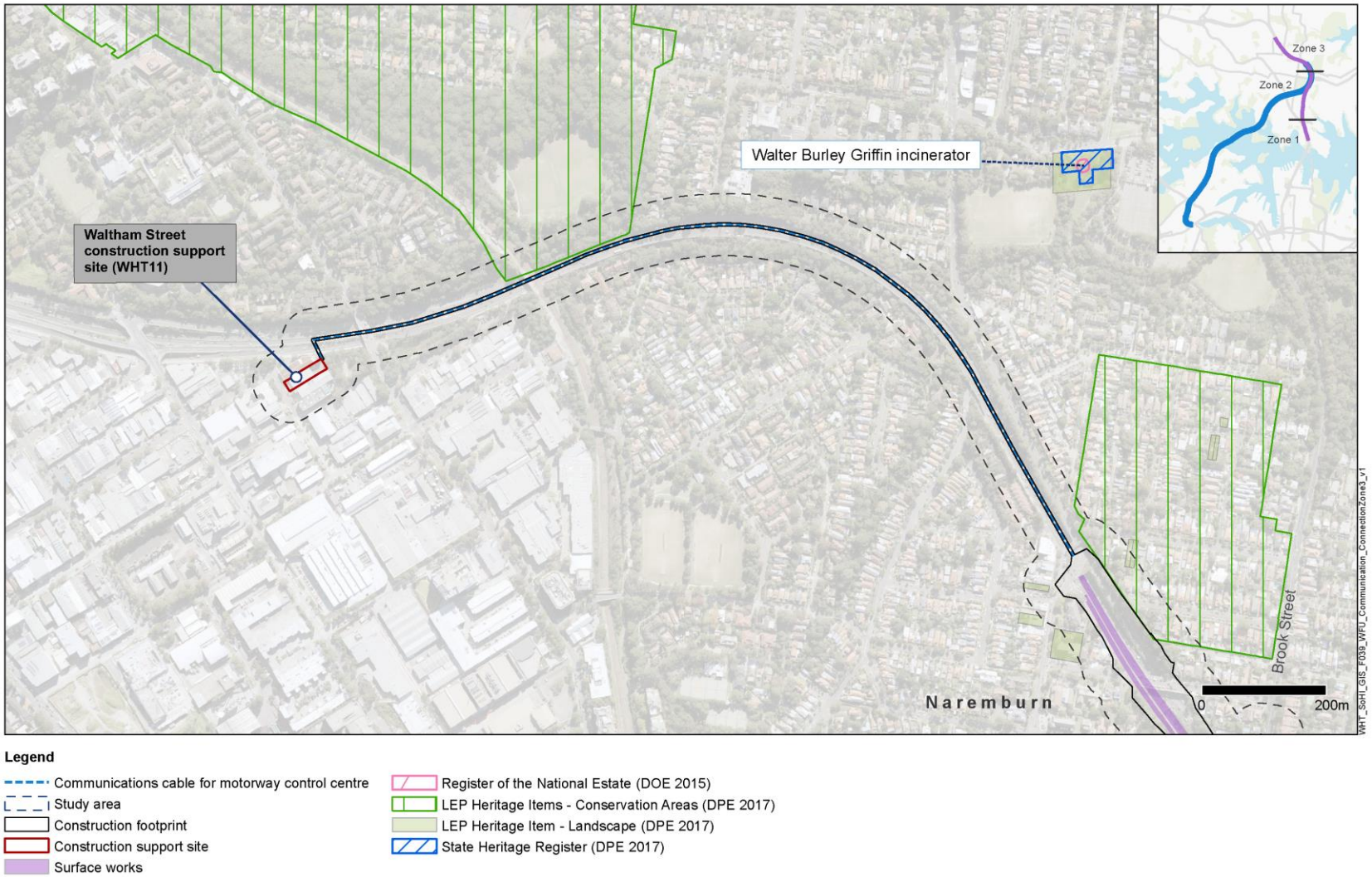


Figure 5-4 Heritage items in the vicinity of the communication cable – Zone 3

5.3.4 Significant heritage items potentially impacted

Of the items assessed as having heritage significance, the following would be directly or indirectly impacted by the construction of the project. Heritage items situated above the tunnel alignment have been assessed as a series of groups due to their proximity to each other, the similarity of impacts, and similarity of mitigation measures, including:

- Heritage items situated above the tunnel alignment with settlement impacts
- Heritage items situated above the tunnel alignment within close proximity to surface works (no planned physical impact) with settlement impacts
- Heritage items immediately adjacent to surface works.

For the rest of the heritage items within the study area an individual Statement of Heritage Impact has been prepared. These are summarised in Table 5-7 and detailed in the following section.

Table 5-7: Historical heritage items impacted by the project

Item number	Item name	Heritage significance	Impact	Impact description	Level of impact
1	Glebe Island Bridge	State	Potential direct impacts	Vehicle/machinery operation	Negligible
2	The Valley Heritage Conservation Area	Local	Direct impacts Potential direct impacts Indirect impacts	Demolition of buildings Construction support site Vibration, visual	Minor
3	Railway electricity tunnel under Sydney Harbour	State	Indirect impacts	Settlement	Negligible
4	Yurulbin Park	Local	Direct impacts Potential direct impacts Indirect impacts	Planned works – construction compound setup Vehicle/machinery operation, construction compound setup, vegetation removal Settlement, visual, social, aesthetic	Major
5	Former coal loader	Local	Indirect impacts	Vibration, settlement	Minor
6	Woodleys shipyard	Local	Direct impacts Potential direct impacts Indirect impacts	Planned works – construction compound setup Vehicle/machinery operation, vegetation removal, use of heritage item Settlement, visual, social, aesthetic	Minor
7	BP site	Local	Direct impacts Potential direct impacts Indirect impacts	Planned works – construction compound setup, vegetation clearance Construction compound setup, use of heritage item Settlement, visual, social, aesthetic	Minor

Item number	Item name	Heritage significance	Impact	Impact description	Level of impact
8	Sydney Harbour Bridge, approaches and viaducts (road and rail)	National	Direct impacts Potential direct impacts Indirect impacts	Planned works – roadworks, toll gantry construction, construction compound Vehicle/machinery operation Aesthetic, social, visual	Minor
9	North Sydney Bus Shelters	Local	Potential direct impacts Indirect impacts	Vehicle/machinery operation Settlement	Negligible
10	St Leonards Park	State	Potential direct impacts Indirect impacts	Vehicle/machinery operation, noise wall construction Vibration, settlement, visual, social	Minor
11	North Sydney Sewer Vent	State	Potential direct impacts Indirect impacts	Vehicle/machinery operation Vibration, settlement	Negligible
12	ANZAC Park	Local	Potential direct impacts	Vehicle/machinery operation	Negligible
13	Northern Suburbs Ocean Outfall Sewer	Sydney Water Section 170	Direct impacts Potential direct impacts Indirect impacts	Planned works – roadworks Vibration, settlement	Negligible
14	Cammeray Park (including golf course)	Local	Direct impacts Potential direct impacts Indirect impacts	Planned works – roadworks Vehicle/machinery operation Vibration, settlement, visual, social	Moderate
15	Cammeray Conservation Area	Local	Direct impacts Potential direct impacts Indirect impacts	Planned works – roadworks Vehicle/machinery operation Settlement, vibration, visual	Minor
16	Tarella	State	Direct Indirect impacts	Architectural noise treatment Vibration, visual	Negligible
17	St Thomas Rest Park	Local	Indirect impacts	Vibration	Negligible
18	Holtermann Estate A Conservation Area	Local	Direct Indirect impacts	Architectural noise treatment Settlement, vibration, visual	Negligible
19	Heritage items situated above the tunnel alignment with potential settlement and vibration impacts	National, Local	Indirect impacts	Settlement	Negligible

5.4 Statements of Heritage Impact

5.4.1 Item 1: Glebe Island Bridge, Pyrmont

5.4.1.1 Site details

The Glebe Island Bridge is located between Bank Street, Pyrmont and James Craig Road, Rozelle. The heritage item is listed on the State Heritage Register, the Leichhardt Local Environmental Plan 2013, the Roads and Maritime Section 170 Register, the Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005, the Register of the National Estate and the National Trust of Australia (NSW).

The item is of state significance, as it meets criterion A (historical), B (associative), C (aesthetic), D (social), E (research potential), F (rarity) and G (representativeness).

There are no known or suspected areas of archaeological potential within the heritage item boundary to be impacted by the project, therefore no further archaeological investigations are proposed.

5.4.1.2 Proposed works

The White Bay construction support site would be immediately adjacent to the heritage curtilage of the Glebe Island Bridge, on the far western approach of the bridge at James Craig Road. The construction support site would be used for temporary construction facilities including site offices, staff amenities, spoil handling and casting and fitout of the immersed tube tunnel units. Vehicles would enter the site off James Craig Road.

The construction support site boundary appears to enter the boundary of this heritage item for less than five metres at its north-western corner, however this is due to the resolution of the spatial data used for assessment. Site planning during detailed design would avoid direct impacts on the heritage curtilage.

5.4.1.3 Impact assessment

The project would avoid direct impacts to the heritage item as work would be situated outside its heritage boundary.

Table 5-8 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impact.

Table 5-8: Impact assessment – Glebe Island Bridge, Pyrmont

Impact type	Consideration
Potential direct	Physical impact may occur due to the use of construction vehicles or machinery within close proximity to the heritage item. Standard construction measures (such as fencing of active construction areas and delineation of 'no-go' areas) would manage this risk. Construction vehicle access routes pass in close proximity to the heritage item. Should there be insufficient delineation of heritage curtilage to prevent accidental access by construction vehicles, Roads and Maritime would liaise with Port Authority of NSW concerning additional protection measures.
Indirect – Visual	The project would introduce new but temporary elements within the vicinity of the heritage item, however any new items would be in keeping with the current industrial landscape of the area. As such, any visual impacts to the heritage item would be negligible.
Indirect – Vibration	Surface works in the vicinity of the heritage item would be minor associated with car parking and site offices, which would require only minor site preparation works. Minimum working distances for vibration-intensive activities would be applied to avoid indirect impacts to the heritage item.

5.4.1.4 Conclusion

With the implementation of the management measures described, the level of impact on the heritage item would be **negligible**, as the proposed works would remain outside the heritage boundary.

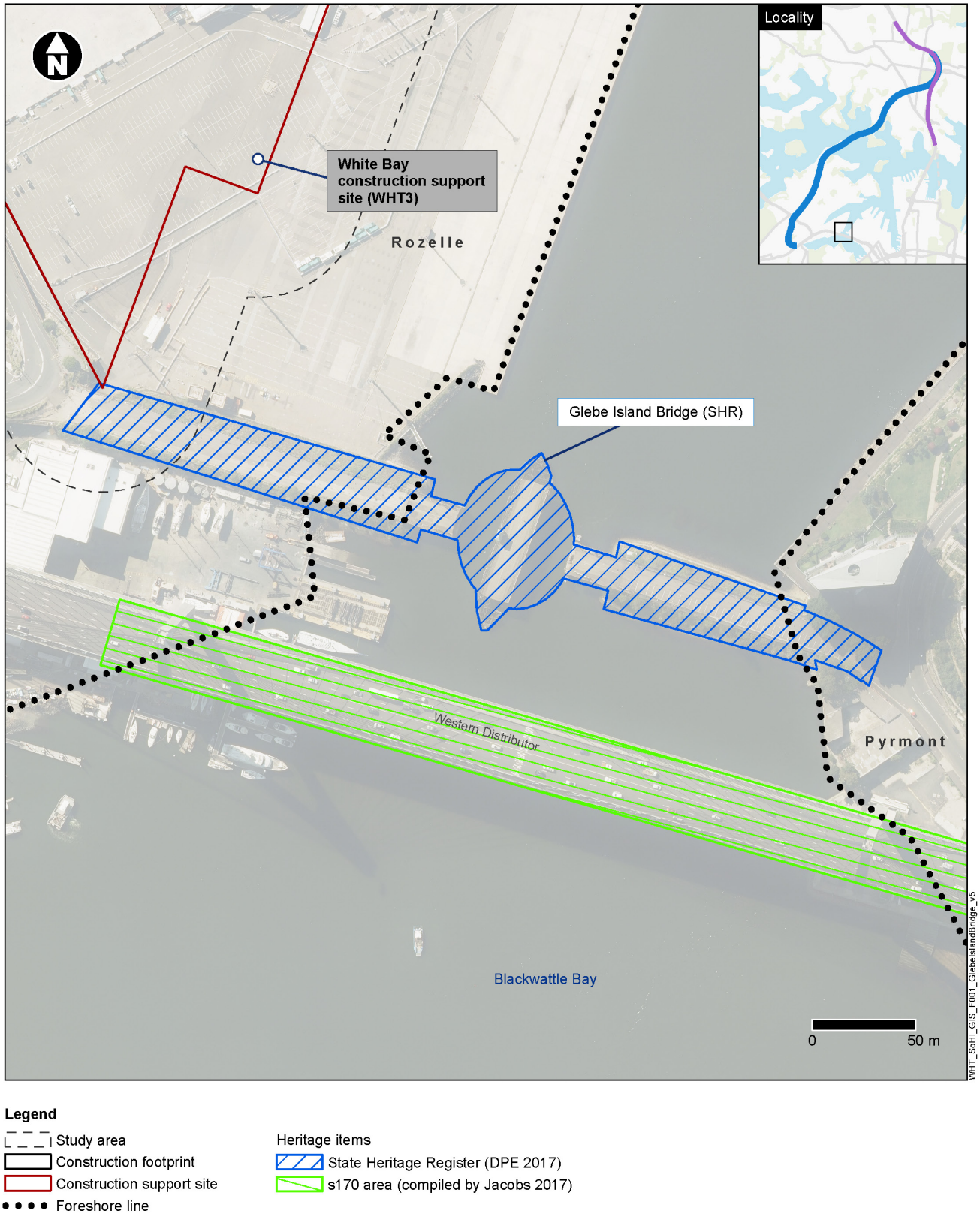


Figure 5-5 : Item 1 Glebe Island Bridge

5.4.2 Item 2: The Valley Heritage Conservation Area, Rozelle and Balmain

5.4.2.1 Site details

The Valley Heritage Conservation Area includes a number of subdivisions/part subdivisions around the highest land in the Leichhardt municipality on either side of the Darling Street ridge and across Victoria Road, land east of Wellington Street to White Bay, the civic buildings and the commercial zone of Rozelle on both sides of Victoria Road, the land east of the Darling Street ridge beyond the commercial zone, the civic and commercial buildings of Balmain retail centre, small groups of shops along Darling Street, and the former retail area of Evans and Beattie Streets. The heritage item is listed on the Leichhardt Local Environmental Plan 2013. See Appendix A for full site description, photographs and significance assessment.

There are no known or suspected areas of archaeological potential within the heritage item boundary to be impacted by the project, therefore no further archaeological investigations are proposed.

5.4.2.2 Proposed works

The mainline tunnels are located directly below the heritage conservation area.

At the surface, the construction footprint abuts the heritage curtilage for the item. The Victoria Road construction support site (WHT2) establishment works would involve demolition of the existing structures on the site (including the former Balmain Leagues Club) and earthworks to level the site in preparation for site work and installation of site facilities.

5.4.2.3 Impact assessment

The project would avoid direct impacts to most of the heritage conservation area. The former Balmain Leagues Club property would be demolished as part of the project. This property (consisting of Lot 101 DP 629133, Lot 104 DP 733658, and Lot 102 DP 629133) is not subject to the Leichhardt Local Environmental Plan 2013 heritage boundary but was subject to the *Leichhardt Local Environmental Plan 2000* heritage boundary. Despite this, the demolition of the buildings is considered in relation to the 2013 heritage conservation area boundary.

Table 5-9 outlines the following aspects of the project that could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impact.

The buildings to be demolished are situated outside of the original Heritage Conservation Area, and are assumed to be of no contributory significance as they are situated outside the updated Heritage Conservation Area boundary. Further, the buildings to be demolished would equate to less than one per cent of the entire stock of buildings within the original Heritage Conservation Area. As such, comparative analysis to determine rarity of the demolished buildings has not been prepared in this instance.

Table 5-9: Impact assessment – The Valley Heritage Conservation Area

Impact type	Consideration
Direct	The direct impacts associated with the project would involve the demolition of buildings within Lot 101 DP 629133, Lot 104 DP 733658, and Lot 102 DP 629133 of the heritage conservation area. The project would not impact the underlying street pattern in this area. Buildings that are significant to the conservation area are those dating up to World War II (pre-1939), particularly buildings illustrating the development of workers' and artisans' housing between 1871 and 1891, and the close physical relationship between industry and housing in the 19th century cities. However, the buildings to be demolished, while previously included within the heritage conservation area, have been excluded from the current heritage boundary, therefore suggesting their limited contribution to the overall significance of the conservation area. Direct impact on the heritage conservation area is considered to be negligible.

Impact type	Consideration
	An archival photographic recording of the buildings to be demolished would be carried out, in accordance with the guidelines *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Council of NSW, 2006).
Potential direct	Physical impact may occur due to the use of construction machinery and vehicles within close proximity to the heritage item. Standard construction measures (such as fencing of active construction areas and delineation of 'no-go' areas) would manage this risk.
Indirect – Visual	Views within the heritage conservation area would experience localised impacts due to the demolition of the buildings within and immediately adjacent to the heritage curtilage. As this occurs on the periphery of the conservation area, the impact is considered to be minor. Temporary visual impact may occur due to the construction of the temporary construction support site. Any visual impact would only occur at the common boundary between the heritage item and the construction footprint and would be minimised through the selection of materials. Following completion of construction, Roads and Maritime would remove all aspects of the construction compound and the site would remain cleared. Any future development of the site would then be subject to separate approval.
Indirect – Vibration	Given the proximity of works, there is potential for vibration from the surface works to exceed 2.5 millimetres per second. As such, there is a risk of damage to the heritage item, if any structures are within these vibration levels and subject to structural review of the heritage item. The management measures outlined in Section 5.2 should be considered to control and minimise vibration impacts from the construction.
Indirect – Settlement	Settlement and ground movement from tunnel excavation may cause damage to the heritage item. Settlement modelling for this project indicates that the ground settlement levels at the heritage item would have a predicted maximum surface settlement of between 25 and 30 millimetres and a predicted maximum surface angular distortion of between 1:500 and 1:2000. As such, the degree of severity to the heritage item is 'slight'. To protect the heritage item and reduce its exposure to settlement impacts, prior to and during construction the management measures summarised in Section 5.2 would be implemented to address any potential structural damage to the heritage item. Any repairs required as a result of the settlement damage, would be carried out under the guidance of a suitably qualified heritage professional.

5.4.2.4 Conclusion

The proposed works would be of small/localised scale and of low intensity, but part of the works would be permanent/irreversible (in the case of the buildings to be demolished within Lot 101 DP 629133, Lot 104 DP 733658, and Lot 102 DP 629133). However, as these buildings are outside the current heritage boundary and therefore assumed to be of little significance, and with the implementation of the management measures described, the level of impact on the heritage conservation area would be **minor**.

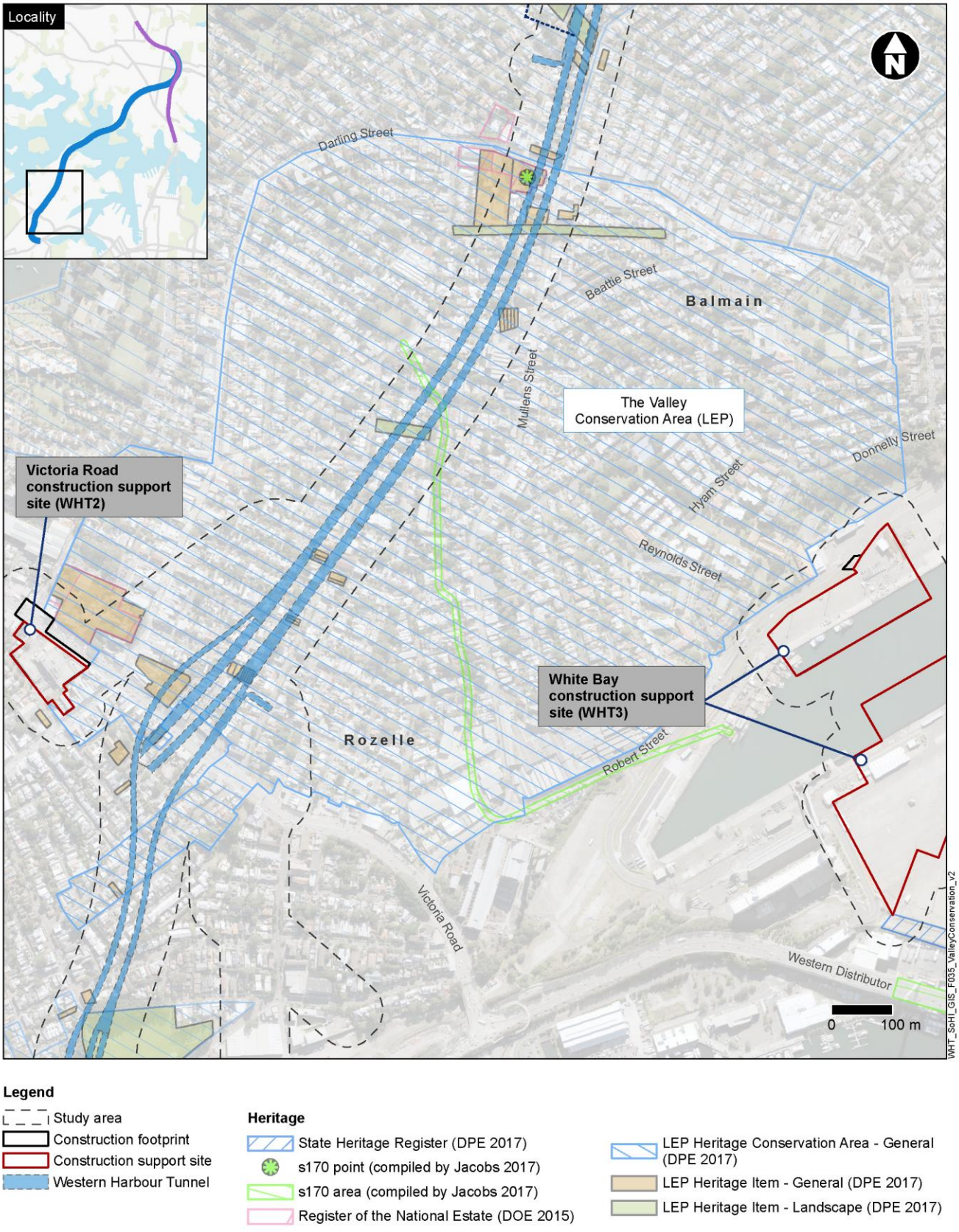


Figure 5-6 : Item 2 The Valley Heritage Conservation Area

5.4.3 Item 3: Railway electricity tunnel under Sydney Harbour, Birchgrove and Greenwich

5.4.3.1 Site details

The Railway electricity tunnel under Sydney Harbour is located at 146A and 146B Louisa Road, Birchgrove, on Lot 11 DP 839246. The heritage item is listed on the State Heritage Register, the Leichhardt Local Environmental Plan 2013, the Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 and the Transport for NSW Section 170 Heritage and Conservation Register.

The item is of state significance as it meets criterion A (historical), B (historical association), C (aesthetic), E (research potential), and F (rarity). Refer to Appendix A for full site description, photographs and significance assessment.

The following impact assessment focuses on the land-based impacts to the Railway electricity tunnel, and summarises the maritime-based impacts. For details of the impact assessment for the maritime section of the Railway electricity tunnel, refer to Technical working paper: Maritime heritage (Cosmos Archaeology, 2020).

There are no known or suspected areas of archaeological potential within the heritage item boundary to be impacted by the project, therefore no further archaeological investigations are proposed.

5.4.3.2 Proposed works

Based on the curtilage for the heritage item within the Leichhardt Local Environmental Plan 2013, the project would not directly impact the heritage item. There is no evidence of the entry remains above ground in the vicinity of surface works at Yurulbin Point and the majority of the item is located underground.

Key components of the project in the vicinity of the heritage item include:

- Mainline tunnelling works, located around 15 metres from the heritage item
- Construction activities associated with the crossing of Sydney Harbour. This includes dredging, installation of cofferdams (which would include piling and excavation) and the construction of the immersed tube tunnels. The majority of these works would be over 50 metres from the item.

5.4.3.3 Impact assessment

The land-based section of the Railway electricity tunnel occurs under 146A and 146B Louisa Road, Birchgrove within the study area. The project would avoid direct impact or damage to the land-based section of this heritage item which comprises its shaft and tunnel structure (and early cabling).

Table 5-10 outlines the following aspects of the project that could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-10: Impact assessment – North Sydney Sewer Vent

Impact type	Consideration
Indirect – Vibration	Tunnelling vibration would be below the 2.5 millimetres per second threshold. Risk of exceedance of 2.5 millimetres per second by construction activities at the surface, including piling at the Sydney Harbour north cofferdam and Sydney Harbour south cofferdam would reduce as distances increase from the activity.
Indirect – Settlement	Settlement and ground movement from tunnel excavation may cause damage to the heritage item. Settlement modelling for this project indicates that the ground settlement levels for most of the heritage item (where the curtilage is within Birchgrove) would be less than 10 millimetres, with a small section having a predicted maximum surface settlement of less than 15 millimetres and a predicted maximum surface angular distortion of less than 1:2000. As such, the degree of severity to structures within the heritage item is 'very slight' and would lessen as the distance between the mainline tunnel and the item, increases.

5.4.3.4 Conclusion

With the implementation of the management measures described, the level of impact on the heritage item would be **negligible**, as the settlement modelling indicates that impact upon structures would be 'very slight' or lower.

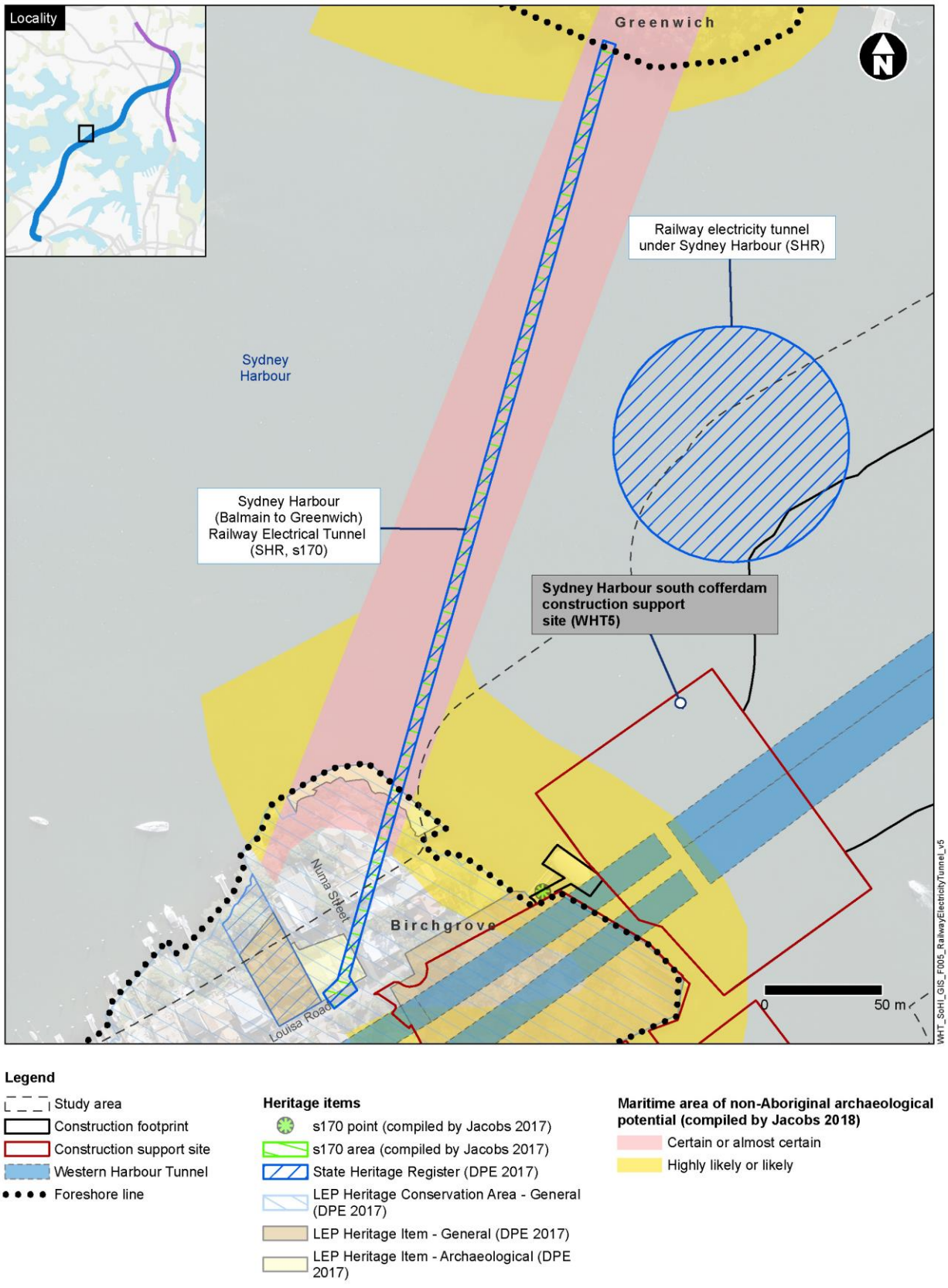


Figure 5-7 : Item 3 Railway electricity tunnel under Sydney Harbour

5.4.4 Item 4: Yurulbin Park, Birchgrove

5.4.4.1 Site details

Yurulbin Park is located at the end of Louisa Road, Birchgrove, on Lots 1 and 2 Section 9 DP 192096 and Lot 1 DP 1112881; and road reserve. The heritage item is listed on the Leichhardt Local Environmental Plan 2013 and is of local significance as it meets criterion A (historical), B (historical association), C (aesthetic), D (social), E (research potential), F (rarity), and G (representativeness). Refer to Appendix A for full site description, photographs, significance assessment and archaeological assessment.

The site has been assessed as having one area of archaeological potential related to the Morrison and Sinclair shipyard which operated at the site from the 1920s to the 1970s.

The following impact assessment focuses on the land-based impacts within Yurulbin Park and summarises the maritime-based impacts. For details of the impact assessment related to the project in the maritime environment, refer to Technical working paper: Maritime heritage (Cosmos Archaeology, 2020).

5.4.4.2 Proposed works

The Yurulbin Point construction support site (WHT4) would be located within the heritage curtilage of the heritage item. Site establishment works at the construction support site would include:

- Vegetation clearing and earthworks as part of early works and site establishment. Some vegetation alongside the Louisa Road, Birchgrove would be retained
- Excavation of access shaft, connecting to the mainline tunnels immediately below the construction support site
- Construction of new wharfs including an enclosed barge shed in Snails Bay.

During construction, temporary structures within the construction support site would include a barge shed (on land), site offices, substation and noise barriers.

Immediately adjacent to construction support site would be construction activities associated with the crossing of Sydney Harbour. These include:

- Installation of the Sydney Harbour north cofferdam (WHT5) and Sydney Harbour south cofferdam (WHT6), the former located adjacent to the heritage item. Each cofferdam would have support barges, on which would be site offices and cranes
- Dredging and installation of the immersed tube tunnel
- Use of existing mooring facilities at Snails Bay.

Following the completion of construction, no permanent features above the water would be present. This site would not be required on a permanent basis to operate the project and would be rehabilitated and returned to an equivalent state as soon as practicable at the completion of construction.

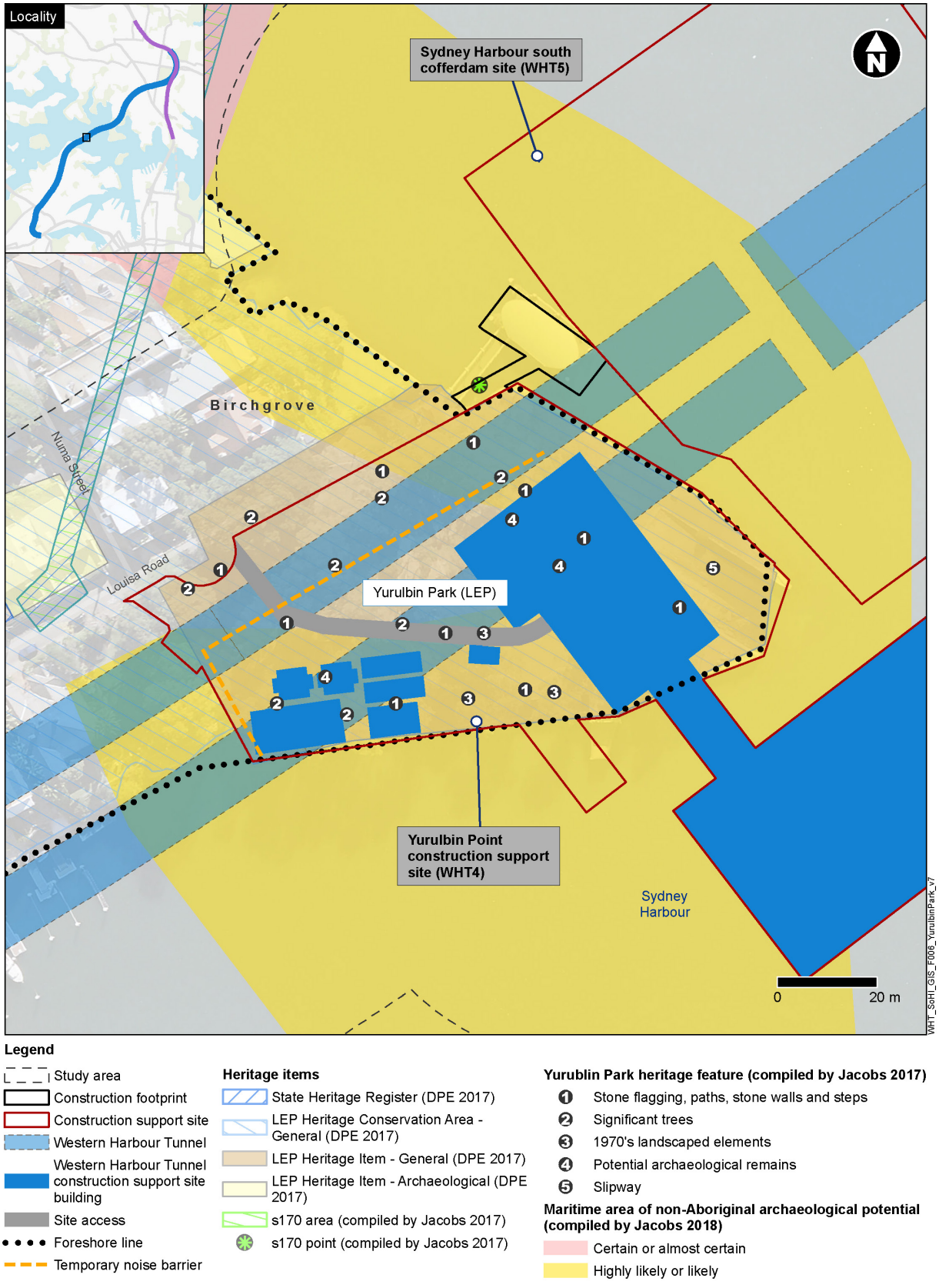


Figure 5-8 : Item 4 Yurulbin Park

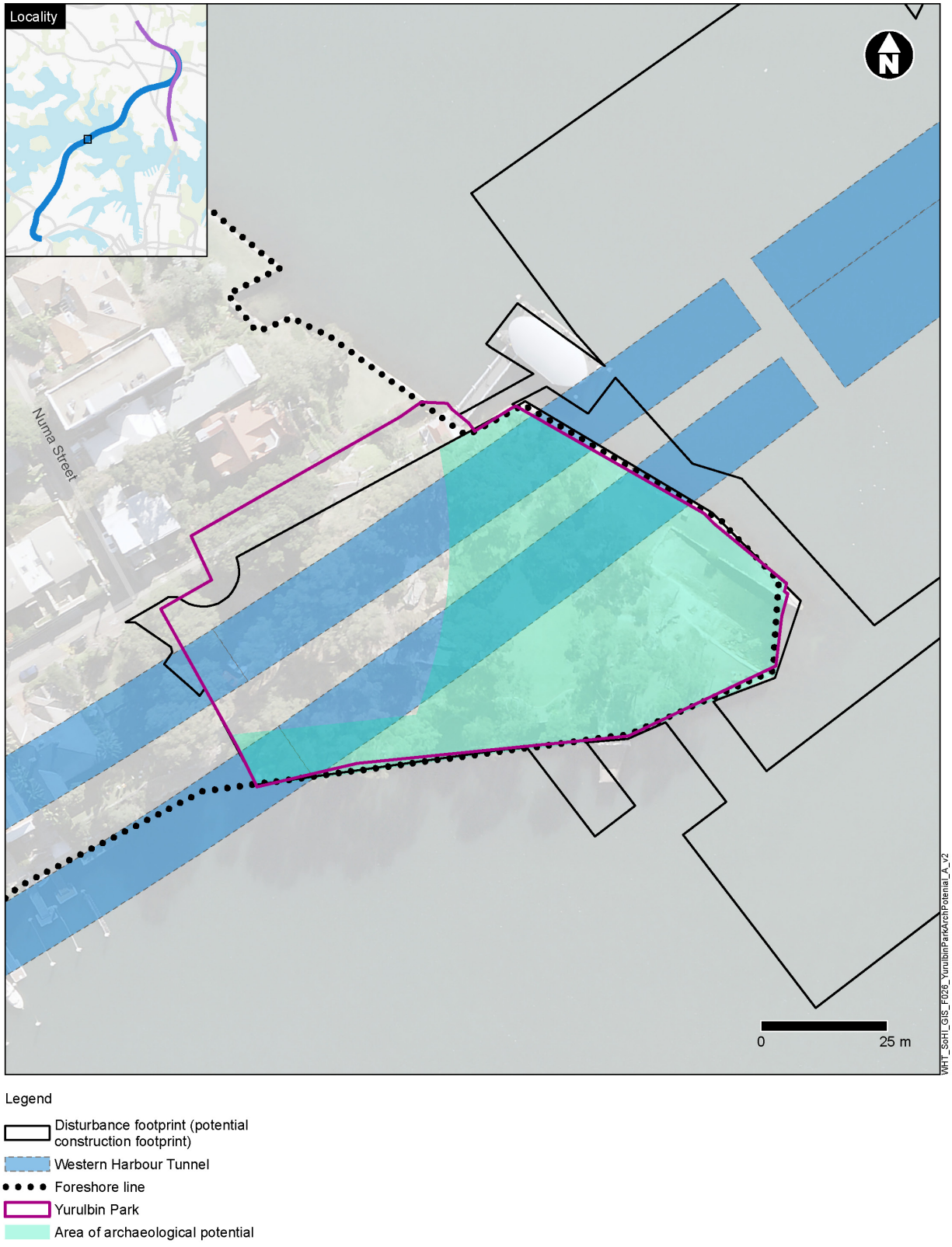


Figure 5-9 : Area of archaeological potential, Yurulbin Park

5.4.4.3 Impact assessment

There would be little enhancement of heritage significance due to the direct impacts to the heritage item. However, to ameliorate this, the reinstatement of significant heritage components and the park overall would occur following completion of construction, which would return the park to its current standard.

The redesign of the disturbed sections of the park would seek to retain as much of the existing character and reconstruct the original design as possible (WSP and Arup, 2020). Roads and Maritime will continue to liaise with the original landscape architect to guide the future redesign of the park following construction.

Table 5-11 outlines the following aspects of the project that could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-11 : Impact assessment – Yurulbin Park

Impact type	Consideration
Direct - Areas of archaeological potential	Direct impacts to areas of archaeological potential would occur due to the earthworks, the excavation of the access shaft, and the construction of the spoil shed and enclosed spoil conveyor. The proposal would seek to minimise impacts to the existing sandstone outcrop where possible. To mitigate the physical impacts to the area of archaeological potential, an archaeological investigation of the 1920s shipyard would be carried out in accordance with the Archaeological research design and methodology for Yurulbin Park (Appendix C). These mitigation measures would realise the research potential of the heritage item by capturing as much archaeological and site data as possible prior to destruction or disturbance. Following completion of construction, the construction support site would be removed, and the heritage item would be reinstated to an open space. An interpretation strategy including historical information, and information obtained from the archaeological investigation would be developed and implemented. This interpretation strategy would be developed in co-ordination with a plan for future design of the site.
Direct – Land	The project would have a direct impact on the heritage item as discussed below. An archival photographic recording of the heritage item would be carried out, in accordance with the guidelines *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Council of NSW, 2006). A conservation management plan would be prepared for the park, identifying those original designed features and remnant elements of Aboriginal and non-Aboriginal use of the site that can be conserved, retained or reconstructed to enhance the heritage significance of the heritage item. **Stone flagging, paths, stone walls and steps** Impacts may occur to the stone flagging, paths, stone walls, and steps during site establishment works to install construction-related infrastructure. To mitigate the physical impacts to these elements, a condition survey would be completed prior to works commencing, and opportunities to temporarily remove, store and reinstate these elements on completion of construction work would be investigated and implemented if these elements need to be temporarily removed. **Designed landscape elements from the 1970s** These elements include the cut timber pylon walls, and the timber stairs and lookout. These items would be directly impacted where these elements occur outside exclusion areas or cannot be avoided during detailed site planning. These features may be reinstated as part of the redesign of disturbed areas post-construction. **Trees** Mature trees within the heritage item would be directly impacted. Areas of exclusion have been identified, and mature trees along Louisa Road, Birchgrove (including the large fig tree) would

Impact type	Consideration
	be protected and retained (Technical working paper: Arboricultural impact assessment (ELA, 2020)). Replacement plantings would be provided upon completion of construction as part of the redesign.
Direct – Maritime	As detailed in Technical working paper: Maritime heritage (Cosmos Archaeology, 2020), piling for the temporary structures at Snails Bay and works associated with the cofferdams may impact potential archaeological remains, including maritime infrastructure. Such works would have a minor localised impact on remains of maritime infrastructure associated with earlier phases of the current wharf and associated archaeological deposits.
Potential direct	Physical impact may occur due to the use of construction machinery and vehicles within close proximity to the heritage item. Standard construction measures (such as fencing of active construction areas and delineation of 'no-go' areas) would manage this risk. There is the potential for the construction of the spoil shed to impact the slipway connected to the 1920s shipyard. The shed would be at a slightly higher level than the slipway and a site office would be situated immediately adjacent to the slipway. Detailed site planning would target avoidance of direct impacts on this element of the heritage item. As detailed in Technical working paper: Maritime heritage (Cosmos Archaeology, 2020), overall the impact to maritime heritage sites could vary from Negligible to Moderate, should direct impacts occur, noting that: • There is potential, though highly improbable, for the maritime heritage sites to be physically impacted from anchoring by project vessels • It is highly improbable that project vessels would collide with maritime heritage sites • There is a probable impact from propeller jet turbulence.
Indirect – Visual	The aesthetic significance of this park is high, due to its harbour-side location, rock outcroppings, stone walls, and its 270 degree views of the harbour, and as an undeveloped point to passing boat traffic. Physical works would be carried out and vegetation would also be removed as a consequence of these works, which would result in temporary visual impacts during construction. Its immediate setting would not significantly change once construction works have concluded. The park would be unavailable for public access for around four years, with large temporary structures erected within the park. The impacts to the aesthetic values of the park would be considerable during this period. The design of the construction support site (such as materials used for the spoil sheds and temporary noise barriers) would be selected to minimise the visual impacts, and to blend into the surrounding environment where feasible and reasonable. The installation of the cofferdam adjacent to the heritage item, and associated construction equipment would also have a considerable visual impact to the aesthetic values of the park. However, this would be temporary.
Indirect – Vibration	Tunnelling vibration would be below the 2.5 millimetres per second threshold. The predicted surface works would be above 2.5 millimetres per second (given works would occur directly within the heritage curtilage). As such, there is a risk of damage to the heritage item, if any structures are within these vibration levels and subject to structural review of the heritage item. Minimum working distances for vibration-intensive activities would be applied, where reasonable and feasible, to avoid indirect impacts to structures located within the heritage item.
Indirect – Settlement	Settlement and ground movement from tunnel excavation may cause damage to the heritage item. Settlement modelling for this project indicates that the ground settlement levels at the heritage item would have a predicted maximum surface settlement of 40 to 45 millimetres and a predicted maximum surface angular distortion of between 1:500 and 1:2000. As such, the degree of severity to structures within the heritage item is 'slight'.

Impact type	Consideration
	To protect the heritage item and reduce its exposure to settlement impacts, prior to and during construction the management measures summarised in Section 5.2 would be implemented to address any potential structural damage to the heritage item. Any repairs required as a result of the settlement damage, would be carried out under the guidance of a suitably qualified heritage professional.

5.4.4.4 Conclusion

Yurulbin Park has local heritage significance. The proposed works within Yurulbin Park would be of medium-large scale and moderate intensity, with some of the changes being permanent and irreversible. As such, the level of impact on the heritage item overall would be **major.** As detailed in Section 5.1, there is limited land to support construction activities, which has necessitated the need to use Yurulbin Park as a construction support site.

The design of the project works at Yurulbin Park have been developed in consultation with Bruce MacKenzie, the original designer of the park. This has resulted in a design that minimises impacts to significant features and changes to the permanent landform at Yurulbin Park. Some mature trees within the park would be directly impacted, but areas of exclusion have been identified and replacement plantings would be provided on completion of construction as part of the redesign. Opportunities to temporarily remove, store and reinstate certain elements such as stone flagging, stone walls and steps would be investigated and implemented if these elements need to be temporarily removed.

While permanent impacts would occur to areas of archaeological potential during site establishment, specialist investigations would provide an opportunity to obtain information about the archaeology and history of the site not available from other sources. Reinstatement works following the completion of construction would be designed in consultation with Bruce MacKenzie. The new design would seek to retain and enhance the existing character and the original design intent as much as possible. These works would also improve the quality and long-term viability of landscaping and usability of the park.

5.4.5 Item 5: Former coal loader, Waverton

5.4.5.1 Site details

The Former coal loader is located at 2 Balls Head Drive, Waverton, on Lot 99 DP 1048930; Lots 1–3 DP 542933. The heritage item is listed on the North Sydney Local Environmental Plan 2013, the Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 and the Register of the National Estate.

The item is of local heritage significance as it meets criteria A (historical), C (aesthetic), E (research potential), F (rarity) and G (representativeness). See Appendix A for full site description, photographs and significance assessment.

The following impact assessment focuses on the land-based impacts within the Former coal loader boundary and summarises the maritime-based impacts. For details of the impact assessment related to the project in the Maritime environment, refer to Technical working paper: Maritime heritage (Cosmos Archaeology, 2020).

There are no known or suspected areas of archaeological potential on land within the heritage item boundary to be impacted by the project, and while the proposed maritime works are in an area of high sensitivity, it is considered unlikely that the works would directly impact on maritime heritage. Therefore, no further archaeological investigations are proposed.

5.4.5.2 Proposed works

The Sydney Harbour south cofferdam (WHT6) would be located immediately adjacent to the curtilage of the heritage item. The installation of the Sydney Harbour south cofferdam (WHT6) would include piling works and excavation of rock within the cofferdam. During construction, supporting work barges and other supporting structures would be positioned adjacent to the cofferdam to support the construction of the transition structure within the cofferdam. The transition structure would provide the connection between the bored tunnels and the immersed tube tunnels. The establishment of the support barges would require piling, and plant and equipment placed on the support barges would include a large crane. The cofferdam and supporting infrastructure has been positioned to avoid direct impacts on the lower walkway and dolphins of the heritage item.

Other works in the vicinity of the heritage item include:

- Installation of the cofferdam structure at Sydney Harbour north (WHT5)
- Dredging and installation of the immersed tube tunnel
- Use of existing mooring facilities at Snails Bay.

The mainline tunnels would also pass directly below the heritage item.

Following the completion of construction, no permanent features above the water would be present.

During design development of the project, several alignments were considered for the crossing of Sydney Harbour. At the crossing between Birchgrove and Waverton, key considerations included:

- Avoiding impacts to the coal loader facility (located on land) and the associated renewal precinct on Balls Head
- Avoiding encroachment into the *HMAS Waterhen* naval base to the north of the coal loader facility
- Improving constructability of the project by locating the northern cofferdam in rock where water depths are relatively shallow
- Keeping the Sydney Harbour north cofferdam clear of the main shipping channel
- Maintaining close proximity to the temporary tunnelling decline at Berrys Bay to ensure efficient tunnelling access to the immersed tube tunnel

- Aligning the tunnel with favourable geology
- Minimising impacts to the Balls Head Coal Loader Wharf.

The preferred alignment achieves all of the aforementioned, with the harbour crossing skewed to enable construction of the temporary cofferdam to the south of the former coal loader wharf. This avoids direct impacts to the wharf, the *HMAS Waterhen* substratum and follows favourable geology.

5.4.5.3 Impact assessment

The project would not have a direct impact on the landside component of the heritage item.

Table 5-12 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-12 : Impact assessment – Former coal loader, Waverton

Impact type	Consideration
Direct – Land	The project would not have a direct impact on the heritage item.
Direct – Maritime	As detailed in Technical working paper: Maritime heritage (Cosmos Archaeology, 2020), the southeast corner of the cofferdam is considered to be an area of high maritime heritage sensitivity due to its association with the coal loader. However, there do not appear to be any potential maritime heritage structures or items within the cofferdam footprint. As such, it was concluded that it is improbable that the installation of the cofferdams (including excavation) in this area of high sensitivity would directly impact any remains of maritime infrastructure and associated archaeological deposits related to the heritage item. Should any impact occur, the effect to the heritage values of the site would be minor.
Potential direct	Physical impact may occur due to the proximity of construction activity (carried out from the water), and the use of construction machinery and vehicles within close proximity to the heritage item. As detailed in Cosmos Archaeology (2020), overall the impact to maritime heritage sites could vary from negligible to moderate, should direct impacts occur, noting that: • There is potential, though highly improbable, for the maritime heritage sites to be physically impacted from anchoring by project vessels • It is highly improbable that project vessels would collide with maritime heritage sites • It is improbable that impacts would occur from propeller jet turbulence.
Indirect – Visual	The installation of the cofferdam adjacent to the heritage item, and associated construction equipment would also have a considerable but temporary visual impact to the aesthetic values of the item. Works would be visible from publicly accessible areas, such as the rooftop garden located above the coal loader tunnels. As any impacts would be temporary, the visual impacts would be minor.
Indirect – Vibration	Tunnelling, in particular during benching activities, and the installation of the cofferdam (piling and excavation) would create vibration above the 2.5 millimetres per second threshold and would fall within the minimum working distances. As such, there is a risk of damage to the heritage item, if any component of the heritage item is within these vibration levels, and subject to structural review of the heritage item. As detailed in Cosmos Archaeology (2020), the impacts due to vibration are considered to be negligible to minor. Where work could take place within the minimum working distances for an unsound structure, a structural assessment would be carried out, appropriate vibration criteria adopted and monitored prior to vibration-intensive construction works proceeding.
Indirect – Settlement	Settlement and ground movement from tunnel excavation may cause damage to the heritage

Impact type	Consideration
	item. Settlement modelling for this project indicates that the ground settlement levels at the heritage item would have a predicted maximum surface settlement of 25 to 30 millimetres and a predicted maximum surface angular distortion of between 1:500 and 1:2000. As such, the degree of severity to structures within the heritage item is 'slight'. To protect the heritage item and reduce its exposure to settlement impacts, prior to and during construction the management measures summarised in Section 5.2 would be implemented to address any potential structural damage to the heritage item. Any repairs required as a result of the settlement damage would be carried out under the guidance of a suitably qualified heritage professional.

5.4.5.4 Conclusion

With the implementation of the management measures described, the level of impact on the heritage item would be **minor.** While visual impacts would occur, these would be temporary. There remains a potential risk to the item due to vibration-intensive activity and tunnelling activities occurring in the immediate vicinity of, or directly below the heritage item. A structural condition survey would be completed prior to construction commencing and additional mitigation measures identified to minimise risks to the heritage item as a result of vibration-intensive activities and/or settlement.

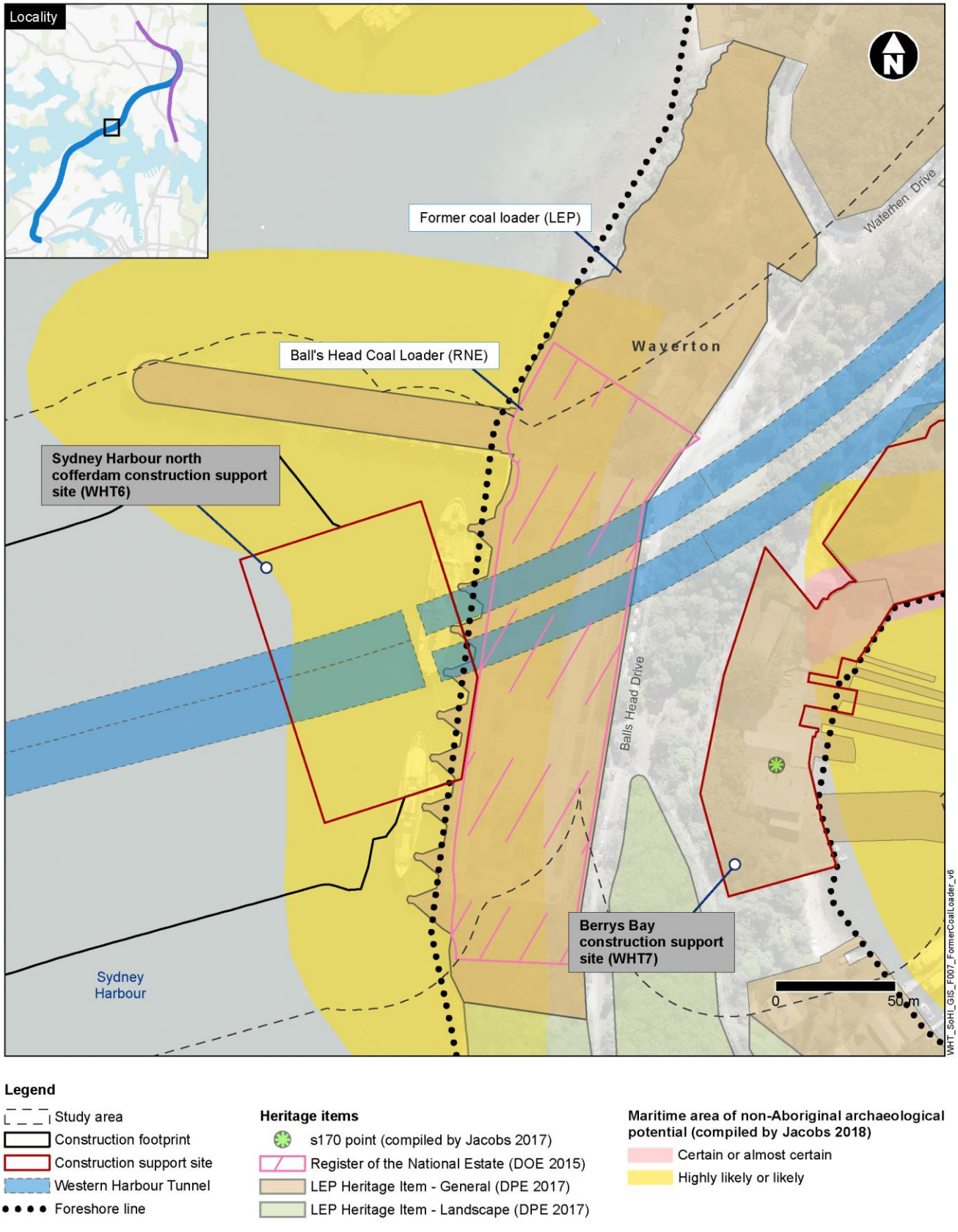


Figure 5-10 : Item 5 Former coal loader

5.4.6 Item 6: Woodleys shipyard, Waverton

5.4.6.1 Site details

Woodleys shipyard is located at 1 Balls Head Drive, Waverton, on Lots 101 and 102 DP 1162896. The heritage item is listed on the North Sydney Local Environmental Plan 2013, the Roads and Maritime Section 170 Register and the Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005.

It is of local significance as it meets criteria A (historical), B (historical association), C (aesthetic), D (social), E (research), F (rarity), and G (representativeness). Refer to Appendix A for full site description, photographs and significance assessment.

The following impact assessment focuses on the land-based impacts within Woodleys shipyard, and summarises the maritime-based impacts. For details of the impact assessment related to the project in the marine environment, refer to Technical working paper: Maritime heritage (Cosmos Archaeology, 2020).

5.4.6.2 Proposed works

The Berrys Bay construction support site (WHT7) would be partially located within the curtilage of the heritage item. Where possible, the existing heritage structures would be retained and repurposed for use. These structures include a number of heritage listed structures, including Woodleys shed and a stone retaining wall. Where possible, the construction support site has been designed to retain and protect these structures.

A temporary wharf would also be constructed adjacent to Woodleys shed from the existing slipway, requiring piling activity. The wharf would be located over Slipway 1, which is the site of the original NSW Torpedo Corps slipway.

The mainline tunnels would pass underground to the northwest and north of the heritage item.

As detailed in Chapter 4 (Project development and alternatives) of the environmental impact statement, construction support sites are required to support tunnelling across the project alignment. Where possible, construction support sites have been located to minimise overall property acquisition requirements, as well as minimising impact on heritage items and ecologically sensitive areas. The Berrys Bay construction support site (WHT7) was selected as it enabled use of Roads and Maritime property, and maximised opportunities for water transport for construction traffic, avoiding the need to use local residential streets where possible. Approaches to the site layout such as reusing heritage structures and considering subsequent adaptive reuse opportunities has minimised incremental impacts to the heritage item.

5.4.6.3 Impact assessment

There would be little enhancement of heritage significance due to direct impact to the heritage item. However, to ameliorate this, the layout for the construction support site has where possible maximised the retention and protection of significant heritage components of the heritage item.

The use of the site also provides opportunities to investigate the repurposing of the site as an area of high quality recreational open space for the wider community. This would provide opportunities for enhancement of the site (by others).

Table 5-13 outlines the following aspects of the project which could detrimentally impact on heritage significance of the item as well as the measures that are to be taken to minimise impact.

Table 5-13 : Impact assessment – Woodley's shipyard

Impact type	Consideration
Direct – Land	Temporary direct impacts may occur to existing structures within the heritage item, if required. Should heritage buildings be changed externally, such as by adding cladding or extensions, further assessment would be carried out to identify approaches to avoid impacting on heritage fabric or heritage significance. This would include consideration of how work can be carried out to facilitate subsequent adaptive reuse or to minimise incremental impacts. If impact on heritage fabric cannot be avoided, further assessment and archival recording would be completed.
Direct – Maritime/Areas of archaeological potential	As detailed in Technical working paper: Maritime heritage (Cosmos Archaeology, 2020), some excavation may be required on the shoreward end of the wharf. This may require the partial removal of Slipway 1 and would have direct impacts to the earlier remains of the NSW Torpedo Corps slipway structure as well as archaeological remains from that period. Any impact would vary from minor to moderate depending on the scale of any excavation carried out, and the condition of the archaeological remains. This potential impact can be mitigated to minor through limiting or negating the need for excavation to build the wharf and/or through archaeological excavation or monitoring. Mitigation and management measures are provided in Cosmos Archaeology (2020).
Potential direct	Physical impact may occur due to the construction activity, and the use of construction machinery and vehicles within close proximity to the key heritage features in the heritage item. Removal of vegetation (if required) may also destabilise the ground surrounding heritage features, such as the Berrys sandstone seawall. Standard construction measures (such as fencing of active construction areas, use of temporary structural support and delineation of 'no-go' areas) would manage this risk. These measures would be applied to built elements of the heritage item, areas of maritime heritage, as well as areas of archaeological potential. As detailed in Cosmos Archaeology (2020), overall the impact to maritime heritage sites could vary from negligible to minor, should direct impacts occur, noting that: • It is probable that anchoring by project-related vessels would have a minor impact on potential discarded items and less probability of impacting the remains of maritime infrastructure and associated deposits • It is probable that impacts would occur from propeller jet turbulence, in shallower waters.
Indirect – Visual	The use of the heritage item as a construction support site would result in temporary visual impacts, as it would detract from the visual appeal of the area for both the public using, or looking across, Berrys Bay, and those viewing the area from Berrys Bay Lookout at Carradah. The impact to the landscape character would be moderate to high during construction (WSP and Arup, 2020). The design of the construction support site (such as materials used for sheds) would be selected to minimise the visual impacts, and to blend into the surrounding environment where feasible and reasonable (WSP and Arup, 2020). Temporary structures would be removed at the completion of construction, and heritage structures would be protected. Additionally, this has always been an operational industrial maritime site, and as such, continuing use of the site would be similar in nature. As such, the impacts to the aesthetic values of this heritage item are temporary and minor.
Indirect – Social	Temporary social impact may occur as the site is considered to be potentially socially significant to former Woodleys employees, marina/mooring users, and the local community. However, as access to the site is already limited and the project would only impact the site during construction, any impact is considered to be negligible. Future opportunities to provide public open space within the site would be investigated by Roads and Maritime and other relevant stakeholders.
Indirect – Vibration	Vibration from construction activity would be above the 2.5 millimetres per second threshold, as it would be within the minimum working distances. As such, there is a risk of damage if any

Impact type	Consideration
	component of the heritage item is within these vibration levels, and subject to structural review of the heritage item. Where work could take place within the minimum working distances for an unsound structure, a structural assessment would be carried out, appropriate vibration criteria adopted and monitored prior to vibration-intensive construction works proceeding.
Indirect – Settlement	Settlement and ground movement from tunnel excavation may cause damage to the heritage item. Settlement modelling for this project indicates that the ground settlement levels at the heritage item would have a predicted maximum surface settlement of less than 10 millimetres and a predicted maximum surface angular distortion of less than 1:2000. As such, the degree of severity to structures within the heritage item is 'very slight'. To protect the heritage item and reduce its exposure to settlement impacts, prior to and during construction the management measures summarised in Section 5.2 would be implemented to address any potential structural damage to the heritage item. Any repairs required as a result of the settlement damage, would be carried out under the guidance of a suitably qualified heritage professional.

5.4.6.4 Conclusion

The proposed works would be of medium-large scale and low intensity, with the majority of the area being temporarily modified. Changes to Woodleys shipyard would be short term and reversible if the additional mitigation measures are followed. This includes adjustments to the location of the new wharf structure to avoid direct impacts to heritage components, or through the selection of construction methods that avoids the need for excavation at the landward ends of the structure (refer to Cosmos Archaeology (2020).

The implementation of these measures would protect existing heritage components, and salvage any maritime archaeology prior to the start of works. As such, the level of impact on the heritage item would be **minor**.

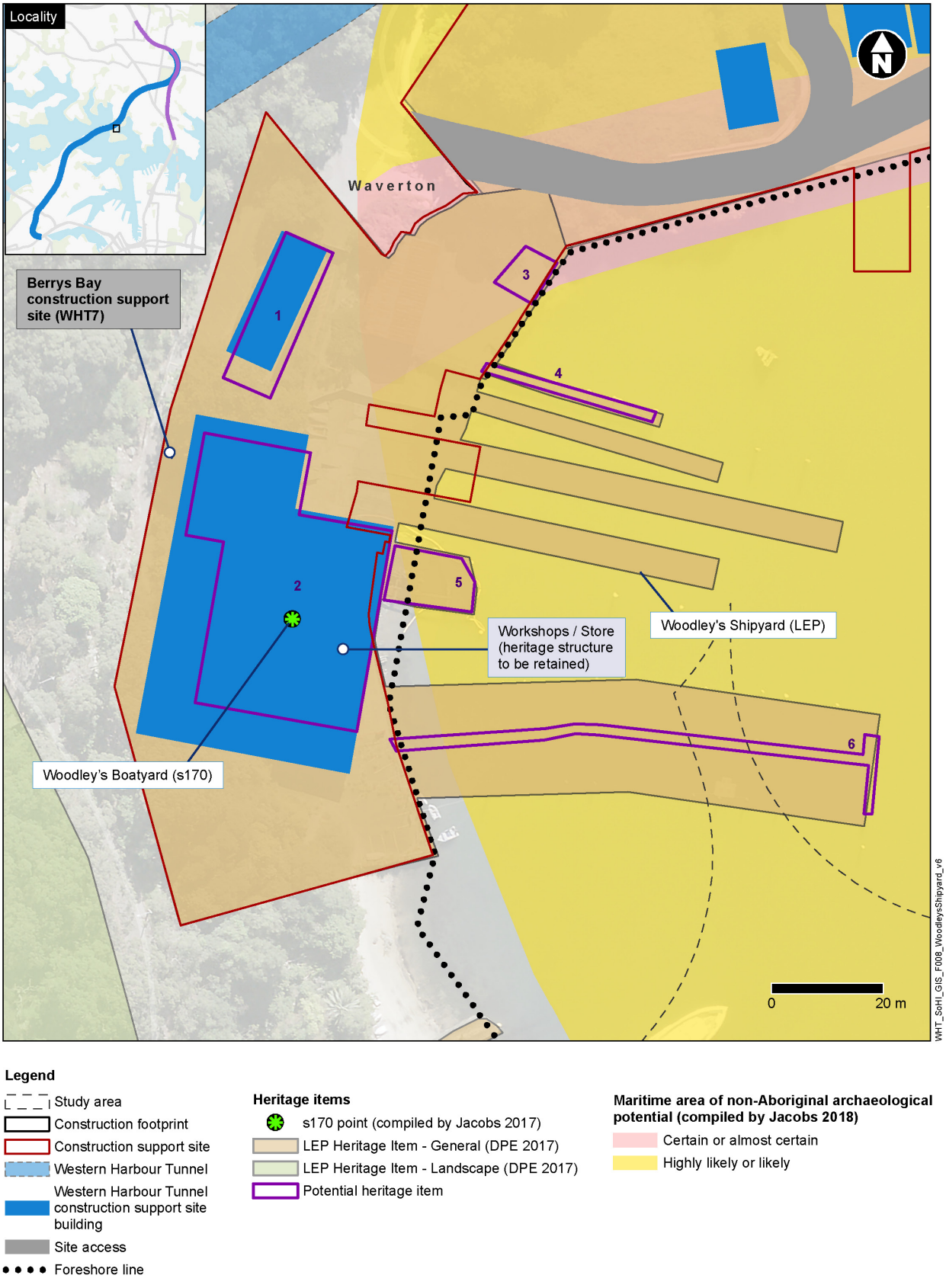


Figure 5-11 : Item 6 Woodleys shipyard

5.4.7 Item 7: BP site, Waverton

5.4.7.1 Site details

The BP site is located at 3A Balls Head Drive, Waverton, on Lots 2 and 20 DP 1048933. The heritage item is listed on the North Sydney Local Environmental Plan 2013, the Roads and Maritime Section 170 Register, and the Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005.

The site is of local significance as it meets criteria A (historical), B (historical association), C (aesthetic), D (social), E (research), F (rarity), and G (representativeness). See Appendix A for full site description, photographs, significance assessment and archaeological assessment.

The *Waverton Peninsula Industrial Sites: BP, Caltex, Coal Loader, Conservation Management Plan* (Godden Mackay Logan 2000) identifies a number of key features of the BP Site which are either still extant, or are the locations of historically known structures or features (Figure 5-12). The site has also been assessed as having areas of archaeological potential (Figure 5-13). A detailed archaeological assessment and research design are provided in Appendix B.

The following impact assessment focuses on the land-based impacts within BP site, and summarises the maritime-based impacts. For details of the impact assessment related to the project in the marine environment, refer to Technical working paper: Maritime heritage (Cosmos Archaeology, 2020).

5.4.7.2 Proposed works

The Berrys Bay construction support site (WHT7) would be partially located within the curtilage of the heritage item. Temporary structures within the heritage curtilage include:

- An acoustic shed with a tunnel decline to the mainline tunnels, with an associated enclosed spoil conveyor and barge shed located over water
- A temporary wharf located to the west of the barge shed
- Ancillary infrastructure or work areas, including a wastewater treatment plant, workshop, substation and laydown areas.

Clearing and earthworks would be limited to the minimum required to establish the construction support site, including areas where mature vegetation would be protected and retained.

The construction support site would be located within the boundary of this heritage item, including within areas of archaeological potential.

The mainline tunnels would pass underground to the northwest and north of the heritage item, connected via a tunnel decline.

As detailed in Chapter 4 (Project development and alternatives) of the environmental impact statement, construction support sites are required to support tunnelling across the project alignment. Where possible, construction support sites have been located to minimise overall property acquisition requirements, as well as minimising impacts on heritage items and ecologically sensitive areas. The Berrys Bay construction support site (WHT7) was selected as it enabled use of Roads and Maritime property, and maximised opportunities for water transport for construction traffic, avoiding the need to use local residential streets, where possible.

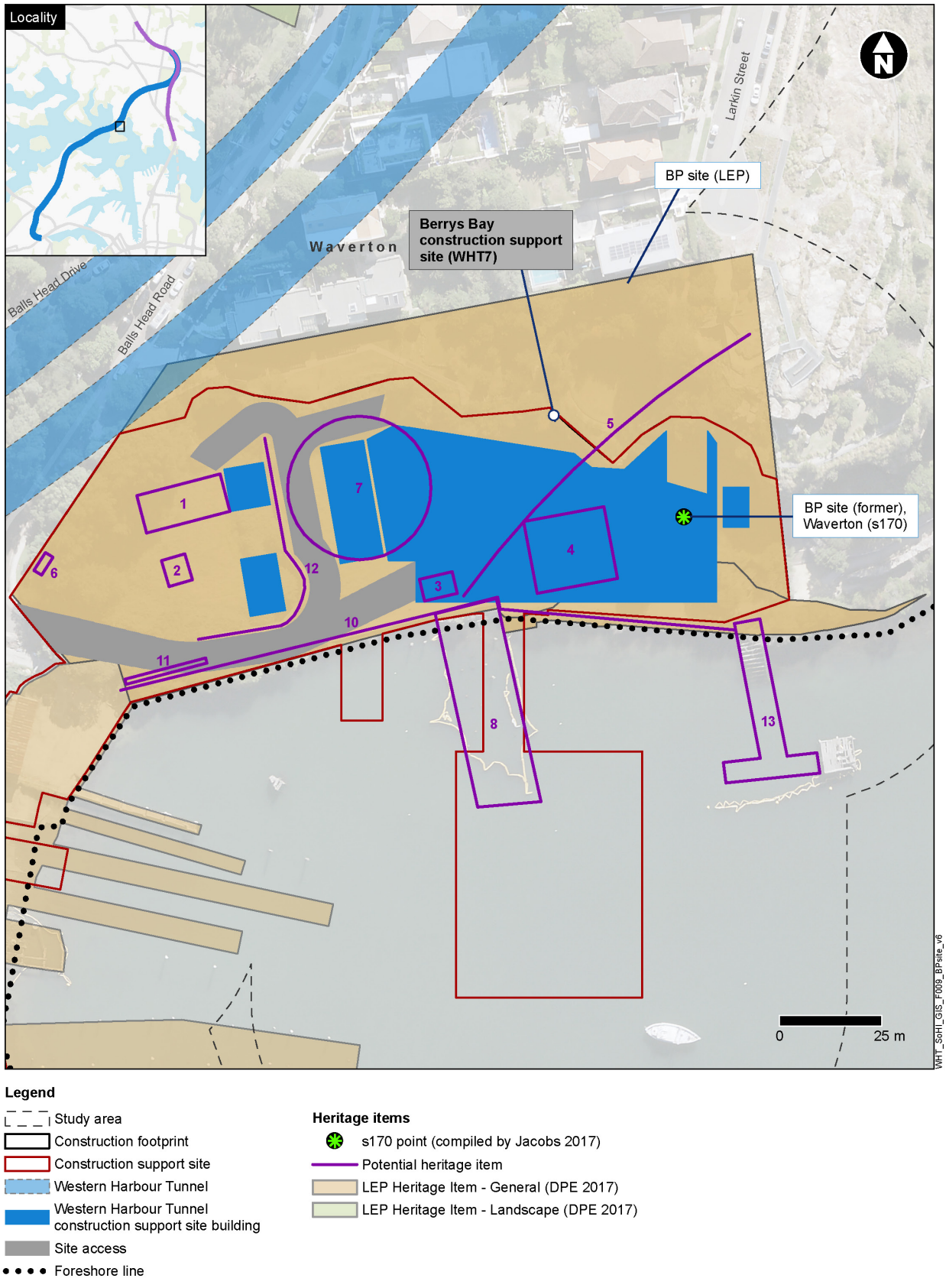


Figure 5-12 : Item 7 BP site

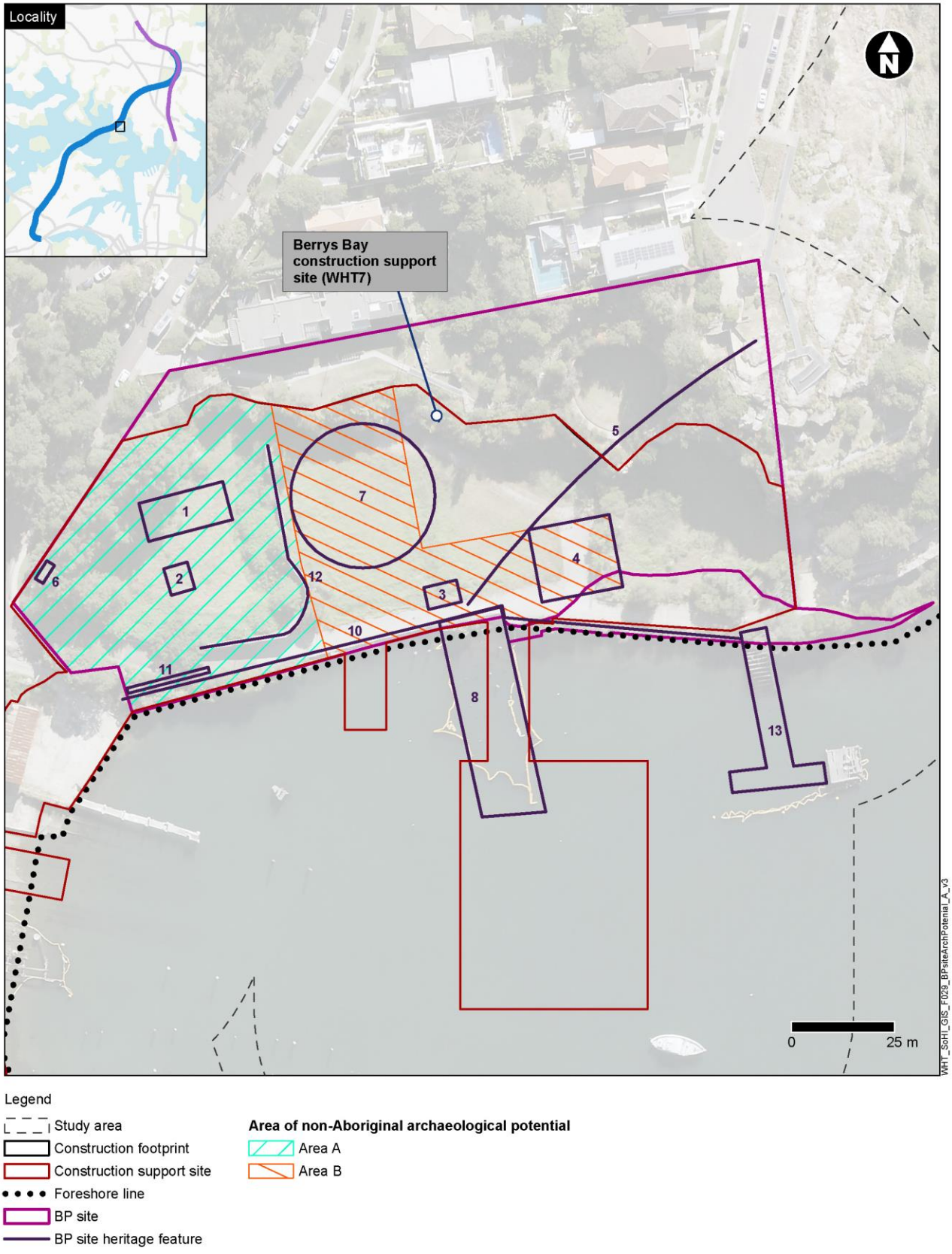


Figure 5-13 : Location of heritage features and areas of archaeological potential at BP Site

5.4.7.3 Impact assessment

There would be little enhancement of heritage significance due to direct impacts to the heritage item. However, to ameliorate this, the layout for the construction support site has where possible maximised the retention and protection of significant heritage components of the heritage item, or reinstatement of components (if temporarily removed/impacted).

The use of the site also provides opportunities for Roads and Maritime, North Sydney Council and other relevant stakeholders to investigate the repurposing of the site as an area of high quality recreational open space for the wider community. This would provide opportunities for enhancement of the site (by others).

The establishment of the Berrys Bay construction support site (WHT7) would have direct impacts to individual visible surface features, locations of known historical features, and areas of archaeological potential. This would result in the destruction or removal of the feature and/or impacts to areas of archaeological potential (as detailed in Table 5-14 and Table 5-15). While the construction support site is temporary, even after reinstatement of the site, physical impacts on the modified landforms of the site and the remnant industrial elements would remain.

Table 5-14: Visible surface features or location of historical features at BP site, and direct impacts due to Berrys Bay construction support site (WHT7)

Feature[2]	Description	Impacts due to the project
1. 1834 Berry's warehouse/store	Stone warehouse/store built by Berry in 1834. Also used by: • Peninsula and Oriental Company (P&O) and the General Screw Steam Company for coal store – 1853 • AB Black for storage of ballast – sometime between 1853 and 1872 • Rag and Famish Hotel as a distillery - 1872 • NSW Torpedo Corps as a munitions storage, with a surrounding compound enclosed by a paling fence, including workshops, an office and hydraulic testing house – 1877 – 1889. Stone warehouse/store was dismantled in 1933 and stones reused to build the existing bund wall in 1936. Despite the removal by the Commonwealth Oil Refinery Ltd in 1936 to make way for a new storage tank, remnant features of the original building may be located within this area.	Risk of direct impact due to the construction of the wastewater treatment plant and sediment pond. The establishment of the laydown area would not require excavation works.
2. 1834 stone cottage	Location of a stone cottage associated with Berry's warehouse/store (1), lived in by Berry's Clerk and General Manager William George Matthews until 1854. Demolished in the 1930s.	No anticipated impacts on the basis that the establishment of the laydown area would not require excavation works.
3. Small Commonwealth Oil Refinery storehouse	Location of a small building related to the Commonwealth Oil Refinery, still visible in	Direct impact due to the construction of the acoustic shed.

[2] Numbers cross-reference features numbered in Figure 5-12

Feature[2]	Description	Impacts due to the project
	1943 aerial imagery, situated to the north of the Western wharf (8).	
4. Large Commonwealth Oil Refinery storehouse	Location of a large building related to the Commonwealth Oil Refinery, still visible in 1943 aerial imagery, situated to the northeast of the Western wharf (8).	Direct impact due to the construction of the acoustic shed and tunnel decline.
5. Circa 1930 possible funicular tramway	Location of funicular tramway that carried 4-gallon drums of kerosene from the Western wharf (8) in a northwesterly direction to a storehouse on top of a rocky outcrop known as 'Gibraltar' (outside proposed project construction site).	Direct impact due to the construction of the acoustic shed.
6. Stone and concrete foundations	There is no further detail in the *Waverton Peninsula Industrial Sites: BP, Caltex, Coal Loader, Conservation Management Plan* (Godden Mackay Logan 2000) about the origin of these foundations. During field survey, the location of this feature was not accessible.	No direct impact.
7. Large 1923 fuel tank	Although the original 1923 steel tank itself is gone, the remnant infrastructure associated with the tank remains, including the tank's sandstone block footings, remain.	Direct impact due to the construction of the acoustic shed and workshop.
8. 1930 Western wharf	Remnants of a timber structure that originally comprised timber piles, timber headstocks, timber girders, and a timber deck.	Direct impact due to the construction of the enclosed spoil conveyer and barge shed in this location.
10. Site of Berry's Sandstone Block Wharf	Remnants of Berry's sandstone block wharf, c.1830, may survive in the sandstone wall (11) adjacent to Woodley's Shipyard.	Direct impact due to the construction of a wharf in this location. Vegetation clearance in this location as part of construction of the site access may also cause impact due to disturbance of the ground in the vicinity of the wall.
11. Sandstone Block Wall	Remnants of Berry's sandstone block wharf, c.1830, may survive in the sandstone wall (11) adjacent to Woodley's Shipyard.	Direct impact due to the site access road construction in this location which intersects with the eastern end of the sandstone block wall. Vegetation clearance in this location as part of construction of the site access may also cause impact due to disturbance of the ground in the vicinity of the wall. Depending on nature and scale of works in this location, it may be possible to avoid the extant wall.
12. 1936 Bund Wall	The existing coursed sandstone bund wall (12) built in 1936 reuses the sandstone blocks of the warehouse/store (1) built by convict labour for Alexander Berry in 1834. Some of the stones have tooled margins and are rumoured to be marked with the number of the convict that cut them. No numbers	No direct impact, but potential impacts from the site access proposed to run alongside the 1936 Bund Wall.

Feature[2]	Description	Impacts due to the project
	were found on the exterior face, and the interior face has been lined with concrete.	
13. 1960 Timber T Wharf	Built to replace earlier finger wharf.	No direct impact and beyond the construction footprint.

Table 5-15: Areas of archaeological potential at BP site, and direct impacts due to Berrys Bay construction support site (WH7)

Area of archaeological potential	Associated features/occupation	Impacts due to the project
Area A	Berry's sandstone block wharf (10) Circa 1820s wharf (Berry/Wollstonecraft) 1834 stone warehouse (1) 1834 stone cottage (2) Two wells associated with warehouse and cottage (exact location unknown) Stables (exact location unknown) Coal store for P&O and General Screw Steam Company (1) AB Black storage of ballast (1) 1872 distillery for the Rag and Famish Hotel (1) 1877-1889 NSW Torpedo Corps occupation including munitions storage and compound with workshops, office, hydraulic testing house and paling fence (1) Blacksmith on wharf edge circa 1880 (exact location unknown)	Direct impact due to the construction of the wastewater treatment plant, sediment pond and substation, particularly in the location of the 1834 stone warehouse (1), and possibly two associated wells, stables and NSW Torpedo Corps buildings and fence. Any excavation behind the wall into reclaimed areas could impact archaeological deposits associated with the period of occupation by Berry and Wollstonecraft and any excavation into the reclamation immediately behind the seawall may impact the basal remains of the 1830s stone wharf (Cosmos Archaeology, 2020). As detailed in Technical working paper: Maritime heritage, the level of impact would vary depending on the scale of excavation, if excavation is carried out, and the condition of the archaeological remains.
Area B	1923 fuel storage tank (7) Commonwealth Oil Refinery storehouses/buildings (3, 4) Funicular tramway (5)	Direct impact due to the construction of the acoustic shed and workshop in this location, impacting all known features (3, 4, 5 and 7)

Adjustments to the location of temporary structures to avoid direct impact on heritage components or areas of archaeological potential would be considered, where reasonable and feasible. This includes changes to the location of the wharf or barge shed structures (refer to Technical working paper: Maritime heritage (Cosmos Archaeology, 2020)), or through the selection of construction methods that avoid the need for excavation.

Due to the direct impacts to the site overall, and the individual visible surface features, an archival photographic recording would be carried out for heritage item. The recording would be carried out in accordance with the guidelines *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Council of NSW, 2006). This recording would also include a photogrammetric recording to develop a 3D photographic model of the site. This would be carried out prior to any construction works commencing at the site.

To mitigate the physical impacts to the areas of archaeological potential, an archaeological investigation of the BP site would be carried out in accordance with the Archaeological research design and methodology for BP site (Appendix B). These mitigation measures would realise the research potential of the heritage item by capturing as much archaeological and site data as possible prior to destruction or disturbance at the site.

Following completion of construction, the temporary structures would be removed and areas impacted within the heritage item would be reinstated. An interpretation strategy including historical information and information obtained from the archaeological investigation would be developed and implemented. This interpretation strategy would be developed in co-ordination with a plan for future use of the site and in accordance with the *Waverton Peninsula Industrial Sites: BP, Caltex, Coal Loader, Conservation Management Plan*. Further discussion about urban design and landscaping works related to this area is provided in Technical working paper: Urban design, visual and landscape impact (WSP and Arup, 2020). This mitigation measure would also mitigate social impacts from the project.

Table 5-16 outlines the other aspects of the project which could detrimentally impact on the heritage significance of the item as well as the measures that are to be taken to minimise impacts.

Table 5-16: Impact assessment (excluding direct impacts) – BP Site, Waverton

Impact type	Consideration
Direct – Maritime areas of archaeological potential	As detailed in Technical working paper: Maritime heritage (Cosmos Archaeology, 2020), some excavation may be required on the shoreward end of the wharfs. This would have direct impact to archaeological remains associated with the period of occupation by Berry and Wollstonecraft. Any impact would vary from minor and moderate depending on the scale of excavation, if excavation is carried out, and the condition of the archaeological remains. This potential impact can be mitigated to minor through limiting or negating the need for excavation to build the wharf and/or though archaeological excavation or monitoring. Mitigation and management measures are provided in Technical working paper: Maritime heritage (Cosmos Archaeology, 2020).
Potential direct	Physical impact may occur due to the proximity of construction activity, and the use of construction machinery and vehicles within close proximity to the heritage item. Removal of vegetation (if required) may also destabilise the ground surrounding heritage features. Works would also be carried out in proximity to retained heritage features, such as the 1936 bund wall (12) and sandstone block wall (11). Standard construction measures (such as fencing of active construction areas, use of temporary structural support and delineation of 'no-go' areas) would manage this risk. These measures would be applied to built elements of the heritage item, areas of maritime heritage, as well as areas of archaeological potential. As detailed in Technical working paper: Maritime heritage (Cosmos Archaeology, 2020), overall the impact to maritime heritage sites could vary from negligible to minor, should direct impacts occur, noting that: • It is probable that anchoring by project-related vessels would have a minor impact on potential discarded items and lesser probability of impacting the remains of maritime infrastructure and associated deposits • It is probable that impacts would occur from propeller jet turbulence in shallower waters.
Indirect – Visual	The use of the heritage item as a construction support site would result in temporary visual impacts, as it would detract from the visual appeal of the area for the public using or looking across Berrys Bay, and those viewing the area from Berrys Bay Lookout at Carradah. The impact to the landscape character would be moderate to high during construction (WSP and Arup, 2020). The project would have a temporary aesthetic impact in the changes made to the site, including foreshore areas, given that its aesthetic significance relates to the unusual modified landforms of the BP Site, including the stark form of curved cuttings and straight lines of massive masonry walls which makes it instantly recognisable as an industrial site. The design of the construction support site (such as materials used for the spoil barge shed) would be selected to minimise the visual impacts, and to blend into the surrounding environment where feasible and reasonable (WSP and Arup, 2020). Temporary structures would be removed at the completion of construction, and heritage structures would be

Impact type	Consideration
	protected. Reinstatement works would return the site to at least its current condition, ensuring no permanent visible changes are made to the visual aesthetics of the heritage site. As such, the impact to the aesthetic values of this heritage item is temporary and minor.
Indirect – Social	Temporary social impact may occur, as the site is considered to be potentially socially significant as to the local community, and important to the Waverton Peninsula's 'sense of place'. As access to the site is already limited and the project would only impact the site during construction, any temporary impact is considered to be negligible. The temporary use of the site would be designed so as to support subsequent sympathetic adaptive reuse of the site following completion of construction.
Indirect – Vibration	Vibration from construction activity would be above the 2.5 millimetres per second threshold, as it would be within the minimum working distances. As such, there is a risk of damage to the heritage item, if any component of the heritage item is within these vibration levels, and subject to structural review of the heritage item. Where work could take place within the minimum working distances for an unsound structure, a structural assessment would be carried out, appropriate vibration criteria adopted and monitored prior to vibration-intensive construction works proceeding.
Indirect – Settlement	Settlement and ground movement from tunnel excavation may cause damage to the heritage item. Settlement modelling for this project indicates that the ground settlement levels at the heritage item would have a predicted maximum surface settlement of 10 to 15 millimetres and a predicted maximum surface angular distortion of between 1:500 and 1:2000. As such, the degree of severity to structures within the heritage item is 'slight'. To protect the heritage item and reduce its exposure to settlement impacts prior to and during construction, the management measures summarised in Section 5.2 would be implemented to address any potential structural damage. Any repairs required as a result of the settlement damage would be carried out under the guidance of a suitably qualified heritage professional.

5.4.7.4 Conclusion

The proposed works on the site overall would be of medium-large scale and low intensity, with the majority of the area being temporarily modified. While the changes to the subsurface archaeology of the BP site would be permanent and irreversible, the changes to the heritage significance of the BP site itself would be short term and reversible, subject to the implementation of the mitigation measures.

In this respect, the significance of the heritage item is related to its use as an industrial site and is represented mainly by its modified landforms (particularly 'the stark form of curved cuttings and straight lines of massive masonry walls'). Following completion of construction, the site would be reinstated to at least its current condition, and stone cuttings and masonry walls would still be in place. While the ground disturbance from construction and proposed archaeological investigation would destroy the archaeological remains at the site, the information obtained from the archaeological investigation would realise its archaeological potential and yield important information about the early use of the site. This information and any archaeological findings would provide an opportunity to incorporate these into an interpretation scheme for the site, similar to that in the adjacent Carradah Park (the northern part of the BP site, outside the current study area).

The implementation of the mitigation measures would protect existing heritage components (stone cuttings, masonry walls), record information about the physical nature of the heritage item as it currently exists, and salvage any land-based and maritime archaeology prior to the start of works. Opportunities to further minimise incremental impacts to heritage components, through micro-siting or construction methods that could encourage sympathetic adaptive reuse, would also be explored during detailed design. This includes adjustments to the location of the new wharf structure to avoid direct impacts to heritage components, or through the selection of construction methods that avoid the need for excavation at the landward ends of the structure (refer to

Technical working paper: Maritime heritage (Cosmos Archaeology, 2020)). As such, the level of impact on the heritage item would be **minor**.

5.4.8 Item 8: Sydney Harbour Bridge, approaches and viaducts (road and rail), Milsons Point/Dawes Point

5.4.8.1 Site details

The Sydney Harbour Bridge, approaches and viaducts (road and rail) are be located on the Bradfield Highway and Cahill Expressway on Lot PT7 DP 127637; Lot PT1 DP 743856; Lot PT1 DP 779561; Lot 22 DP 785020; Lots 1 and 4 DP 849664; and Lot 100 DP 879674. This heritage item is listed on the National Heritage List, the State Heritage Register, the North Sydney Local Environmental Plan 2013, the Roads and Maritime Section 170 Heritage and Conservation Register, the Register of the National Estate and the National Trust of Australia (NSW) Register.

The Sydney Harbour Bridge, approaches and viaducts (road and rail) is of national significance as it meets criterion A (events, processes), E (aesthetic characteristics), F (creative or technical achievement), G (social value) and H (significant people). It is also of state significance as it meets criterion A (historical), B (historical association), C (aesthetic), D (social), E (research potential), F (rarity), and G (representativeness). See Appendix A for full site description, photographs and significance assessment.

The three underbridges which are part of this heritage item – Milsons Point (Fitzroy Street) Underbridge, Milsons Point (Lavender Street) Railway Underbridge, and North Sydney (Arthur Street) Railway Underbridge) – are of state significance and listed on the RailCorp Section 170 Heritage and Conservation Registers. As they form part of the fabric of the Sydney Harbour Bridge approaches and viaducts (road and rail), they are assessed as part of this heritage item.

Activities that may affect the heritage significance of the Sydney Harbour Bridge and associated elements would need to consider the policies *Sydney Harbour Bridge Conservation Management Plan* (Godden Mackay Logan 2007). There are no known or suspected areas of archaeological potential within the heritage item boundary, in the proposed locations of works, therefore no further archaeological investigations are proposed.

The terminology for the sections and components of the Bridge used in this section, use those provided in Figure 5-14. As the National Heritage List boundary and the State Heritage Register boundary for the Sydney Harbour Bridge are different, impacts are assessed for each register boundary separately.

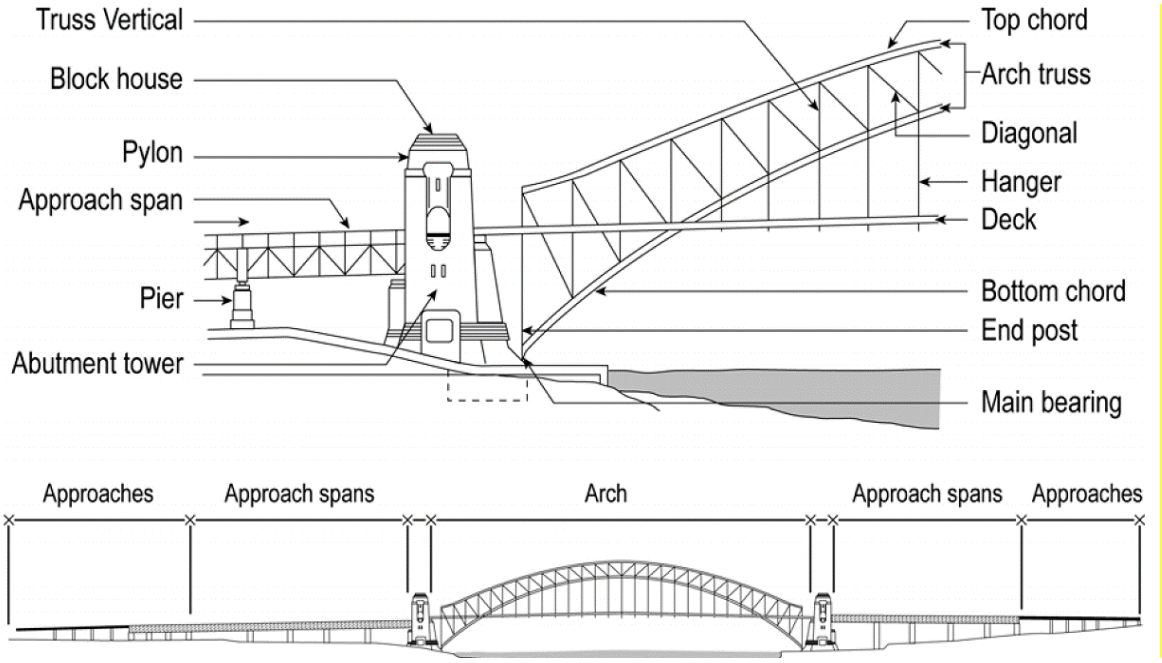


Figure 5-14 : Illustration of different parts of the Sydney Harbour Bridge (Source: Godden Mackay Logan 2007)

5.4.8.2 Proposed works – National Heritage List Boundary

Proposed works that would interact with the Sydney Harbour Bridge, approaches and viaducts (road and rail) would involve the southernmost end of the Warringah Freeway Upgrade, which comprises roadworks that include some demolition of current road infrastructure, earthworks, spoil management, construction of drains, paving, integration roadworks, noise walls, architectural finishes and landscaping, and retaining walls. These works would be located within the National Heritage List boundary of this heritage item. Further detail for these works are provided for each bridge component below.

Northern Approaches

The proposed construction works which would take place along the Milsons Point approach to the Sydney Harbour Bridge, include:

- A new dedicated southbound bus lane that would extend from immediately south of Miller Street, North Sydney, to the Sydney Harbour Bridge
- Other general road works, including road resurfacing, and the installation or removal of medians. These roadworks would only affect the road pavement and uppermost road formation, within current road lanes.

Northern Approach spans

The proposed construction works include a short section (less than 20 metres) of works on the Milsons Point approach span of the Sydney Harbour Bridge, which would comprise a new dedicated southbound bus lane. This would also include road resurfacing, and the installation or removal of medians. These roadworks would only occur on the road pavement and uppermost road formation, within current road lanes.

5.4.8.3 Proposed works – State Heritage Register Boundary

The proposed works outlined in Section 5.4.8.2 (within the National Heritage List boundary, would also be located within the State Heritage Register boundary.

Northern Approaches

In addition to the proposed roadworks mentioned in Section 5.4.8.2, works also include:

- The temporary Blue Street construction compound (WFU1), located in North Sydney, bounded between the Pacific Highway to the east and south, North Shore railway line to west, and Blue Street to the north. The nearest residential properties to the site would be located around 60 metres to the southwest on Middlemiss Street, and would be adjacent to the heritage-listed Milsons Point Railway Group. The compound would support construction activities at the southern end of the Warringah Freeway Upgrade. The construction compound would be located on the open space on top of the present bays of occupied tenancies which form the underneath sections of the Sydney Harbour Bridge approaches.

  The proposed construction works at the site would include:

  - A project management site office and site amenities
  - Parking areas and a laydown area
  - A high voltage power connectivity, potable water supply and a suitable connection for water discharge.

  The construction compound is partly within the State Heritage Register boundary, and partly within the Local Environmental Plan boundary. It is currently used as project workspace for Sydney Harbour Bridge asset works.

New Toll gantry

While no decision on tolls has yet been made, works for Warringah Freeway Upgrade include provision for toll gantries for northbound traffic should government introduce northbound tolls. Should government elect to introduce northbound tolls, a toll gantry is required at the Lavender Street exit. The proposed structure would be a small two-way toll gantry, located within the construction footprint within the Sydney Harbour Bridge northern approach near Lavender Street. The gantry would be situated on the Bradfield Highway side of the Lavender Street railway arch, which forms part of the northern approach of the Sydney Harbour Bridge. The form of the tolling gantry would be refined during detailed design to minimise impacts to the heritage item. The Heritage Council of NSW would be consulted on all works within the State Heritage Register or National Heritage Register listed curtilage of the Sydney Harbour Bridge, as well as any that are visually or physically proximate, to ensure that heritage impacts are minimised.

5.4.8.4 Proposed works – In close proximity to National Heritage List and State Heritage Register Boundaries

Noise barrier on northern approach

A noise barrier is proposed on the eastern edge of the northern approach to the Sydney Harbour Bridge. The proposed location of the noise barrier has been designed to be situated outside any statutory heritage boundary, and would be situated approximately 30 metres from the National Heritage List boundary and five metres from the State Heritage Register boundary.

At-property noise treatments would have to be considered if a noise barrier is not provided. As noted above, a noise barrier is preferred to at-property treatments if reasonable and feasible, given the broader community benefits noise barriers can provide.

The final materials, length and design of the noise barrier would be determined during detailed design and in consultation with Department of Premier and Cabinet (Heritage) (formerly the Office of Environment and Heritage (OEH) Heritage Division) and the NSW Heritage Council.

The extent of project works located within or near the Sydney Harbour Bridge is shown on Figure 5-17.

5.4.8.5 Impact assessment – National Heritage List Boundary

The following aspects of the proposal **respect or enhance** the heritage significance of the item or conservation area for the following reasons:

The project would avoid planned physical impacts to the Sydney Harbour Bridge pylons and abutments, and to the arch itself. As per the *Sydney Harbour Bridge Conservation Management Plan* (Godden Mackay Logan 2007) the overall form of the arch, pylons, and abutments are of exceptional significance, while the form of the main interior configurations and spaces of the pylons and abutments are of high significance, and would thus retain their significance.

Pylons, abutments, piers

The fabric of the pylons, abutments, and piers considered to be of high significance, includes:

- The granite facing and concrete structure of walls, piers, floors and roofs
- Original windows and doors
- Bronze plaques
- Pylon interior stairs, handrails and balustrades
- External sandstone and concrete stairs, handrails and balustrades.

High significance fabrics relating to the arch include:

- Steelwork of the trusses, lateral bracing and hangers, portal frames at the end posts, floor laterals, cross girders, stringers, joists and bearings
- Lattice steel parapets, balustrades, lighting/overhead cable supports, steel cantilever arms
- All original access equipment, painting cranes, gantries, stairs, ladders and handrails
- Coke concrete filling on pressed steel troughs
- Steel curb plates, cast iron scuppers and gratings
- Any original railway components:
  - ‘trainstop’ devices
  - Signals
  - signage
- All bronze plaques.

All of this fabric is situated outside the construction footprint, and would therefore not be impacted.

Approach spans

Works would avoid the majority of the bridge’s approach spans, barring a short section (less than 20 metres) of works on the Milsons Point approach span. The approach spans are of exceptional significance in terms of overall form, including:

- The pattern of the steel structural members
- The exterior form and detail of the granite clad piers
- The open spaces under the approach spans.

The fabric of the approach spans which are considered to be of high significance, includes:

- The steelwork of the trusses, lateral bracing and hangers, portal frames at the end posts, floor laterals, cross girders, stringers, joists and bearings

  Lattice steel parapets, balustrades, lighting/overhead cable supports, steel cantilever arms
- All original access equipment, painting cranes, gantries, stairs, ladders and handrails
- Coke concrete filling on pressed steel troughs
- Steel curb plates, cast iron scuppers and gratings
- Any original railway components:
  - 'trainstop' devices
  - signals
  - signage
- All bronze plaques.

As the project consists only of work along the existing roadway, these high significance fabrics would be avoided by the proposed works.

Approaches

The approaches, which intersect with the construction footprint, are of high significance for their overall form including:

- The rendered retaining walls divided into bays
- The ten flat-topped occupancies between Middlemiss Street and Pacific Highway (Figure 5-15 and Figure 5-16)
- The 17 bays of flat-topped occupancies along Ennis Road
- The arch bridges over Arthur, Burton, Fitzroy, and Lavender Streets.

The roadworks would avoid the Sydney Harbour Bridge approaches between Middlemiss Street and the Pacific Highway, and the Milsons Point train station and railway line.

Figure 5-15 : Bays along Pacific Highway, facing southeast

Figure 5-16 : Bays along Pacific Highway, facing northwest

The fabric considered to be of high significance includes:

- All original structural elements supporting the railway viaducts and roadway (retaining walls, concrete arched occupancies and bridges, flat-topped beam and slab construction and dividing walls)
- Rendered architectural elements, (eg walls, parapets, pilasters, and spandrels)
- Structure and original finishes of Milsons Point station
- The bridge stairs in Ennis Road and Alfred Street
- The date crest over both entrances to station
- Vestiges of former tram station (eg the stairs)
- Bronze plaques
- The original bridge lighting (bronze lanterns on Lavender Street bridge, cast iron lanterns and concrete posts on bridge stairs and elsewhere).

As the roadworks would take place to the east of the Pacific Highway, then along the Warringah Freeway and Cahill Expressway, many of these high significance fabrics would be avoided. Impacts on the approaches within the National Heritage boundary are discussed below in Section 5.4.8.5. Impacts on the Lavender Street railway arch bridge are discussed in the State Heritage Register impact assessment Section 5.4.8.6 as the associated works are situated outside the National Heritage boundary.

Views

The views of the Sydney Harbour Bridge, which are considered to be exceptional significance, would be partially impeded by the proposed works. The key views identified in the *Sydney Harbour Bridge Conservation Management Plan* (Godden Mackay Logan 2007), which are in the area of works, are:

- Views of the bridge end-on from the northern and southern approach roads
- Views of the bridge from ground level nearby and from the water
- Views of the steel structure and pylons from deck level.

As the project takes place along the surface of the Warringah Freeway and Cahill Expressway, the views from the southern end of the bridge would remain unimpeded and retain their aesthetic significance. Additionally, as roadworks are situated on the northern end of the north approach span, they would not interact with views of the bridge from the ground level nearby or from the water, nor impede views of the steel structure and pylons from deck level. Only the views from the northern end would be partially impeded, and these impacts are discussed below.

Table 5-17 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts. Heritage impacts have been assessed against the management policies of the *Sydney Harbour Bridge Conservation Management Plan* (Godden Mackay Logan 2007).

Table 5-17: Impact assessment – Sydney Harbour Bridge National Heritage List Boundary

Impact type	Consideration
Direct	Physical impact may occur due to roadworks along the entire length of the **Sydney Harbour Bridge approaches** on the Milsons Point approach. The road surfaces, movable toll plazas and toll booths, road gantries and signage, and plant growth, dirt, water staining and lime deposits, are considered to be of little heritage significance, and as such, roadworks affecting these elements would not impact on significance. Any existing concrete on the approaches is considered to be intrusive, therefore any works impacting on these components would also not impact on heritage significance. Any original structural elements supporting the railway viaducts and roadway, any rendered architectural elements, the bridge stairs, the vestiges of the former tram station, and the original bridge lighting are elements of high significance, and any original storm water drainage systems are of moderate significance. As such, elements of either high and moderate significance should be avoided by project works as physical damage to the exterior, and structural integrity of these components may occur, and would potentially impact on heritage significance.
Direct	Physical impact may occur due to roadworks for a short distance along the **Sydney Harbour Bridge approach spans** on the Cahill Expressway. While the road surfaces and crash barriers are considered to be of little heritage significance, the safety fencing, security barriers, and any evidence of conversion from tramway to roadway are of moderate significance. As such, the items of moderate significance should be avoided by project works, as physical damage to the exterior and structural integrity of these components may occur. As a mitigation measure, appropriate barrier fencing should be installed between the construction area and any fabrics of high or moderate significance. Also appropriate barrier fencing and signage would be installed prior to the Milsons Point approach spans of the Sydney Harbour Bridge to prevent construction vehicles from approaching these components. The fencing would be installed for the duration of construction for the project and removed following completion.
Direct	Physical impact may occur to any **evidence of former conversion from tramway to roadway or other historical relics** (archaeological evidence), such as any original structural elements within the surface of the roadway from proposed roadworks. However, the exact location of these components, including evidence of the tramway to roadway conversion, are not identified in the Sydney Harbour Bridge Conservation Management Plan (Godden Mackay Logan 2007). As a protective measure, should any remnants of these components be discovered during the project works the management measure detailed in Section 7.1.2 would be implemented.
Indirect – Visual	Temporary visual impact may occur due to the Warringah Freeway Upgrade roadworks, as the setting is considered to be of exceptional significance. Depending on the exact nature and timing of the works, they may impede the existing unobstructed views of the end-on view of the Sydney Harbour Bridge and its approach spans from the northern approach roads. The roadworks may also prevent access to the northern approach, which gives a grand sweeping entrance to the bridge with continually changing views of the bridge and harbour, during construction. However, as these potential impacts would be temporary in nature, there is likely to be limited adverse impact on the heritage significance of the heritage item. To mitigate the aesthetic impacts upon this heritage item, roadworks should be made unobtrusive as possible for the public using the Sydney Harbour Bridge and viewing the bridge from the north.
Indirect – Social	Temporary social impact may occur due to the limitation of access to the heritage item during construction activities within the boundary of this heritage item, which may hinder the noted easy access provided by the bridge to the public. To mitigate this impact upon this heritage item, a Community Involvement Plan would be prepared and included in the construction environmental management plan to guide community and stakeholder engagement during the construction phase of the project. Once works are complete, the heritage item should be reopened to the public with all fabrics of high or moderate significance restored to their current standard, to preserve its social significance.

Due to the National Heritage List entry of the Sydney Harbour Bridge, a referral must be made under the EPBC Act if a proposed action has, would have, or is likely to have a significant impact on its world heritage values.

Assessment of the project against the relevant significant impact criteria in *Significant Impact Guidelines 1.1: Matters of National Environmental Significance* (Department of the Environment, 2013) is presented in Table 5-18.

Table 5-18: Significant impact criteria 1.1: National Heritage Properties (Sydney Harbour Bridge)

Significant impact criteria Is there a real chance or possibility that the action would:	Assessment of potential impacts	Likely to have a significant impact?
Permanently remove, destroy, damage or substantially alter the fabric of a National Heritage place in a manner which is inconsistent with relevant values.	The proposed action would not impact the fabric of the Sydney Harbour Bridge in a manner which is inconsistent with relevant values, as the works only affect the Milsons Point approach and the traffic lanes of the Bridge. These activities would not remove, destroy, damage or substantially alter the key fabric of the bridge structure.	**No**
Extend, renovate, refurbish or substantially alter a National Heritage place in a manner which is inconsistent with relevant values.	The proposed action would not impact the Sydney Harbour Bridge in a manner which is inconsistent with relevant values, as the works only affect the Milsons Point approach and the traffic lanes of the Bridge and enable it to continue as an operational bridge, a key part of its significance.	**No**
Permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a National Heritage place.	The proposed action is unlikely to impact archaeological deposits or artefacts at the Sydney Harbour Bridge, such as any evidence of tramway to roadway conversion. However, should archaeological deposits or artefacts be discovered during the project works the management measure detailed in Section 7.1.2 would be implemented.	**No**
Involve activities in a National Heritage place with substantial and/or long-term impacts on its values.	No activities with substantial and/or long-term impacts on the Sydney Harbour Bridge's values would be planned. The proposed works enable the continuation of the use of the Bridge as an operational bridge.	**No**
Involve the construction of buildings or other structures within, adjacent to, or within important sight lines of, a National Heritage place which are inconsistent with relevant values.	The continuing use of the Sydney Harbour Bridge since 1932 as a main road and rail connection across Sydney Harbour is of national-level significance. This is consistent with 'Policy 21—Changes due to Operational Requirements' of the *Sydney Harbour Bridge Conservation Management Plan 2007*, which states that changes to the bridge, including lighting, lane marking, safety barriers and fences, toll booths as well as the regular maintenance activities such as road resurfacing, should be restricted to deck level, and can be completed as long as they are related to improving the safety and amenity of the transport system, and that they do not adversely impact upon the overall structural form of the bridge. Additionally, 'Policy 17—Exemptions' states that all such maintenance works and minor repairs should be carried out in compliance with the standard exemptions of Section 57(2) of the Heritage Act. As such, the setting of the Sydney Harbour Bridge is not expected to be significantly impacted by the Project as the visual context and scale of the Project is consistent with 'Policy 14—Maintenance and Repair Works Generally', which state that appropriate repair and	**No**

Significant impact criteria Is there a real chance or possibility that the action would:	Assessment of potential impacts	Likely to have a significant impact?
	maintenance work should be carried out to secure the Sydney Harbour Bridge against deterioration, as long as it conserves the cultural heritage significance of this heritage item. The Sydney Harbour Bridge is an integral part of the Sydney Harbour landscape and a Sydney landmark. In particular, it should be noted that the bridge is seen as a major element of one of the most internationally recognised views of Australia and the city of Sydney, which also comprises the Sydney Opera House, the harbour and its foreshores and the city skyline. This is of national-level significance. Because of these aspects of the Sydney Harbour Bridge, its association with Sydney Harbour, its contribution to the setting of the Sydney Opera House, and due to the temporary nature of roadworks and the construction compound which facilitates these roadworks, overall the visual impacts on the setting of the Sydney Harbour Bridge would not be significant.	
Make notable changes to the layout, spaces, form or species composition of a garden, landscape or setting of a National Heritage place in a manner which is inconsistent with relevant values.	No changes would be proposed to the layout, spaces or form in a garden, landscape or setting within the Sydney Harbour Bridge curtilage.	**No**

5.4.8.6 Impact assessment – State Heritage Register Boundary

The aspects of the proposal which respect or enhance the heritage significance of the heritage item are the same as presented in Impact assessment – National Heritage List Boundary (Section 5.4.8.5).

Table 5-19 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-19 : Impact assessment – Sydney Harbour Bridge State Heritage Register Boundary

Impact type	Consideration
Direct	Direct impact to the heritage item may occur due to the construction of a toll gantry on the eastern side of the Lavender Street railway arch which forms part of the northern approach of the Sydney Harbour Bridge. The overall form of the approaches, including the arch bridge over Lavender Street and all its original structural elements are of high significance (Godden Mackay Logan 2007:61). Additionally, the following conservation policies apply: • 'Policy 13—Integrity of Original Design' requires that 'views of the original form of the rendered masonry approaches should be maintained and not obscured' and 'the fabric and design integrity of the main components of the bridge, comprising the…approaches…should be conserved' (Godden Mackay Logan 2007:95, 96). • 'Policy 19—New Development' requires that 'new development should enhance the function and use of the bridge without obscuring or damaging the integrity of the original design or significant fabric (Godden Mackay Logan 2007:99). • 'Policy 21—Changes Due to Operational Requirements' requires that typical operational alterations such as toll booths 'should be justified on grounds of improving safety and amenity of the transport systems and their impact on the cultural heritage significance of the bridge assessed' and that the alterations 'should not impact upon the overall structural form of the bridge' (Godden Mackay Logan 2007:100). Should government elect to introduce northbound tolls, a toll gantry is required at the Lavender Street exit. The toll gantry has the potential to impact on the significant fabric of the Lavender Street arch and cause visual impact by obscuring the original design of this component which is of High significance. To comply with the above policies, the toll gantry would be designed so as not to physically touch or impact upon the Lavender Street arch; and it would be designed to ensure its scale, height, location, and materials minimise visual obstruction of the Lavender Street arch when viewed from the eastern side of the arch.
Direct	Direct impact to the heritage item may occur due to the construction and use of the temporary Construction compound WFU1, including works relating to the project management site office and site amenities, parking and laydown areas, and high voltage power connectivity, potable water supply and a suitable connection for water discharge. This would be located on the open area on top of the Middlemiss Street bay tenancy spaces, which form part of the Sydney Harbour Bridge approaches. To comply with both 'Policy 13—Integrity of Original Design' and 'Policy 23—Use of Approaches', the affected portion of the heritage item – the entire area of the Construction compound WFU1 – should be documented during a pre-construction survey. The heritage item should then be monitored by a qualified heritage consultant during the installation, use, and removal of the temporary site office and site amenities, all services supporting these, the parking area, and the laydown area to ensure the protection of the tenancy spaces during this period, and to allow for continued availability for lease of these spaces by businesses and organisations. Once complete, the Construction compound area should be returned to its original condition, as documented in a pre-construction survey. To comply with 'Policy 13—Integrity of Original Design' of the Sydney Harbour Bridge Conservation Management Plan 2007, which ensures that all tenancy spaces which form part of the approaches are conserved, a temporary barrier fence would be erected between the Construction compound and the remainder of the heritage item on the flat open area which comprises the roof of the bays to protect the rest of the heritage item to the west of these works, prior to the commencement of all works associated with the Construction compound. The fence would remain in place until the conclusion of works in the vicinity of the heritage item at which time it would be removed.

Impact type	Consideration
Potential direct	Physical impact may occur due to the use of construction machinery and vehicles within close proximity to the heritage item, in relation to the temporary Construction compound WFU1. This would be located on the open area on top of the Middlemiss Street bay tenancy spaces. As a protective measure, a temporary barrier fence would be erected between the construction compound and the rest of the heritage item prior to road construction works commencing. The fencing would be installed for the duration of construction for the project and removed following completion.
Indirect - Visual	Temporary visual impact may occur due to the Warringah Freeway Upgrade roadworks occurring within the boundary of this heritage item, including the installation and use of the temporary Construction compound WFU1. To comply with 'Policy 11—Maintaining Key Views of the Sydney Harbour Bridge in its Setting' of the Sydney Harbour Bridge Conservation Management Plan 2007, the Construction compound WFU1 should blend into the surrounding environment and be as unobtrusive as possible. The construction compound itself should also not obscure or detract from the views of the Sydney Harbour Bridge from the northern approach, should not negatively impact the significant physical and visual character of the Sydney Harbour Bridge within its harbour setting, and should not block the views and vistas to and from Sydney Harbour Bridge. Once works are complete and construction vehicles are removed, the visual appeal of the area should be restored.

5.4.8.7 Impact assessment – In close proximity to National Heritage List and State Heritage Register Boundaries

The proposed noise barrier on the Warringah Freeway on the northern approach to the Sydney Harbour Bridge is situated outside both the State and National heritage boundaries so would not physically impact on the listed heritage item of the Sydney Harbour Bridge. The final materials, length and design of the noise barrier would be determined during detailed design and in consultation with Department of Premier and Cabinet (Heritage) and the NSW Heritage Council. The Heritage Council of NSW would be consulted on all works within the State Heritage Register or National Heritage Register listed curtilage of the Sydney Harbour Bridge, as well as any that are visually or physically proximate, to ensure that heritage impacts are minimised.

The overall form of the bridge approaches, including the rendered retaining walls divided into bays, is of **high** significance (Godden Mackay Logan 2007:61). Additionally, the following conservation policies apply:

- 'Policy 13—Integrity of Original Design' requires that 'views of the original form of the rendered masonry approaches should be maintained and not obscured' and 'the fabric and design integrity of the main components of the bridge, comprising the…approaches…should be conserved' (Godden Mackay Logan 2007:95, 96).

In compliance with this policy, the proposed noise barrier has been situated a sufficient distance from the rendered masonry approaches, and would be situated on the part of the approach that is not of heritage significance (that is, outside statutory heritage boundaries). Decisions regarding appropriate materials, length and design of the noise barrier, would also take Policy 13 into consideration.

As such the proposed noise barrier would respect the heritage significance of the Sydney Harbour Bridge. Given the previous considerations, the noise barrier is unlikely to have detrimental impact on the heritage significance of the Sydney Harbour Bridge.

5.4.8.8 Overall level of impacts

The proposed works would be of small-medium scale of moderate intensity, with temporary works comprising a construction compound located on a small section of the Milsons Point approach to the Sydney Harbour Bridge, and permanent roadworks along the roadways of the Milsons Point approach to the Sydney Harbour Bridge,

and along less than 20 metres of roadway along the Milsons Point approach span. While the roadworks would be permanent and irreversible, they do not impact the heritage significance of the heritage item as this allows for continued use of the Sydney Harbour Bridge as a main road and rail connection. The temporary construction site is assessed as being short term and reversible. As such, the implementation of the management measures described would ensure that the level of impact on the heritage item would be **minor**.

There are limited areas of open space for construction compounds in the vicinity of the project. Therefore, this option minimises heritage impacts as much as possible given the other constraints in this area of the project.

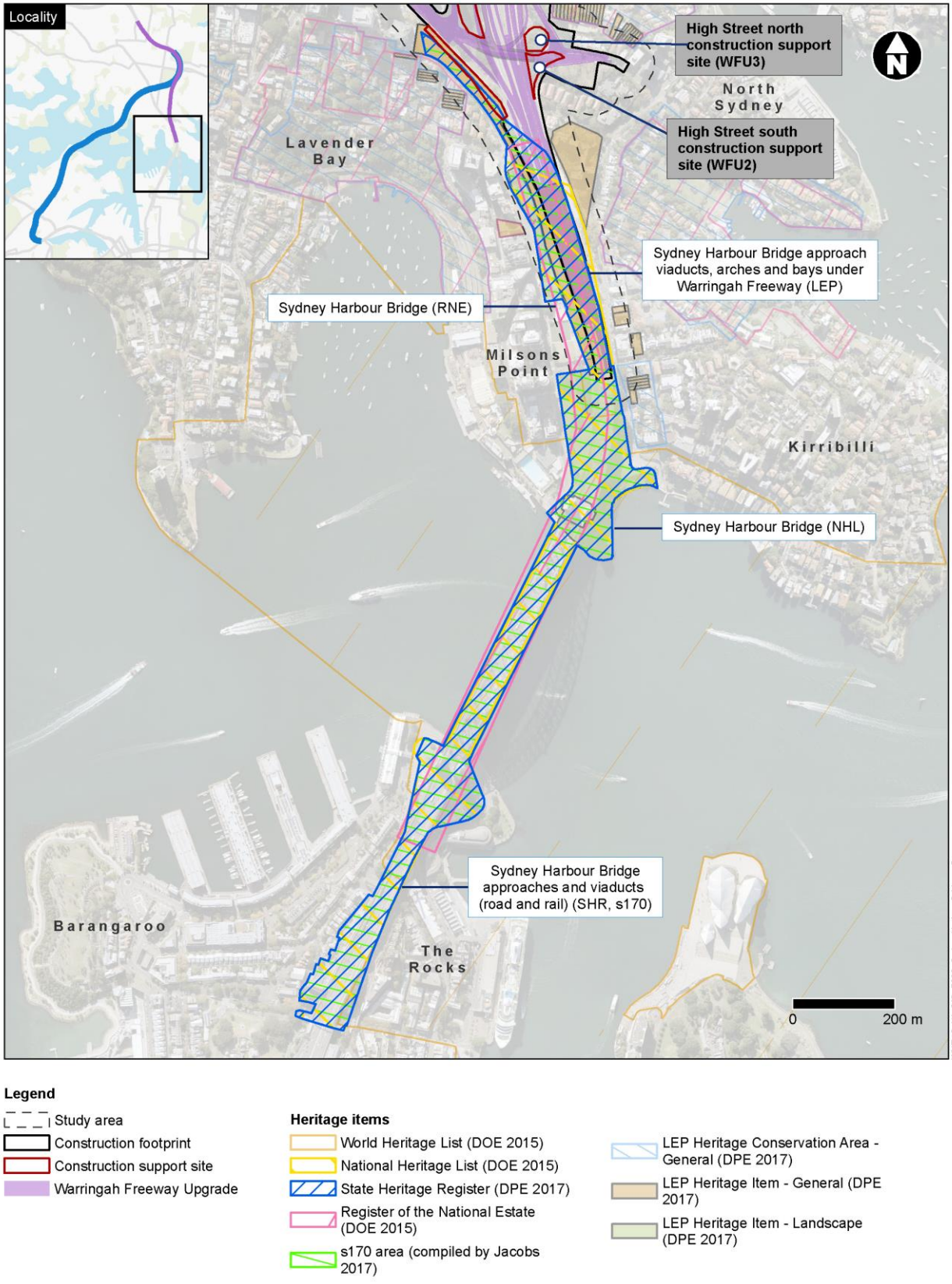


Figure 5-17 : Item 8 Sydney Harbour Bridge, approaches and viaducts (road and rail)

5.4.9 Item 9: North Sydney Bus Shelters

5.4.9.1 Site details

The North Sydney Bus Shelters are a series of bus shelters across the North Sydney Council local government area listed on the North Sydney Local Environmental Plan 2013, with five being located within the study area:

- BS008 'Falcon' – adjacent to 127 Falcon Street on Miller Street, North Sydney
- BS010 'Miller' – adjacent to St Leonards Park at the southeastern corner of Miller and Falcon Streets, North Sydney
- BS025 'Berrys Bay' – opposite 18-20 Woolcott Street, Waverton
- BS038 'St Johns' – opposite 7-9 Broughton Street, Kirribilli
- BS050 'St Leonards Park' – on the traffic island at the southeastern corner of Falcon and Miller Streets, North Sydney

The heritage item is listed on the North Sydney Local Environmental Plan 2013, and is of local significance as it meets criterion A (historical), B (historical association), and D (social). See Appendix A for full site description, photographs and significance assessment.

There are no known or suspected areas of archaeological potential within the heritage item boundary to be impacted by the project, therefore no further archaeological investigations are proposed.

5.4.9.2 Proposed works

Bus Shelters BS008 ('Falcon'), BS010 ('Miller') and BS050 ('St Leonards Park')

Works along Miller Street and Falcon Street would be carried out as part of the Warringah Freeway Upgrade. Work would predominately focus around the Miller Street and Falcon Street intersection, including additional turning lanes. Construction work would include kerb and footpath adjustments. Bus stops may require relocation while these works are taking place.

Bus Shelter BS038 'St Johns'

No works are proposed in the vicinity of this bus shelter, with all construction work occurring within the Sydney Harbour Bridge carriageway at height.

Bus Shelter BS025 'Berrys Bay'

The bus shelter BS025 is located in proximity to the mainline tunnel, and would not be directly impacted.

5.4.9.3 Impact assessment

The project would not have direct impacts on BS025 ('Berrys Bay') or BS038 (St Johns).

Table 5-20 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

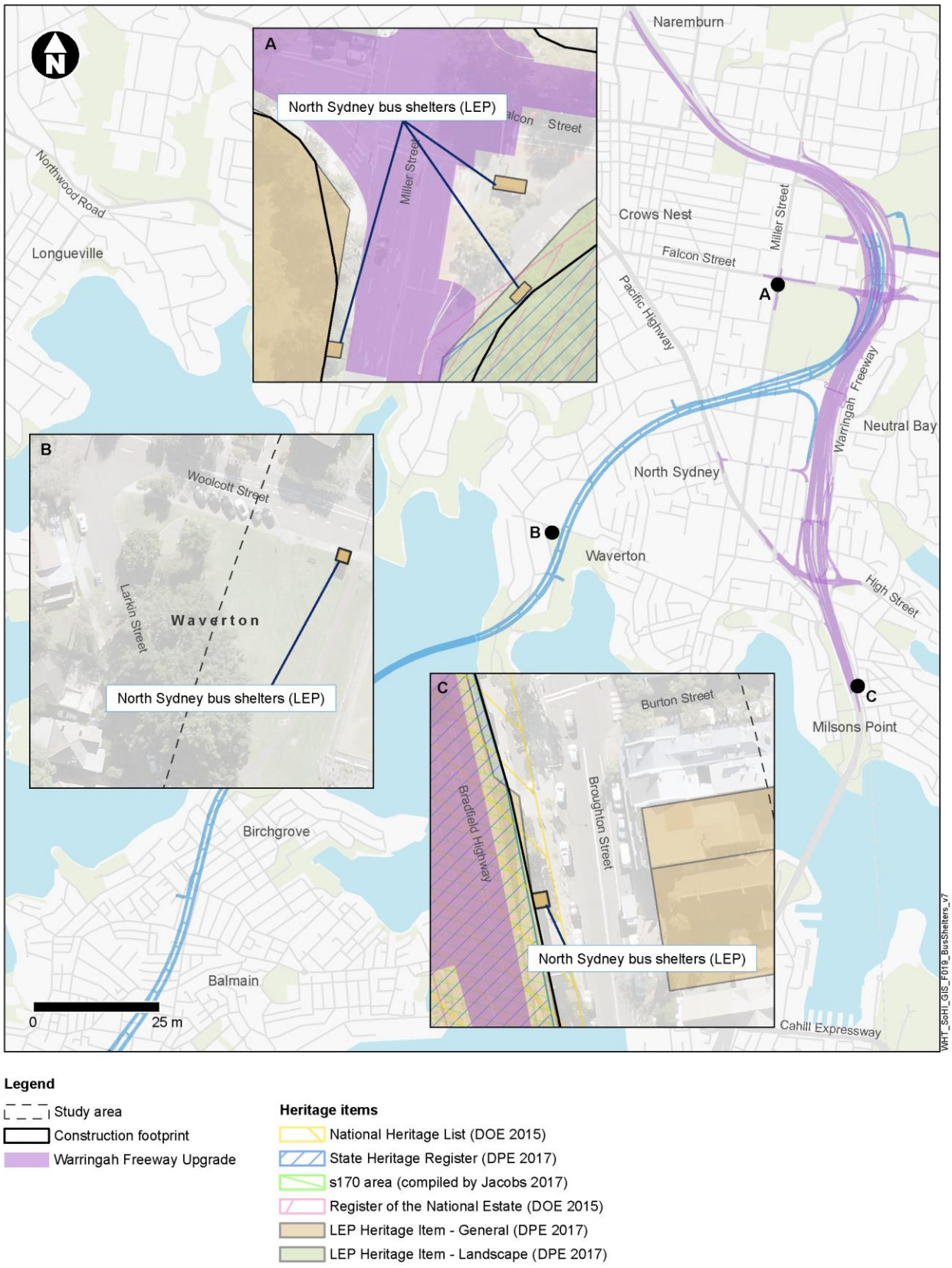
Table 5-20: Impact assessment – North Sydney Bus Shelters

Impact type	Consideration
Direct	For bus shelters BS008, BS010 and BS050, the project would directly impact these items, on the expectation that the shelters would require relocation during construction. If relocated, the shelters

Impact type	Consideration
	would be temporarily removed, stored and relocated in close proximity to their current locations on completion of construction work. A structural condition survey and archival recording would be carried out prior to the removal of the bus shelters. The temporary relocation and reinstatement of the bus shelters would be carried out in consultation with North Sydney Council and completed under supervision of a suitably qualified heritage professional.
Potential direct	Physical impact may occur due to the use of construction machinery and vehicles within close proximity to the heritage item. Standard construction measures (such as fencing of active construction areas and delineation of 'no-go' areas) would manage this risk.
Indirect – Visual	For bus shelters BS008, BS010 and BS050, the shelters would be reinstated following the completion of construction.
Indirect – Vibration	For bus shelters BS008, BS010 and BS050, given the proximity of works, there is potential for vibration from the surface works to exceed 2.5 millimetres per second if the shelters are not relocated. As such, there is a risk of damage to the heritage item, if any structures are within these vibration levels and subject to structural review of the heritage item. For bus shelter BS025, tunnelling vibration would be below the 2.5 millimetre per second threshold. The management measures outlined in Section 5.2 should be considered to control and minimise vibration impacts from the construction.
Indirect – Settlement	Settlement and ground movement from tunnel excavation may cause damage to bus shelter BS025 ('Berrys Bay'). The settlement modelling for this project indicates that the ground settlement levels at St Thomas Rest Park would have a predicted maximum surface settlement of less than 10 millimetres and a predicted maximum surface angular distortion of less than 1:2000. As such, the degree of severity to structures within the heritage item is 'very slight'. To protect the heritage item and reduce its exposure to settlement impacts prior to and during construction, the management measures summarised in Section 5.2 would be implemented to address any potential structural damage to the heritage item. Any repairs required as a result of the settlement damage would be carried out under the guidance of a suitably qualified heritage professional.

5.4.9.4 Conclusion

The proposed works would physically impact the heritage items, but the implementation of the measures detailed above would mean little or no impact on heritage significance, once the shelters were reinstated in close proximity to their current locations. With the implementation of the management measures described, the level of impact on bus shelters BS008, BS010 and BS050 would be **negligible**. Impacts to BS025 and BS038 would also be **negligible**.



Legend

- Study area
- Construction footprint
- Warringah Freeway Upgrade

Heritage items

- National Heritage List (DOE 2015)
- State Heritage Register (DPE 2017)
- s170 area (compiled by Jacobs 2017)
- Register of the National Estate (DOE 2015)
- LEP Heritage Item - General (DPE 2017)
- LEP Heritage Item - Landscape (DPE 2017)

Figure 5-18 : Item 9 North Sydney Bus Shelters

5.4.10 Item 10: St Leonards Park (including W. Tunks Memorial Fountain, War Memorial, and North Sydney Oval), North Sydney

5.4.10.1 Site details

St Leonards Park is located at 283A Miller Street, North Sydney, on Lots 1104–1107 DP 46990; Lot 1108 DP 48839; Lot 7321 DP 1149783; and Part Crown Land Plan 316–3000. This heritage item is listed on the State Heritage Register, the North Sydney Local Environmental Plan 2013, the Register of the National Estate and the National Trust of Australia (NSW) Register and is of state significance as it meets criterion A (historical), B (historical association), C (aesthetic), D (social), F (rarity), and G (representativeness).

The W. Tunks Memorial Fountain is located at the same address on Part Crown Land Plan 316–3000. This heritage item is listed on the North Sydney Local Environmental Plan 2013 and is of local significance as it meets criterion A (historical), and F (rarity).

The War Memorial is located on Ridge Street within Part Crown Land Plan 316–3000. This heritage item is listed on the North Sydney Local Environmental Plan 2013 (I1123) and is of local significance as it meets criterion C (aesthetic), D (social), and G (representativeness).

The North Sydney Oval at Miller Street within Lot 1108, DP 48839. This heritage item is listed on the North Sydney Local Environmental Plan 2013 and is of local significance as it meets criterion F (rarity). See Appendix A for full site description, photographs and significance assessment.

This site has an area of archaeological potential, comprising subsurface World War II air raid trenches. However, these are not situated in close proximity to the proposed works, therefore no archaeological investigation has been proposed, and no archaeological assessment or research design is required.

5.4.10.2 Proposed works

Key components of the project within or in the vicinity of the heritage item include:

- The mainline tunnels between Balls Head at Waverton and the Warringah Freeway at North Sydney would be beneath a portion of St Leonards Park
- The mainline tunnels would be connected to the surface road network through on and off ramps with the Warringah Freeway, beneath and adjacent to St Leonards Park and via an off ramp from the northbound mainline tunnel to Falcon Street, North Sydney
- Surface road works including the upgrade of the Falcon Street interchange to a diverging diamond interchange configuration
- Modifications to lane arrangements and turning movements at Miller Street/Falcon Street intersection and capacity and configuration works on Miller Street and Falcon Street
- Reconstruction of the existing drainage infrastructure beneath St Leonards Park
- The Ridge Street north (WHT9) construction support site which would support construction of the Falcon Street cut and cover (as part of the Western Harbour Tunnel northbound off ramp). The Ridge Street north (WHT9) construction support site would act as a minor works compound and laydown area.

Portions of St Leonards Park would be occupied during construction of the project, but would not be required for operational infrastructure or other operational activities associated with the project. Where tree cover is lost during construction, landscape planting would be carried out of a similar species to match those existing, particularly along the boundary of the park with the Warringah Freeway.

Kerb and footpath adjustment works would occur on Miller Street southbound around the intersection with Falcon Street. These works would provide a new dedicated lane for left turning traffic from Falcon Street

westbound to Miller Street southbound. Further review of the impacts in this area is currently being carried out and permanent impacts to St Leonards Park would be minimised or, where possible eliminated.

As discussed in Chapter 4 (Project development and alternatives) of the environmental impact statement, alternatives to the preferred design were considered including the use of St Leonards Park as a main tunnel support site. The preferred design was selected as it minimises impacts on St Leonards Park State Heritage listing, recreational space and car parking availability.

5.4.10.3 Impact assessment

There would be direct impacts to the heritage item. However, to ameliorate this, the remediation of any impacts to heritage values caused by the project would occur following completion of construction, which would return the park to its current standard.

Table 5-21 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-21: Impact assessment – St Leonards Park (including W. Tunks Memorial Fountain, War Memorial, and North Sydney Oval)

Impact type	Consideration
Direct	Excavation works would be required to support the Falcon Street off ramp cut and cover structure, located on the eastern edge of the park adjacent to the Warringah Freeway. The project would see the off ramp buried into the Warringah Freeway embankment, with the parkland above re-graded to a mostly level land form, extending over the structure. Works in the northeastern corner of the park associated with the surface connections from the mainline tunnels to Falcon Street would result in the removal of vegetation along the boundary of the park and the replacement of the existing retaining wall. The project would avoid planned physical impacts to the following key heritage components of the heritage item: North Sydney Oval complex, the Music Shell, the W. Tunks Memorial Fountain, and the North Sydney Leagues Bowling Club. The Ridge Street north (WHT9) construction support site would require about 8,800 square metres during construction of the project. Following completion of construction, the construction support site would be removed, and the heritage item would be reinstated to an open space. An archival photographic recording of the heritage item would be carried out, in accordance with the guidelines *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Council of NSW, 2006). Overall, direct impacts to the heritage item would be minor as the works would be minor in scale but permanent and irreversible.
Potential direct	Physical impact may occur due to the use of construction machinery and vehicles within close proximity to the heritage item. Standard construction measures (such as fencing of active construction areas and delineation of 'no-go' areas) would manage this risk.
Indirect – Visual	The visual sensitivity of St Leonards Park is high due to the expansive and scenic district views from the park and because the park constitutes a key area of public open space, of which visual amenity is an important factor (WSP and Arup, 2020). Vegetation would be removed as part of the construction works within the heritage curtilage of the park, which would result in temporary visual impacts during construction. The heritage item's immediate setting would not significantly change once construction works have concluded and replacement planting should mitigate this impact over time. For some views to the heritage item (such as from the south), the ventilation outlet within the Warringah Freeway may be visible in the distance where the new structure is not obscured by buildings, mature vegetation or other structures (such as bridges and throw screens).

Impact type	Consideration
	As construction works would be likely to take up to 18 months, the impacts to the aesthetic values of the park would be moderate during this period.
Indirect – Vibration	Tunnelling vibration would be below the 2.5 millimetres per second threshold. The predicted surface works would be above 2.5 millimetres per second (given works would occur directly within or adjacent to the heritage curtilage). As such, there is a risk of damage to the heritage item, if any structures are within these vibration levels and subject to structural review of the heritage item. Surface works in the vicinity of the heritage item would be minor. Minimum working distances for vibration-intensive activities would be applied to avoid indirect impacts to structures located within the heritage item.
Indirect – Settlement	Settlement and ground movement from tunnel excavation may cause damage to the heritage item. Settlement modelling for this project indicates that the ground settlement levels at the heritage item would have a predicted maximum surface settlement of up to 40 millimetres and a predicted maximum surface angular distortion of more than 1:500. As such, the degree of severity to structures within the heritage item is 'slight'. To protect the heritage item and reduce its exposure to settlement impacts prior to and during construction, the management measures summarised in Section 5.2 would be implemented to address any potential structural damage to the heritage item. Any repairs required as a result of the settlement damage would be carried out under the guidance of a suitably qualified heritage professional.

5.4.10.4 Conclusion

The proposed works within St Leonards Park would be of small or localised scale, of low intensity, along the margins of the park in the southeast, and northeast, with some of the changes being permanent and irreversible.

Direct impacts would occur through construction works required for surface connections from the mainline tunnels to Falcon Street and the Ridge Street north (WHT9) construction support site. Vegetation would be removed as part of the construction works within the heritage curtilage of the park, which would result in temporary visual impacts during construction. Reinstatement works following the completion of construction would be redesigned in consultation with a landscape architect and North Sydney Council, and would seek to retain as much of the existing character and the original design intent as possible.

As such, the level of direct impact on the heritage item would be **minor.**

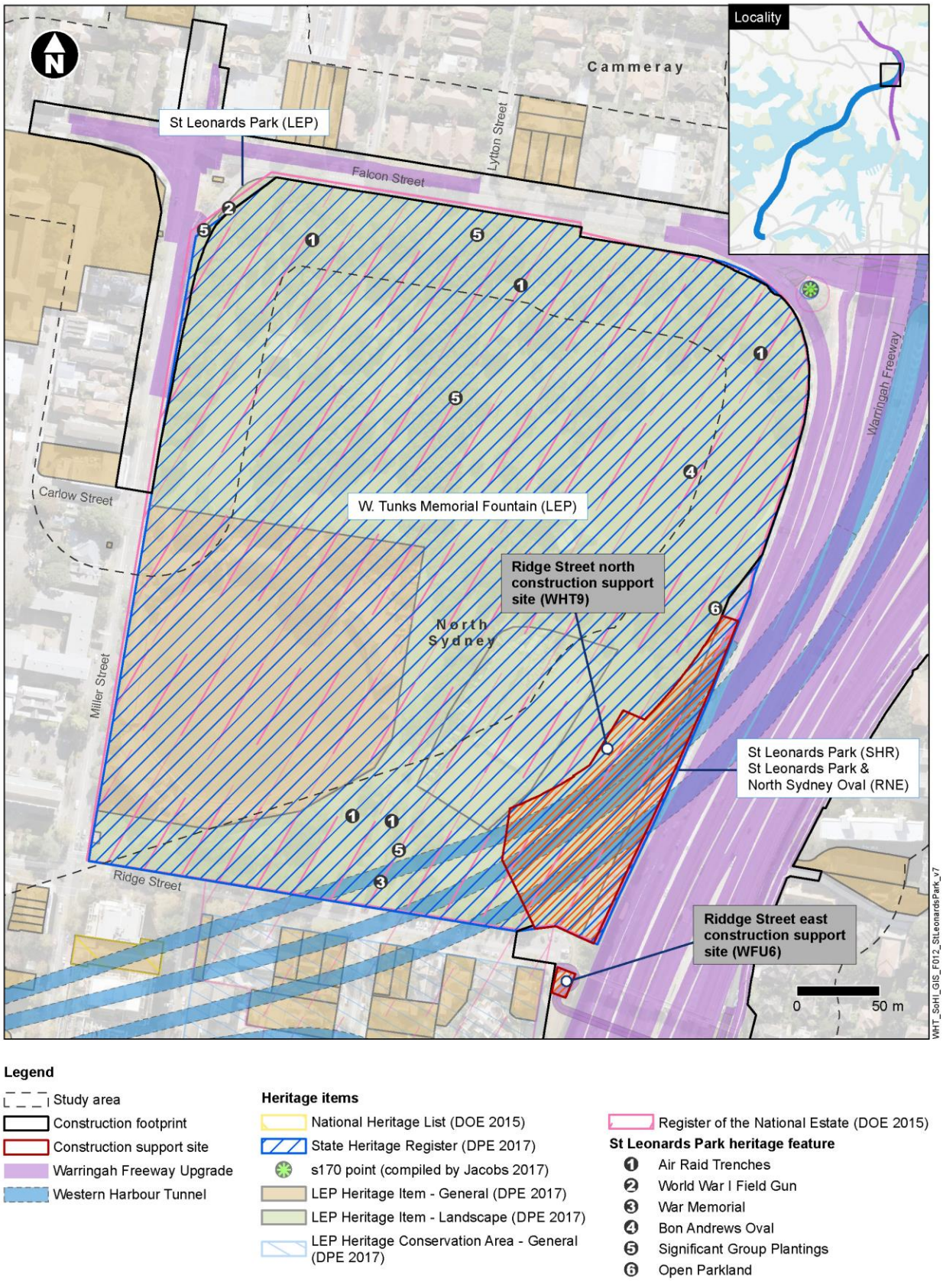


Figure 5-19 : Item 10 St Leonards Park (including W. Tunks Memorial Fountain, War Memorial, and North Sydney Oval)

5.4.11 Item 11: North Sydney Sewer Vent, North Sydney

5.4.11.1 Site details

North Sydney Sewer Vent is located on the southwestern corner of the intersection of Falcon Street with the Warringah Freeway. The heritage item is listed on the State Heritage Register, the North Sydney Local Environmental Plan 2013, the Sydney Water Section 170 Heritage and Conservation Register, the Register of the National Estate and the National Trust of Australia (NSW) Register.

The item is of state significance as it meets criterion A (historical), C (aesthetic), D (social), E (research potential), F (rarity), and G (representativeness). Refer to Appendix A for full site description, photographs and significance assessment.

There are no known or suspected areas of archaeological potential within the heritage item boundary to be impacted by the project, therefore no further archaeological investigations are proposed.

5.4.11.2 Proposed works

The heritage item is located within the construction footprint for the project. However, these works would be situated adjacent to the sewer vent, and the heritage item would be protected and retained.

Key components of the project include:

- The Warringah Freeway/Falcon Street interchange
- Off ramps from the northbound mainline tunnel of Western Harbour Tunnel to Falcon Street
- Construction work within the Warringah Freeway corridor.

The Falcon Street interchange would be modified to a diverging diamond interchange configuration (refer to Figure 5-20). This would require

- Widening of the Falcon Street bridge, and reconfiguration of traffic lanes approaching and through the interchange
- Reconfiguration of medians, signage and traffic signals of the interchange at the western and eastern ends
- Replacement and upgrade of active transport infrastructure around and through the interchange.

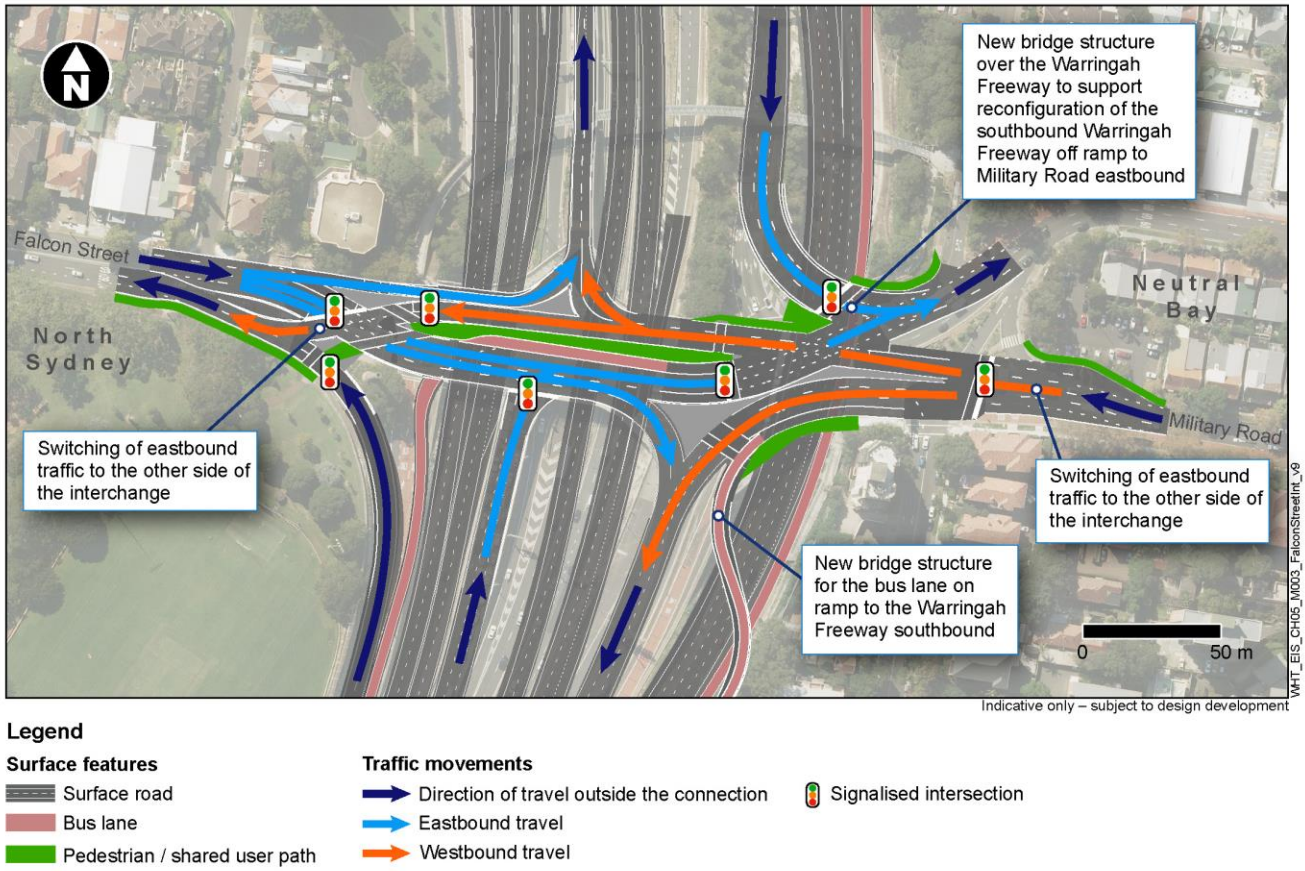


Figure 5-20 : Upgrade of the Falcon Street interchange

5.4.11.3 Impact assessment

As an operational Sydney Water asset, the project would avoid direct impacts to the heritage item.

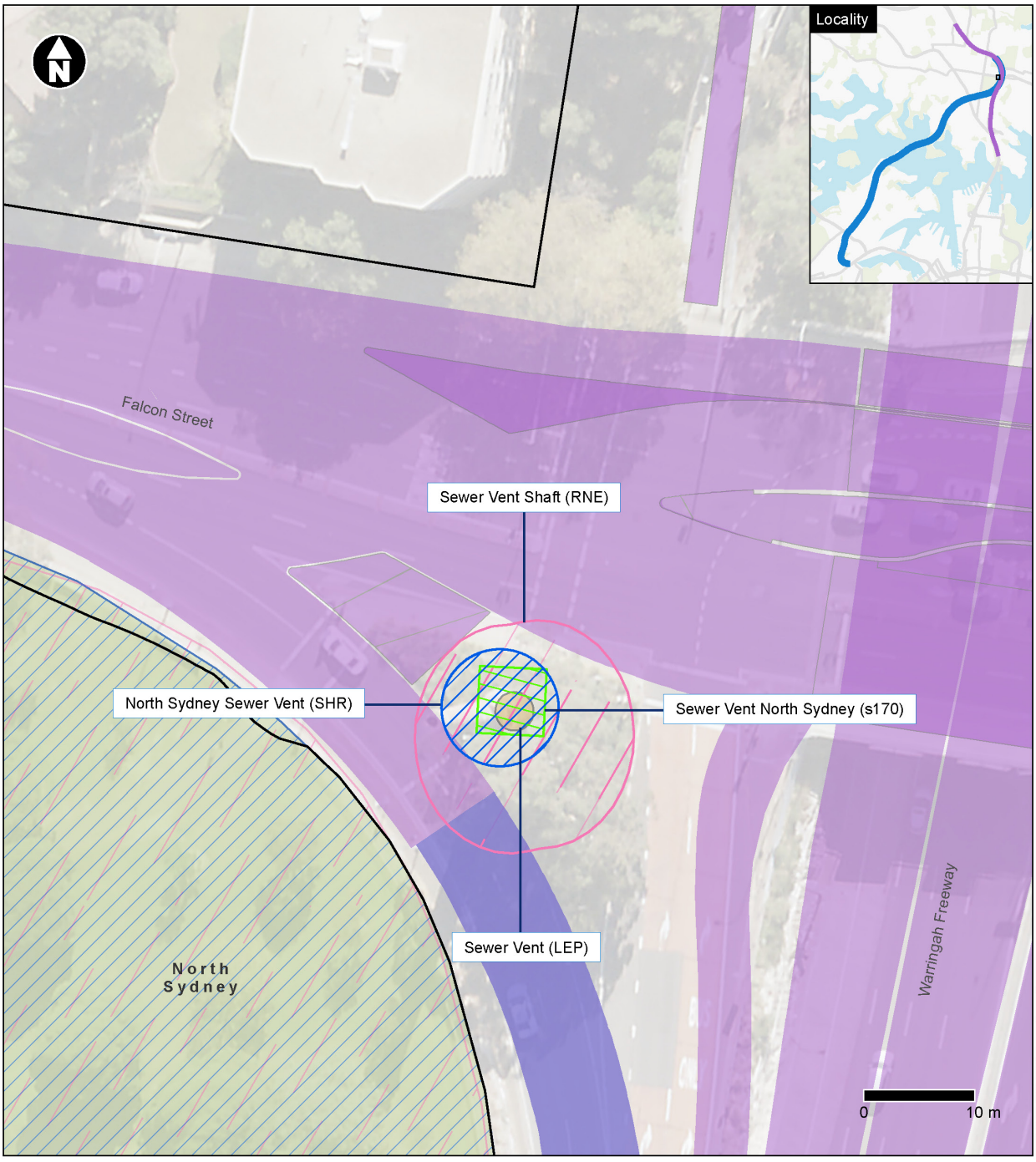
Table 5-22 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-22: Impact assessment – North Sydney Sewer Vent

Impact type	Consideration
Potential direct	Physical impact may occur due to the use of construction machinery and vehicles within close proximity to the heritage item. Standard construction measures (such as fencing of active construction areas and delineation of 'no-go' areas) would manage this risk. In particular, care would be required during works to the off ramp to Falcon Street as it would enter the southwestern border of the heritage item, which may cause damage to the sandstone retaining wall surrounding the heritage item, due to the close proximity of the works. The sandstone retaining wall should be fenced off as a no-go zone during construction.
Indirect – Visual	Physical works would be carried out and vegetation would also be removed as a consequence of these works, which would result in temporary visual impacts during construction. Its immediate setting would not significantly change once construction works have concluded. The ventilation outlet within the Warringah Freeway would be around 300 metres from the item. For some views to the heritage item (such as from the south on the Falcon Street off ramp), it may be visible in the distance where the new structure is not obscured by buildings, mature vegetation or other structures (such as bridges and throw screens). However, any such impact would not block views to the heritage item or alter its landmark status.
Indirect – Vibration	Tunnelling vibration would be below the 2.5 millimetres per second threshold. The predicted surface works would be above 2.5 millimetres per second (given works would occur directly within or adjacent to the heritage curtilage). As such, there is a risk of damage to the heritage item, if any structures are within these vibration levels and subject to structural review of the heritage item. Surface works in the vicinity of the heritage item would be minor. Minimum working distances for vibration-intensive activities would be applied to avoid indirect impacts to structures located within the heritage item.
Indirect – Settlement	Settlement and ground movement from tunnel excavation may cause damage to the heritage item. Settlement modelling for this project indicates that the ground settlement levels at the heritage item would have a predicted maximum surface settlement of between five and 10 millimetres and a predicted maximum surface angular distortion of between 1:2000 and 1:500. As such, the degree of severity to structures within the heritage item is 'very slight'. To protect the heritage item and reduce its exposure to settlement impacts prior to and during construction, the management measures summarised in Section 5.2 would be implemented to address any potential structural damage to the heritage item. Any repairs required as a result of the settlement damage would be carried out under the guidance of a suitably qualified heritage professional.

5.4.11.4 Conclusion

The proposed works would be of small and localised scale, of low intensity, with some being permanent or irreversible. However, these works would occur on the roadways adjacent to the sewer vent, are not planned to physically impact the heritage item, and any potential impacts are able to be prevented through implementation of protective measures. Additionally, there would be no impact on views to the heritage item or any alteration to its landmark status. As such, the level of impact on the heritage item would be **negligible**.



Legend

- Construction footprint
- Warringah Freeway Upgrade
- Western Harbour Tunnel surface works

Heritage items

- State Heritage Register (DPE 2017)
- Register of the National Estate (DOE 2015)
- s170 area (compiled by Jacobs 2017)
- LEP Heritage Item - General (DPE 2017)
- LEP Heritage Item - Landscape (DPE 2017)

Figure 5-21 : Item 11 North Sydney Sewer Vent, North Sydney

5.4.12 Item 12: ANZAC Park, Cammeray

5.4.12.1 Site details

ANZAC Park is located at the corner of Anzac Avenue and Ernest Street, Cammeray, on Lots 607-612 DP 752067, Lot 7096 DP 1060619; and Crown reserve. The key significant element in ANZAC Park is the North Sydney Tramway Depot Memorial and the associated plantings.

The heritage item is not currently listed, but has been assessed as being of local significance as it meets criterion D (social). Refer to Appendix A for full site description, photographs and significance assessment.

This site has an area of archaeological potential, comprising subsurface World War II air raid trenches. This is located underneath the memorial and associated plantings, and works are not currently proposed for this location. As such, no further archaeological investigations are proposed, and no archaeological assessment or research design is required.

5.4.12.2 Proposed works

The project would have temporary and permanent direct impacts to the heritage item.

During construction, construction access would be required off Ernest Street, Cammeray to construction areas alongside the Warringah Freeway and drainage works.

Drainage works would involve the upgrade of the two existing box culverts which cross beneath the Warringah Freeway between ANZAC Park and the Cammeray Golf Course site, that convey overland flows for Willoughby Creek. This would include installing a drainage pipe beneath ANZAC Park, parallel to the existing drainage pipe from near the intersection of Ernest Street and Lytton Street, and connecting with the new drainage infrastructure beneath the Warringah Freeway. The construction footprint of this pipe includes two launch pits within the park, so a pipe can be installed from midway along its southern boundary towards the north-eastern corner of the park using underborinng.

Other features of the project include:

- Adjustments to Cammeray Avenue, that would permanently extend into ANZAC Park
- A permanent noise barrier would be provided along the boundary of the Warringah Freeway and Cammeray Avenue. The final barrier height and design (eg materials) would be determined during detailed design. This noise barrier would be built as part of Warringah Freeway Upgrade.
- The demolition of the existing Ernest Street bridge, and the construction of a new bridge in the same location, as well as a new land bridge around 10 metres wide to the north of Ernest Street at Cammeray, to connect the Cammeray Golf Course site with ANZAC Park. Depending on the timing of construction of Beaches Link, the project may also include the potential replacement and realignment of south-facing ramps.
- The motorway facilities at the Warringah Freeway, built as part of Western Harbour Tunnel. The facilities would be located within the existing Cammeray Golf Course site, with the ventilation outlet at the Warringah Freeway.

Trees within ANZAC Park would be removed, mainly along the western boundary due to works within the park

5.4.12.3 Impact assessment

The project would have direct impacts on the heritage item, however, it would avoid direct impacts to the key heritage components of the heritage item, including the North Sydney Tramway Depot Memorial, associated plantings, and the potential subsurface World War II air raid trenches.

In the event that works are required in the location of the air raid trenches, an archaeological excavation would be required, with a test excavation methodology prepared in consultation with relevant stakeholders prior to the disturbance of this area.

Table 5-23 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-23: Impact assessment – ANZAC Park, Cammeray

Impact type	Consideration
Direct	The proposed works would be restricted to a small area along the south, southeast and eastern boundary of the park being permanently modified by a batter slope, associated with roadworks, extending into the curtilage of the park. Any direct impacts would be contained within previously disturbed areas and works would be minor in nature. As such, while the construction boundary is located within the curtilage, the impact to the heritage significance of the item would be negligible. There would be no direct impact on the area of archaeological potential.
Potential direct	Physical impact may occur due to the use of construction machinery and vehicles within close proximity to the heritage item. Standard construction measures (such as fencing of active construction areas and delineation of 'no-go' areas) would manage this risk. These measures would be applied to built elements of the heritage item, as well as areas of archaeological potential.
Indirect – Visual	Physical works would be carried out and vegetation would also be removed as a consequence of these works. Landscape impacts of the project have been rated as being moderate to high during construction, and moderate during operation, with the permanent impacts to the landscape character likely to reduce as replacement planting matures over time (WSP and Arup, 2020). Views of the ventilation outlet and other operational infrastructure would be visible but filtered. The stand of trees and visual setting around the war memorial would not be impacted by the project. Aside from areas of permanent impacts on the western extent of the park, all other works would be temporary, and areas rehabilitated to a suitable standard and replacement planting provided.
Indirect – Vibration	Vibration from the predicted surface works would be above 2.5 millimetres per second (given works would occur directly within the heritage curtilage). As such, there is a risk of damage to the heritage item, if any structures are within these vibration levels and subject to structural review of the heritage item. Surface works in the vicinity of the heritage item would be minor. Minimum working distances for vibration-intensive activities would be applied to avoid indirect impacts to structures located within the heritage item.
Impacts to areas of archaeological potential	Should works be required in the location of the air raid trenches, an archaeological excavation should be performed to examine and record the air raid trenches. This excavation would be carried out under the supervision of an appropriately qualified historical archaeologist prior to works commencing. Should any relics be identified during archaeological excavation, they would be recorded and salvaged during excavation. If these relics cannot be moved, a temporary barrier fence would be erected between the heritage component and the rest of the construction compound prior to construction works commencing. The fence would remain in place until the conclusion of the works in the vicinity of this heritage component, at which time it would be removed.

5.4.12.4 Conclusion

The proposed works would be restricted to a small area along the south, southeast and eastern boundary of the park. This includes a small strip of the park being permanently modified due to surface roadworks (including batter slopes) extending into the curtilage of the item. While this would be a permanent and irreversible change to these edges of the park, these works do not impact the significant heritage components or the overall heritage significance of the park. As such, the level of impact on the heritage item would be **negligible**.

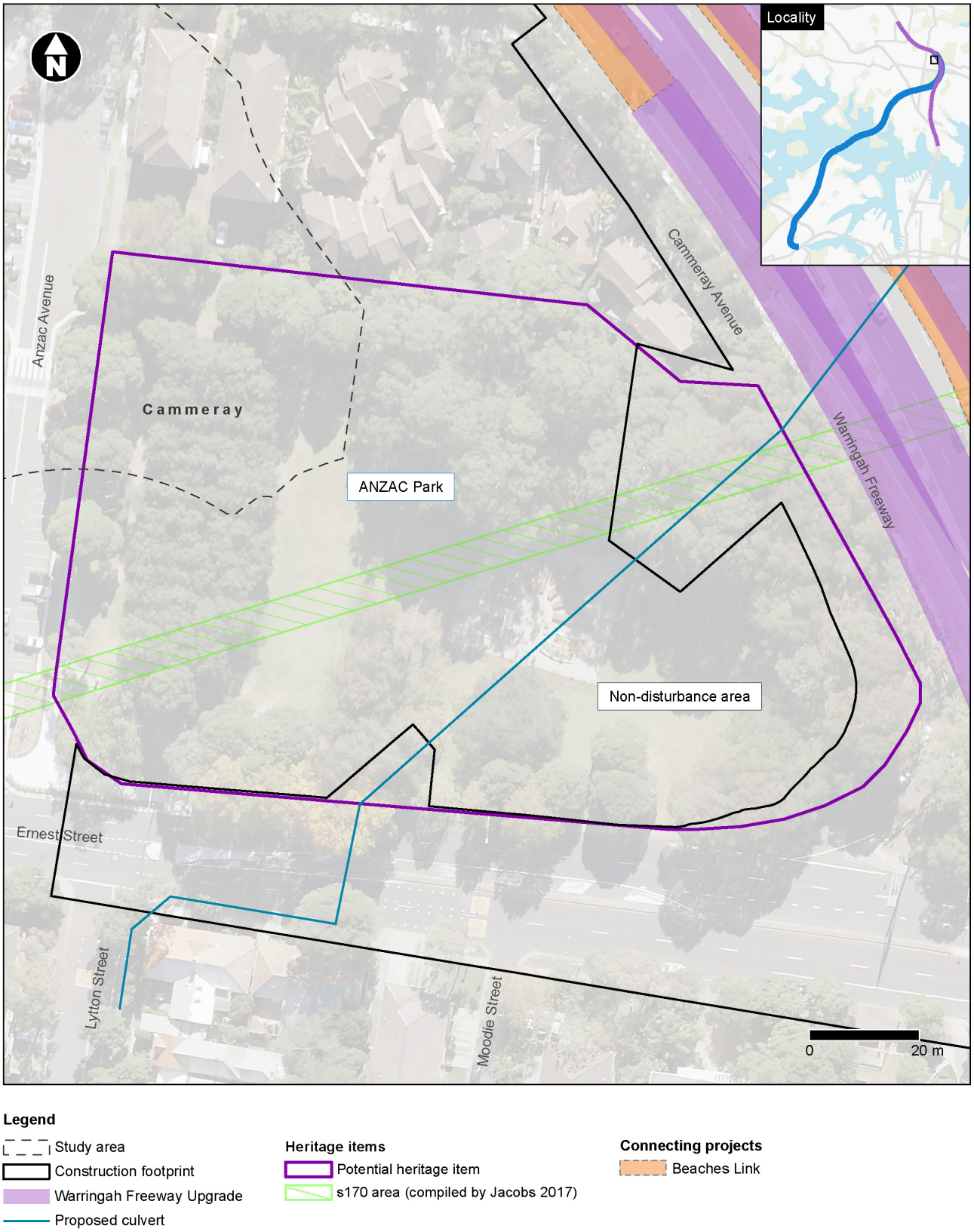


Figure 5-22 : Item 12 ANZAC Park

5.4.13 Item 13: Northern Suburbs Ocean Outfall Sewer, Blacktown to Manly

5.4.13.1 Site details

The Northern Suburbs Ocean Outfall Sewer is located between Flushcombe Road, Blacktown, and the Ocean Outfall at North Head, and runs underneath ANZAC Park (Item 11) near the corner of Anzac Avenue and Ernest Street, Cammeray in an east-northeasterly direction, and underneath Cammeray Park (including Golf Course) (Item 13). The heritage item is listed on the Sydney Water Section 170 Register, and is of local significance as it meets criterion A (historical), C (aesthetic), D (social), E (research potential), F (rarity), and G (representativeness). See Appendix A for full site description, photographs and significance assessment.

There are no known or suspected areas of archaeological potential within the heritage item boundary to be impacted by the project, therefore no further archaeological investigations are proposed.

5.4.13.2 Proposed works

The heritage item passes underneath the Warringah Freeway. Construction of the Warringah Freeway Upgrade in the vicinity of the Northern Suburbs Ocean Outfall Sewer would directly interact with the heritage item and require adjusted maintenance access to a number of sewer maintenance holes affected by the proposed Alfred Street and Warringah Freeway Upgrade works.

Additional components of the project in the vicinity of the heritage item include:

- Minor works along Ernest Street and/or Cammeray Avenue, limited to areas previously disturbed by the Warringah Freeway Upgrade and/or Western Harbour Tunnel. Minor works include signage, line marking, pavement works and adjustments to medians and barriers. Any construction work would be carried out with consideration of the minimum working distances for ‘cosmetic’ damage and standard construction management measures
- The Cammeray Golf Course construction support site (WHT10 /WFU8) which would support civil works associated with the project
- Construction of the Beaches Link portals within the Warringah Freeway corridor, including cut and cover structures and demolition of the Ernest Street ramps
- Fitout of the ventilation outlet at the Warringah Freeway. The structure would be built by the Western Harbour Tunnel project (fitout to be completed as part of the Beaches Link and Gore Hill Freeway Connection project (subject to separate assessment and approval)).
- Fitout of the motorway facilities at the Warringah Freeway. The structure would be built by the Western Harbour Tunnel project
- Removal of the temporary traffic signals at the intersection of the construction support site access with Ernest Street, Cammeray
- Rehabilitation of residual land within the golf course (ie land in excess of operational requirements).

During construction, construction access would be required off Ernest Street, Cammeray to provide access to construction areas alongside the Warringah Freeway and drainage works.

Drainage works would involve the upgrade of the two existing box culverts which cross beneath the Warringah Freeway between ANZAC Park and the Cammeray Golf Course site, that convey overland flows for Willoughby Creek. This would include installing a drainage pipe beneath ANZAC Park, parallel to the existing drainage pipe from near the intersection of Ernest Street and Lytton Street, and connecting with the new drainage infrastructure beneath the Warringah Freeway. The construction footprint of this pipe includes two launch pits within the park, so a pipe can be installed from midway along its southern boundary towards the northeastern corner of the park using underborinng.

5.4.13.3 Permanent features associated with the Western Harbour Tunnel and Warringah Freeway Upgrade

Key permanent features include:

- Upgrade and integration works along the existing Warringah Freeway, including allowance for connections to the Beaches Link and Gore Hill Freeway Connection project
- A permanent noise barrier would be provided along the boundary of the Warringah Freeway and Cammeray Avenue. The final barrier height and design (eg materials) would be determined during detailed design. This noise barrier would be built as part of Warringah Freeway Upgrade
- The motorway facilities at the Warringah Freeway, built as part of Western Harbour Tunnel. The facilities would be located within the existing Cammeray Golf Course site, and the ventilation outlet within the Warringah Freeway.

5.4.13.4 Impact assessment

The project would avoid direct impacts to most of the heritage item. However, some direct impact would occur within the vicinity of the Warringah Freeway Upgrade, ANZAC Park, and at the Cammeray Golf Course.

The adjusted maintenance access to the Northern Suburbs Ocean Outfall Sewer would respect the heritage significance of the item as a way to ensure the continued use of this heritage item, which has continued to develop and change as the population of the northern suburbs has increased since the 1920s. As a mainly subsurface heritage item, the majority of surface works would not impact the heritage significance of the item. However, some works relating to the Warringah Freeway Upgrade, cut and cover structures for the portals, and tunnelling may cause indirect impacts to the heritage item.

Table 5-24 outlines the following aspects of the project that could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-24: Impact assessment – Northern Suburbs Ocean Outfall Sewer

Impact type	Consideration
Direct	Direct impact would be largely avoided, with the exception of a small area. The direct impact associated with the project would involve the adjustment of maintenance access to the heritage item. This impact cannot be avoided as it is required to maintain access to the existing sewer. As this would respect the heritage significance of the heritage item to allow for its continued use, and as works would represent less than one per cent of the heritage item, the impact is considered to be negligible.
Potential direct	Physical impact may occur due to the use of construction machinery, relating to maintenance access, within close proximity to the heritage item. Standard construction measures (such as fencing of active construction areas and delineation of 'no-go' areas) would manage this risk. As a subsurface heritage item, any ground disturbing works may impact upon the heritage item, depending on the depth of works and the depth of the heritage item. As this heritage item is also an operational Sydney Water asset, is assumed that underground services location and infrastructure searches have been carried out prior to the geotechnical investigations, to ensure there is no physical impact to the item. Based on this assumption, no further heritage assessment would be recommended.
Indirect – Vibration	The predicted vibration levels at the heritage item from tunnelling (rock breaking only), cut-and-cover establishment, and surface works would be above 2.5 millimetres per second. As such, there is a medium risk of damage to the heritage item, if any structures are within these vibration levels and subject to structural review of the heritage item.

Impact type	Consideration
	The management measures outlined in Section 5.2 should be considered to control and minimise vibration impacts from the construction.
Indirect – Settlement	The settlement modelling for this project indicates that the ground settlement levels at the heritage item within close proximity to the Cammeray Golf Course – and therefore the Northern Suburbs Ocean Outfall Sewer – would have a predicted maximum surface settlement of 10 to15 millimetres and a predicted maximum surface angular distortion of between 1:500 and 1:2000. As such, the degree of severity to structures within the heritage item is 'slight'. To protect heritage structures and reduce exposure to settlement impacts (prior to and during construction), the management measures summarised in Section 5.2 would be implemented to address any potential structural damage to the heritage item.

5.4.13.5 Conclusion

While the proposed works would have a small physical impact on the heritage item, this would have little impact on its heritage significance. However, these works are necessary for the continued operation of the heritage item. As such, and with the implementation of the management measures, the level of impact on the heritage item as a result of the project and the program of works would be assessed as **negligible**.

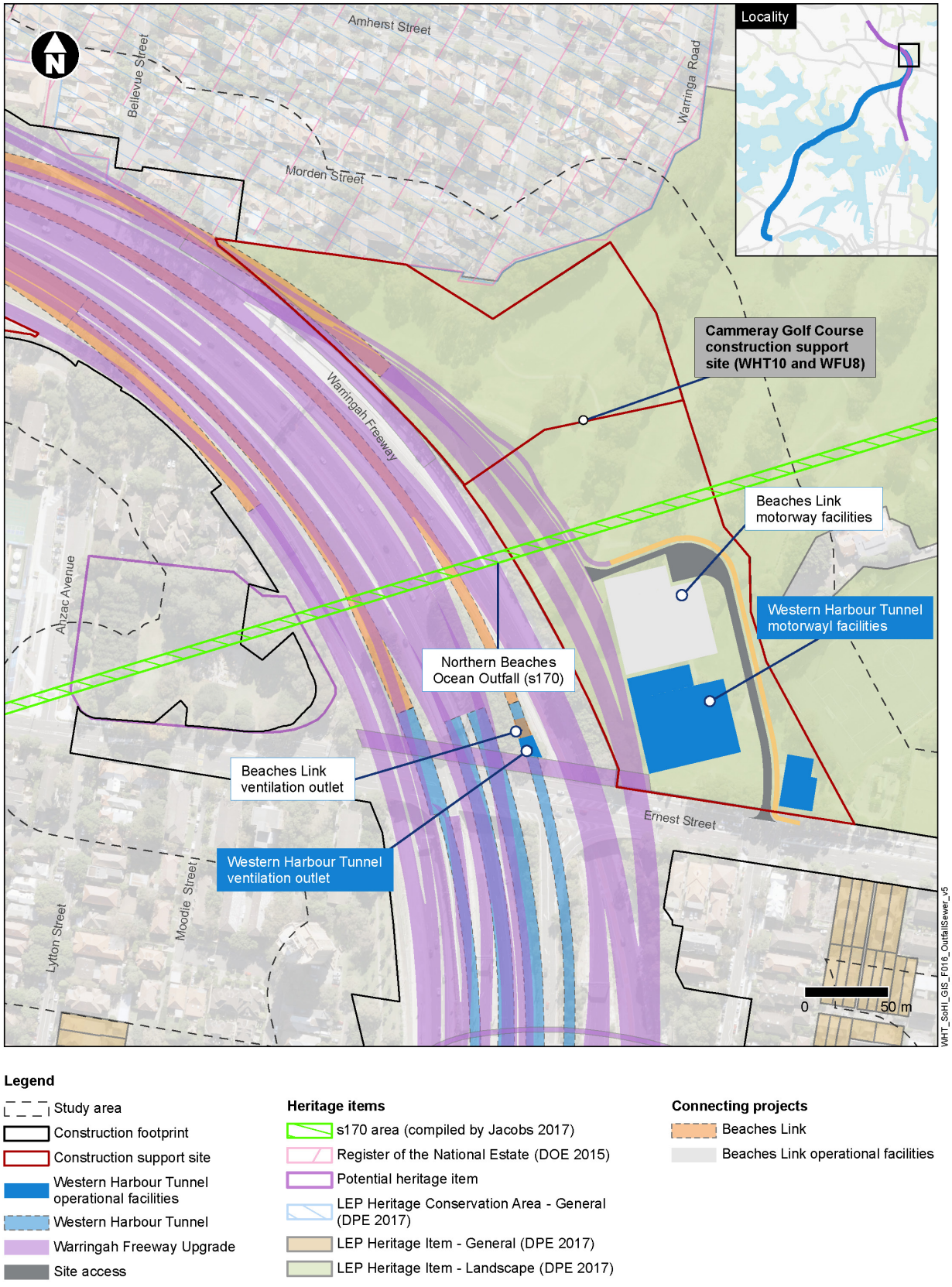


Figure 5-23 : Item 13 Northern Suburbs Ocean Outfall Sewer

5.4.14 Item 14: Cammeray Park (including Golf Course), Cammeray

5.4.14.1 Site details

Cammeray Park (including Golf Course) is located in Cammeray, bounded by residential properties to the north, Warringah Freeway to the west and Ernest Street to the south, on Lots 2–4 DP 244543, on closed roads, and on Crown reserve. The heritage item is listed on the North Sydney Local Environmental Plan 2013 and is of local significance as it meets criterion F (rarity), and G (representativeness). Refer to Appendix A for full site description, photographs and significance assessment.

There are no known or suspected areas of archaeological potential within the heritage item boundary to be impacted by the project, therefore no further archaeological investigations are proposed.

5.4.14.2 Proposed works

The project would temporarily and permanently directly impact the heritage item (estimated at around 33 per cent of the heritage curtilage). Key components of the project within or in the vicinity of the heritage item include:

- The Cammeray Golf Course construction support sites (WHT10 / WFU8). This includes temporary access off the Warringah Freeway and the adjustment of traffic signals at Ernest Street
- Upgrade and integration works along the Warringah Freeway, including allowance for connections to the Western Harbour Tunnel component, as well as the Beaches Link and Gore Hills Freeway Connection project. The widening works (including new embankments), a new Miller Street/Brook Street entry on ramp bridge, utility adjustments, shared path adjustments and a new bus layover area (within the freeway). Parts of the Warringah Freeway Upgrade would extend permanently into the curtilage of the heritage item
- Motorway facilities at the Warringah Freeway (including local roads), built as part of the Western Harbour Tunnel component. The facilities would be located within the existing Cammeray Golf Course construction support site, and the ventilation outlet within the Warringah Freeway
- The modification of the existing Ernest Street bridge, and the construction of a new shared user bridge to the north of Ernest Street at Cammeray, to connect the Cammeray Golf Course site with ANZAC Park. Depending on the timing of construction of Beaches Link component, the project may also include the potential replacement and realignment of south-facing ramps
- Rehabilitation of residual land within the golf course (ie land in excess of operational requirements).

The construction and permanent footprint for the project as well as the program of works has been designed to enable the remaining land to continue to function as a golf course. Residual land (ie in excess of operational requirements) would be returned to enable incorporation into the golf course at the completion of construction.

As discussed in Chapter 4 (Project development and alternatives) of the environmental impact statement, alternatives to the preferred design were considered, including underground and surface alternatives for the interchange. The preferred design was selected as it took advantage of the wide road corridor and more sympathetic topography when compared to alternatives. It is also primarily contained within the existing road corridor and avoided significant property acquisition. Further design refinement for temporary and permanent ancillary infrastructure also enable the land use of the heritage item (golf course) to continue, albeit in an altered arrangement. Therefore, the project design has minimised heritage impacts as much as possible, given the other constraints in this area of the project.

5.4.14.3 Permanent features associated with the Beaches Link and Gore Hill Freeway Connection

Key temporary or permanent features may include:

- A Cammeray Golf Course construction support site which would support civil works associated with the project. This includes temporary access off the Warringah Freeway

- Construction of Beaches Link portals within the Warringah Freeway corridor, including cut and cover structures and demolition of the Ernest Street ramps
- Fitout and operation of the ventilation outlet at the Warringah Freeway. The structure would be built by the Western Harbour Tunnel project
- Fitout and operation of the motorway facilities at the Warringah Freeway. The structure would be built by the Western Harbour Tunnel project.
- Rehabilitation of residual land within the golf course (ie land in excess of operational requirements).

5.4.14.4 Impact assessment

There would be little enhancement of heritage significance due to planned physical impacts to the heritage item. However, to ameliorate this, the portion of the heritage item not used for operational infrastructure would be reinstated and returned to recreational use after temporary works are finalised.

Table 5-25 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-25: Impact assessment – Cammeray Park (including the Golf Course), Cammeray

Impact type	Consideration
Direct	The project would have permanent impacts on the curtilage of the heritage item. Parts of the site would no longer be available for recreational uses, and the change in use would be inconsistent with the heritage values of the site (eg recreation). Additional areas would also be required temporarily to support construction work, resulting in additional but temporary direct impacts. The landscape of the impacted area would undergo significant change as a result of the project (such as the removal of established trees, water features and fairways). This includes changes to the levels of the site due to earthworks, and the creation of new permanent features (arterial roads, embankments, shared paths, and operational facilities). The heritage item would however still retain its use as a golf course following completion of the project, although in an altered arrangement. Due to the level of change required, an archival photographic recording of the heritage item would be carried out, in accordance with the guidelines *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Council of NSW, 2006). As this project impacts the Cammeray Park Golf Course, an additional measure to mitigate these impacts on this particular type of heritage item, would be the preparation of a thematic heritage study of golf courses in Sydney, for the region north of the Sydney Harbour. This study would assist in identifying other potential heritage items in the region that would demonstrate the same or similar significance as the Cammeray Park, therefore reducing the overall impact on that type of heritage item.
Potential direct	Physical impact may occur due to the use of construction machinery and vehicles within close proximity to the heritage item. Standard construction measures (such as fencing of active construction areas and delineation of 'no-go' areas) would manage this risk.
Indirect – Visual	Temporary and permanent visual impacts would occur due to the change in land use and the presence of permanent infrastructure (road-related infrastructure, the motorway facilities at the Warringah Freeway and motorway control centre) which would detract from the visual appeal of the heritage item. Landscape impacts during construction and operation have been rated as being moderate to high, with the permanent impacts to the landscape character likely to reduce as replacement planting matures over time (WSP and Arup, 2020). The operational ancillary facilities have been developed to reduce the perceived scale of the building and its integration into the surrounding context (WSP and Arup, 2020). This has been achieved through a number of approaches including through the selection of material colours and

Impact type	Consideration
	finishes to reflect the open space context of Cammeray Park. Landscape treatments have been proposed to screen views from residential and open space receivers surrounding the park. The design and treatment of operational ancillary facilities during detailed design would look at further refinements, as well as opportunities to provide increased screening though landscape plantings. A landscape plan that maximises an increase of tree canopy in the construction footprint within the park, where feasible, would also be developed.
Indirect – Social	Permanent social impact may occur due to the repurposing of a large section of the heritage item, which would no longer be used as a recreational area, and due to the permanent reduction in the overall amount of open area as a result of the project and the program of works. The park has been assessed as being of social value for its general recreational facilities and open space, and as an example of early twentieth century reclamation of watercourses in urban areas. Where the park is not to be subject to ongoing operational use, it should be reinstated to allow for public access. The park would also still function as a golf course, although in an altered arrangement.
Indirect – Vibration	Vibration from the predicted surface works would be above 2.5 millimetres per second (given works would occur directly within the heritage curtilage). As such, there is a medium risk of damage to the heritage item, if any structures are within these vibration levels and subject to structural review of the heritage item. The management measures outlined in Section 5.2 should be considered to control and minimise vibration impacts from the construction.
Indirect - Settlement	Settlement modelling for this project indicates that the ground settlement levels would have a predicted maximum surface settlement of ranging from 25 to 30 millimetres, and a predicted maximum surface angular distortion of between 1:2000 and 1:500. As such, the degree of severity to structures within the heritage item is ‘slight’. To protect the heritage item and reduce its exposure to settlement impacts, prior to and during construction the management measures summarised in Section 7.1 would be implemented to address any potential structural damage to the heritage item. Any repairs required as a result of the settlement damage, would be carried out under the guidance of a suitably qualified heritage professional.

5.4.14.5 Conclusion

The proposed works would be of small-medium scale of moderate intensity. However, most of the changes at Cammeray Park would be permanent and irreversible. While approximately one third of the park would be removed from its current use, there would still be a large section of relatively intact open space representative of an early reservation to protect water supply, and for use as a golf course. With the implementation of the management measures, the level of impact on the heritage item as a result of the project and the program of works would be assessed as **moderate**.

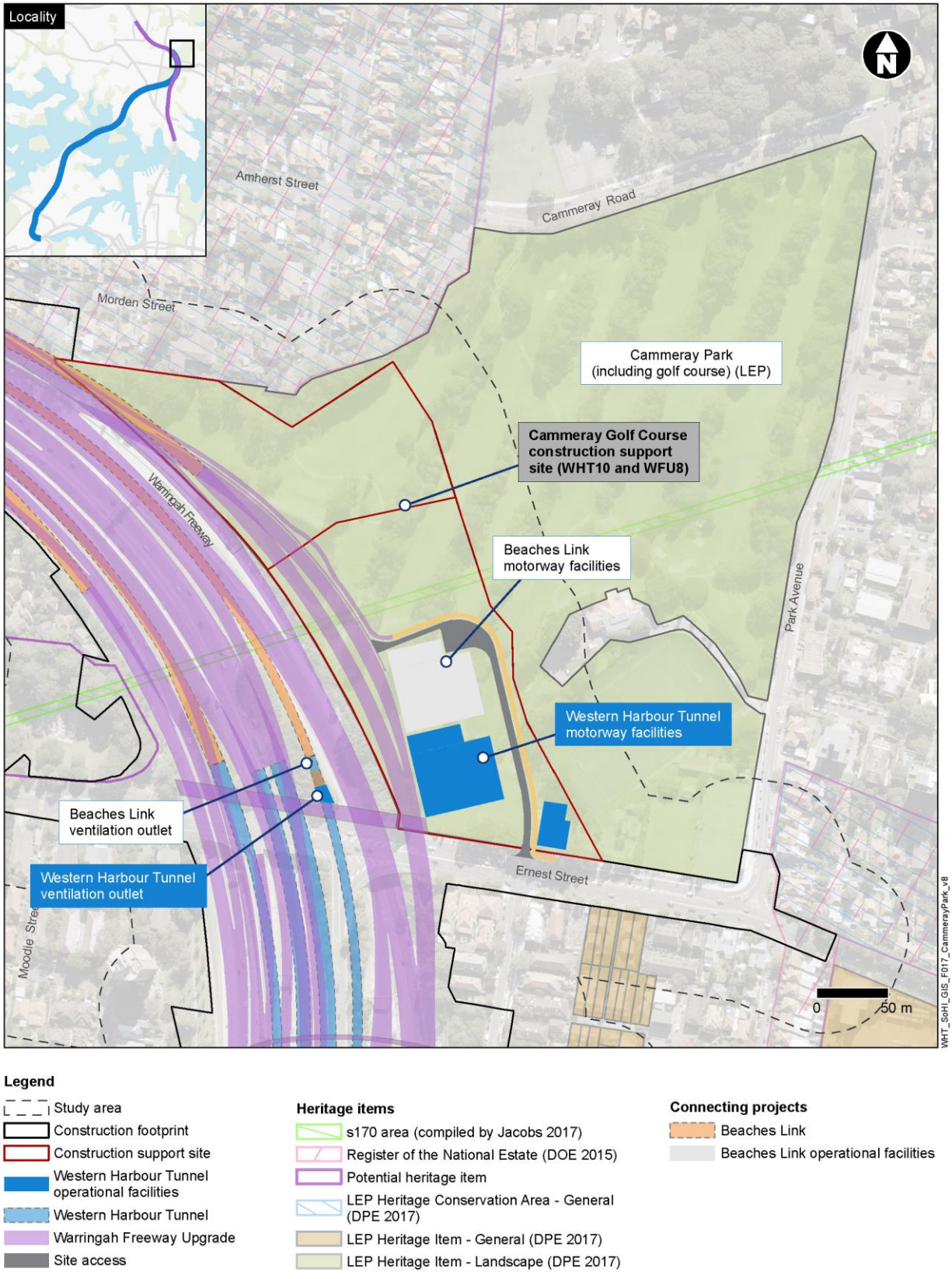


Figure 5-24 : Item 14 Cammeray Park (including Golf Course)

5.4.15 Item 15: Cammeray Conservation Area, Cammeray

5.4.15.1 Site details

The Cammeray Conservation Area is bounded by Carter Street, the Warringah Freeway to the south, Warringah Road to the east, and Miller Street properties to the west. The heritage item is listed on the North Sydney Local Environmental Plan 2013, and the Register of the National Estate, and is of local significance. See Appendix A for full site description, photographs and significance assessment.

There are no known or suspected areas of archaeological potential within the heritage item boundary to be impacted by the project, therefore no further archaeological investigations are proposed.

5.4.15.2 Proposed works

Works associated with the project would occur within the heritage conservation area. Properties within the construction footprint would be demolished, and residual land would be made available for future uses consistent with the land use zoning (residential). Some buildings with the heritage conservation area would also be eligible for at-property treatment for operational traffic noise.

Key components of the project in the vicinity of the heritage item include:

- The Cammeray Golf Course construction support sites (WHT10/WF8). This includes temporary access off the Warringah Freeway and the installation of temporary lights at Ernest Street
- Upgrade and integration works along the Warringah Freeway, including the widening of the freeway, a new Miller Street/Brook Street entry on ramp bridge and adjustments to shared paths in the vicinity of the heritage conservation area
- A permanent noise barrier would be provided along the boundary of the Warringah Freeway and Morden Street, Cammeray. The final barrier height and design (eg materials) would be determined during detailed design. This noise barrier would be built as part of Warringah Freeway Upgrade
- The motorway facilities at the Warringah Freeway, which would be built as part of Western Harbour Tunnel. The facility would be located within the existing Cammeray Golf Course site, and the ventilation outlet within the Warringah Freeway.

5.4.15.3 Impact assessment

As a residential-based heritage conservation area, the project would avoid direct impacts on the majority of the heritage conservation area. Demolition is proposed for three buildings within the Conservation Area and is not demolition of the whole heritage item. The buildings to be demolished are situated on the margins of the Conservation Area, two of which are of contributory significance, and the buildings to be demolished would equate to less than two per cent of the entire stock of contributory buildings within the Heritage Conservation Area. As such, comparative analysis to determine rarity of the demolished buildings has not been prepared in this instance.

Table 5-26 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-26: Impact assessment – Cammeray Conservation Area

Impact type	Consideration
Direct	The direct impacts associated with the project would involve the demolition of three buildings on the periphery of the heritage conservation area. The project would not impact the underlying street pattern in this area.

Impact type	Consideration
	Characteristic buildings of the conservation area are typically Federation and Edwardian Queen Ann, reflecting the predominant period of development. Of the buildings to be demolished, one is a modern addition (post 1950s build). The residual land (land in excess of operational requirements) would be made available for future uses that are permissible under the land use zoning (residential). While the project would result in the demolition of a building that contributes to the heritage conservation area, the impact of the project is localised on the periphery of the conservation area, and is a single isolated example at the end of a row previously demolished as part of previous freeway upgrade works. As such, the direct impact is considered to be minor. Prior to demolition of the buildings, an archival photographic recording of the contributory building would be carried out in accordance with the guidelines *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Council of NSW, 2006). Some properties would also have direct impacts due to at-property noise treatment. Eligibility would be confirmed during detailed design and in consultation with the landowner. This may impact on the heritage fabric of the building, if a contributory element. Should architectural noise treatment be required, this would be done in such a way to minimise heritage impacts, while preserving owner amenity. Any treatment would be sympathetic to the heritage values of the item and would be carried out in accordance with the Burra Charter (in that any changes that reduce cultural significance should be reversible). If noise treatment within a heritage building is required, the advice of a conservation architect would be sought.
Potential direct	Physical impact may occur due to the use of construction machinery and vehicles within close proximity to the heritage item. Standard construction measures (such as fencing of active construction areas and delineation of 'no-go' areas) would manage this risk.
Indirect – Visual	Views within the heritage conservation area would experience localised impacts due to the demolition of three buildings within the heritage curtilage. As this occurs on the periphery of the conservation area, and one of the buildings is not a contributing element to the heritage listing, the impact is considered to be minor. The permanent noise barrier would be located along a short section of the heritage conservation area curtilage. The final barrier height and design (eg materials) would be confirmed during detailed design, in consultation with the community and urban design considerations. While the noise barrier would introduce a new permanent element, the impact would be localised and would not obstruct view lines beyond the conservation area. As such, it is unlikely to have a significant impact on the heritage conservation area. Temporary and permanent visual impacts along the boundary of the conservation area would occur due to changes to the Cammeray Golf Course and the presence of project-related infrastructure. Landscape impacts to the golf course during construction and operation have been rated as being moderate to high, with permanent impacts to the landscape character likely to reduce as replacement planting matures over time (WSP and Arup 2020). The ventilation facility has been developed to reduce the perceived scale of the building and its integration into the surrounding context (WSP and Arup 2020). This has been achieved through a number of approaches including through the selection of material colours and finishes to reflect the open space context of Cammeray Park. Landscape treatments have been proposed to screen views from residential receivers surrounding the park. The design and treatment of the facility and outlet during detailed design would look at further refinements, as well as opportunities to provide increased screening though landscape plantings. A landscape plan that maximises an increase of tree canopy in the construction footprint within the park, where feasible, would also be developed.
Indirect – Vibration	Given the proximity of works, there is potential for vibration from surface work to exceed 2.5 millimetres per second. As such, there is a risk of damage to the heritage item, if any structures are within these vibration levels and subject to structural review of the heritage item.

Impact type	Consideration
	The management measures outlined in Section 5.2 should be considered to control and minimise vibration impacts from the construction.
Indirect - Settlement	Settlement and ground movement from tunnel excavation may cause damage to heritage items located directly above the mainline tunnels and ramps, or within the zone of influence based on geological conditions. Depending on the heritage item relative to the project, settlement modelling for this project indicates that the ground settlement levels would have a predicted maximum surface settlement of ranging from five to 10 millimetres, and a predicted maximum surface angular distortion of 1:2000 to 1:500. As such, the degree of severity to structures within the heritage item is 'very slight'. To protect the heritage item and reduce its exposure to settlement impacts, prior to and during construction the management measures summarised in Section 7.1 would be implemented to address any potential structural damage to the heritage item. Any repairs required as a result of the settlement damage, would be carried out under the guidance of a suitably qualified heritage professional.

5.4.15.4 Conclusion

The proposed works would be of small/localised scale and low intensity but would be permanent (in the case of the building to be demolished). With the implementation of the management measures described, the level of impact on the heritage conservation area would be **minor**.

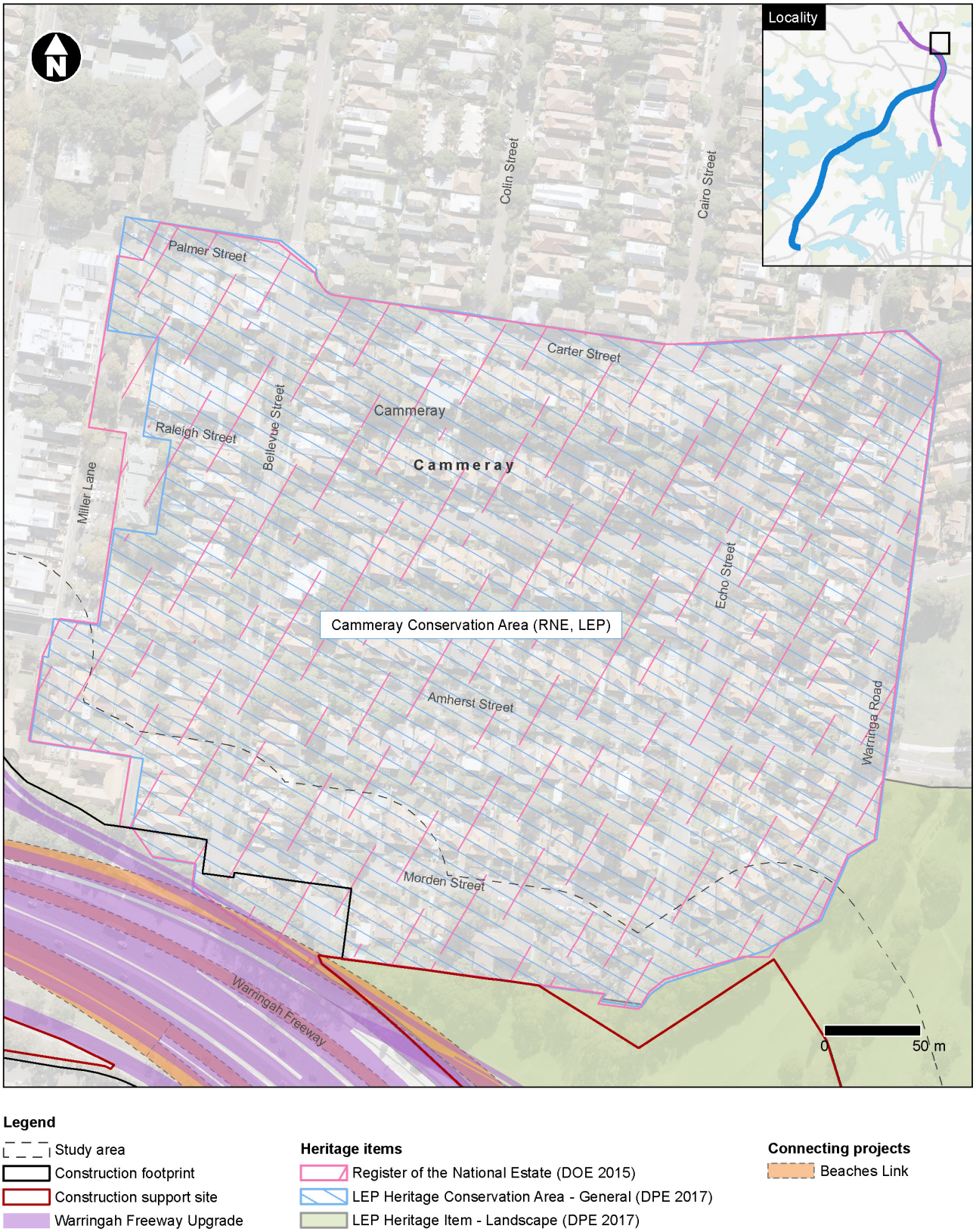


Figure 5-25 : Item 15 Cammeray Conservation Area

5.4.16 Item 16: Tarella, Cammeray

5.4.16.1 Site details

Tarella is located at 3 Amherst Street, Cammeray (Lot 101 DP 618220). The heritage item is listed on the State Heritage Register, the North Sydney Local Environmental Plan 2013, the Register of the National Estate and the National Trust of Australia (NSW) Register, and is of state significance as it meets criterion F (rarity), and G (representativeness). See Appendix A for full site description, photographs and significance assessment.

There are no known or suspected areas of archaeological potential within the heritage item boundary to be impacted by the project, therefore no further archaeological investigations are proposed.

5.4.16.2 Proposed works

As part of the Warringah Freeway Upgrade, road widening works would be carried out adjacent to the heritage curtilage, but at a lower level to the heritage item. It would include earthworks, modifications to an existing retaining wall, pavement works, drainage works and other related infrastructure.

A permanent noise barrier would be provided along the southern property boundary as part of the Warringah Freeway Upgrade. The item has also been identified as being eligible for at-property treatment for road traffic noise mitigation. The final barrier height and design, as well as eligibility for at-property treatment would be determined during detailed design.

5.4.16.3 Impact assessment

Permanent road or ancillary operational infrastructure associated with the project would avoid direct impacts to the heritage item as works would be situated outside its heritage boundary, on a lower level than that of the heritage item. As such, this would respect the heritage significance of the item.Table 5-27 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-27: Impact assessment – Tarella, Cammeray

Impact type	Consideration
Direct	Direct impacts to the heritage item would be restricted to architectural noise treatment. Eligibility would be confirmed during detailed design and in consultation with the landowner. This may impact on the heritage fabric of the item. Should architectural noise treatment be required, this would be done in such a way to minimise heritage impacts, while preserving owner amenity. Any treatment would be sympathetic to the heritage values of the item and would be carried out in accordance with the Burra Charter (in that any changes that reduce cultural significance should be reversible). If noise treatment within the heritage structure is required, the advice of a conservation architect would be sought.
Indirect – Visual	Views to the south are already obscured by an existing solid property boundary wall of around two to three metres. As such, the provision of a new noise barrier would be unlikely to result in indirect impacts to the heritage item. The final barrier height and design (eg materials) would be determined during detailed design.
Indirect – Vibration	Vibration from surface works in the vicinity of the heritage item could exceed 2.5 millimetres per second given works would be required within the road reserve, including modifications to the existing retaining wall. The management measures outlined in Section 5.2 should be considered to control and minimise vibration impacts from the construction; specifically the use of minimum working distances for vibration-intensive activities would be applied to avoid indirect impacts to the heritage item.

5.4.16.4 Conclusion

With the implementation of the management measures described, the level of impact on the heritage item would be **negligible**.

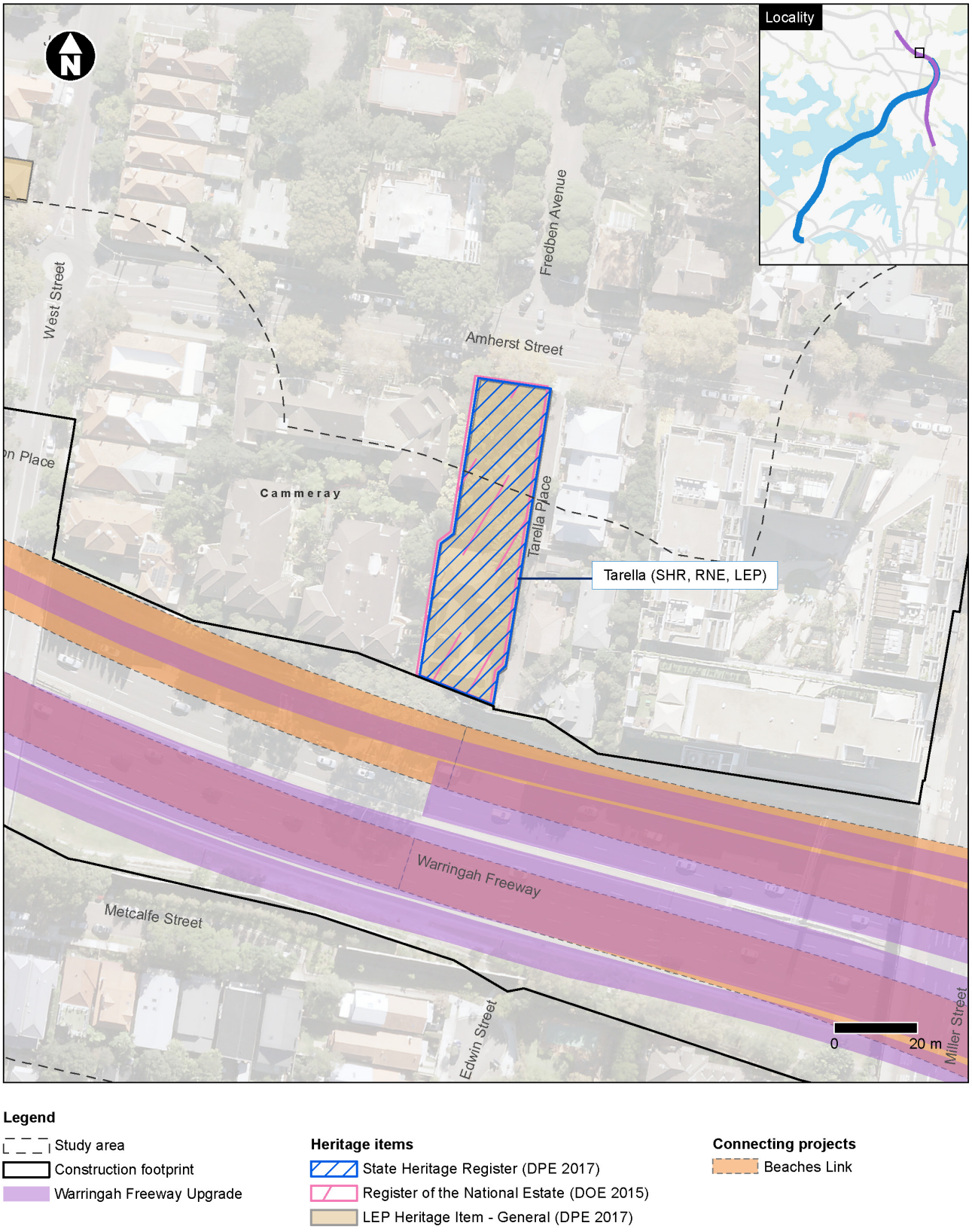


Figure 5-26 : Item 16 Tarella, Cammeray

5.4.17 Item 17: St Thomas Rest Park, North Sydney

5.4.17.1 Site details

St Thomas Rest Park is located at 250 West Street, Crows Nest (Lot 100 DP 790953 and Lot 104 DP 790981).

The heritage item is listed on the North Sydney Local Environmental Plan 2013 and the National Trust of Australia (NSW), and is of local significance as it meets criterion B (historical association). Refer to Appendix A for full site description, photographs and significance assessment.

There are areas of original interments and possibly subsurface evidence of the original layout of the cemetery within the Park, however the proposed works are situated outside the heritage boundary, and as such archaeological potential is not considered further. No further archaeological investigations are proposed.

5.4.17.2 Proposed works

As part of the Warringah Freeway Upgrade, road widening works would be carried out adjacent to the heritage curtilage but at a lower level to the heritage item. It would include earthworks, modifications to an existing retaining wall, pavement works, drainage works and other related infrastructure.

5.4.17.3 Impact assessment

Permanent road or ancillary operational infrastructure associated with the project would avoid direct impacts to the heritage item as works would be situated outside its heritage boundary, on a lower level than that of the heritage item. As such, these works would respect the heritage significance of the item.

Table 5-28 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-28: Impact assessment – St Thomas Rest Park, North Sydney

Impact type	Consideration
Direct	None.
Indirect – Visual	None. Any works would be minor and would be carried out within the existing road reserve, which is set on a lower level than that of the heritage item.
Indirect – Vibration	Vibration from surface works in the vicinity of the heritage item could exceed 2.5 millimetres per second given works would be required within the road reserve, including modifications to the existing retaining wall. The management measures outlined in Section 5.2 should be considered to control and minimise vibration impacts from the construction; specifically the use of minimum working distances for vibration-intensive activities would be applied to avoid indirect impacts to the heritage item.

5.4.17.4 Conclusion

With the implementation of the management measures described, the level of impact on the heritage item would be **negligible**, as the proposed works would be located on a lower level outside the heritage boundary.

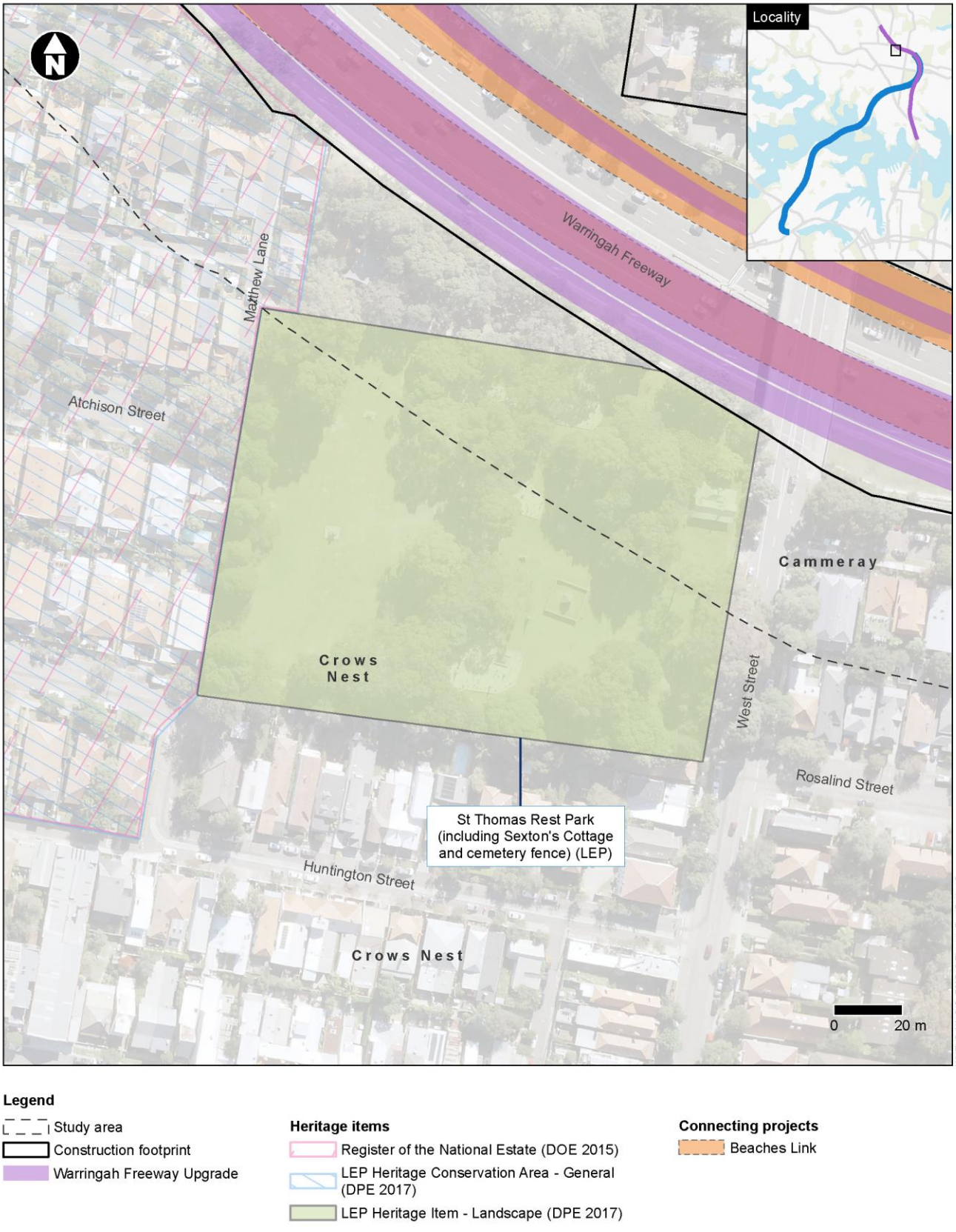


Figure 5-27 : Item 17 St Thomas Rest Park, North Sydney

5.4.18 Item 18: Holtermann Estate A Conservation Area, Crows Nest

5.4.18.1 Site details

Holtermann Estate A Conservation Area is located in Crows Nest, bounded by the southern side of Jenkins Lane, the southern side of the Warringah Freeway, the eastern boundary of 217 Chandos Street, the western boundary of St Thomas Rest Park, the western side of Devonshire Street, the northern side of Huntington Street, the eastern side of Alexander Lane, the southern side of Devonshire Street, the northern side of Albany Street, the eastern sides of Zig Zag and Ingram Lanes, the southern side of Chandos Street, the eastern side of Wheatleigh Street and the rear of properties on the northern side of Chandos Street.

The heritage item is listed on the North Sydney Local Environmental Plan 2013 and the Register of the National Estate, and is of local significance. Refer to Appendix A for full site description, photographs and significance assessment.

There are no known or suspected areas of archaeological potential within the heritage item boundary to be impacted by the project, therefore no further archaeological investigations are proposed.

5.4.18.2 Proposed works

As part of the Warringah Freeway Upgrade, road widening works would be carried out adjacent to the heritage conservation area but, at a lower level. It would include earthworks, modifications to an existing retaining wall, pavement works, drainage works and other related infrastructure.

A new noise barrier would be provided along the boundary of the conservation area that is shared with the Warringah Freeway road reserve. The properties within the conservation area have also been identified as being eligible for architectural noise treatment for road traffic noise mitigation. The final barrier heights and design, as well as eligibility for at-property treatment would be determined during detailed design.

5.4.18.3 Impact assessment

Permanent road or ancillary operational infrastructure associated with the project would avoid direct impacts to the heritage item as works would be situated outside its heritage boundary, on a lower level than that of the heritage item. As such, these works would respect the heritage significance of the item.

Demolition is proposed for one building within the Heritage Conservation Area, and is therefore not demolition of the whole heritage item. The building to be demolished is situated on the margins of the Heritage Conservation Area, is of no contributory significance, and the building to be demolished would equate to less than one per cent of the entire stock of contributory buildings within the Heritage Conservation Area. As such, comparative analysis to determine rarity of the demolished buildings has not been prepared in this instance.

Table 5-29 outlines the following aspects of the project that could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-29: Impact assessment – Holtermann Estate A Conservation Area, Crows Nest

Impact type	Consideration
Direct	Demolition is proposed for one building within the Heritage Conservation Area which would be permanent and irreversible. An archival photographic recording of the heritage item would be carried out, in accordance with the guidelines *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Council of NSW, 2006). A number of residences within the conservation area have been identified as being eligible for architectural noise treatment. Eligibility would be confirmed during detailed design and in

Impact type	Consideration
	consultation with the landowner. This may impact on the heritage fabric of the buildings that contribute to the values of the heritage conservation area. Should architectural noise treatment be required, this would be done in such a way to minimise heritage impacts, while preserving owner amenity. Any treatment would be sympathetic to the heritage values of the building and would be carried out in accordance with the Burra Charter (in that any changes that reduce cultural significance should be reversible). If noise treatment within the heritage building is required, the advice of a conservation architect would be sought.
Indirect – Visual	Negligible. Only views to or across the Warringah Freeway would be impacted by the proposed noise barrier. The final barrier height and design (eg materials) would be determined during detailed design.
Indirect – Vibration	Vibration from surface works in the vicinity of the heritage item could exceed 2.5 millimetres per second given works would be required within the road reserve, including modifications to the existing retaining wall. The management measures outlined in Section 5.2 should be considered to control and minimise vibration impacts from the construction; specifically the use of minimum working distances for vibration-intensive activities would be applied to avoid indirect impacts to the heritage item.
Indirect - Settlement	Settlement and ground movement from tunnel excavation may cause damage to heritage items located directly above the mainline tunnels and ramps, or within the zone of influence based on geological conditions. Depending on the heritage item relative to the project, settlement modelling for this project indicates that the ground settlement levels would have a predicted maximum surface settlement of ranging from 10 to 15 millimetres, and a predicted maximum surface angular distortion of less than 1:2000. As such, the degree of severity to structures within the heritage item is 'slight'. To protect the heritage item and reduce its exposure to settlement impacts, prior to and during construction the management measures summarised in Section 7.1 would be implemented to address any potential structural damage to the heritage item. Any repairs required as a result of the settlement damage, would be carried out under the guidance of a suitably qualified heritage professional.

5.4.18.4 Conclusion

With the implementation of the management measures described, the level of impact on the heritage item would be **negligible**.

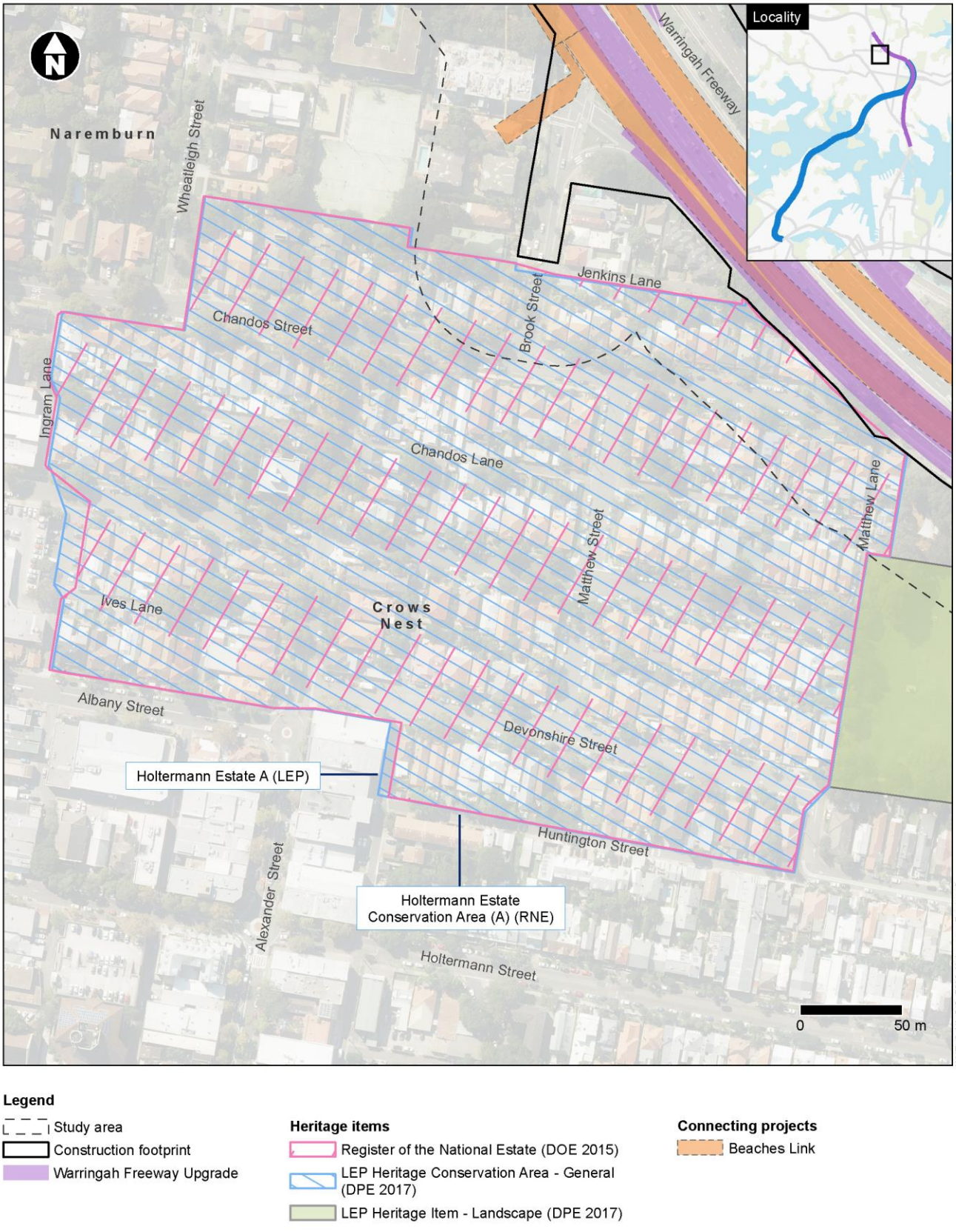


Figure 5-28 : Item 18 Holtermann Estate A Conservation Area, Crows Nest

5.4.19 Item 19: Heritage items situated above the tunnel alignment with potential settlement and vibration impacts

The following heritage items would be situated within the study area above the tunnel alignment or in proximity to cut and cover structures. Table 5-30 lists those heritage items potentially subject to settlement impacts and vibration due to tunnelling activities or surface works. As the impacts and mitigation measures for these heritage items are the same, they are assessed together as a group.

There are no known or suspected areas of archaeological potential within the heritage item boundaries to be impacted by the project, therefore no further archaeological investigations are proposed.

Table 5-30: Heritage items situated above the tunnel alignment

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
St Joseph's Catholic Church and former school, including interiors	Leichhardt Local Environmental Plan 2013	I768	A (historical) B (associative) C (aesthetic) D (social) G (representativeness)	Local	Gordon Street	Rozelle	Within 50 metres of the mainline tunnels
Hornsey Street Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C19	-	Local	-	Rozelle	Within 50 metres of the mainline tunnels
Former bank building, including interiors	Leichhardt Local Environmental Plan 2013	I742	A (historical) C (aesthetic) G (representativeness)	Local	661 Darling Street	Rozelle	Within 50 metres of the mainline tunnels
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I117	A (historical) C (aesthetic) G (representativeness)	Local	91 Beattie Street	Balmain	Within 50 metres of the mainline tunnels
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I118	A (historical) C (aesthetic) G (representativeness)	Local	93 Beattie Street	Balmain	Within 50 metres of the mainline tunnels

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
Exchange Hotel, including interiors; Exchange Hotel	Leichhardt Local Environmental Plan 2013	I116	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	94 Beattie Street	Balmain	Within 50 metres of the mainline tunnels
	Register of the National Estate	1684					Within 50 metres of the mainline tunnels
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I119	A (historical) C (aesthetic) G (representativeness)	Local	95 Beattie Street	Balmain	Within 50 metres of the mainline tunnels
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I120	A (historical) C (aesthetic) G (representativeness)	Local	97 Beattie Street	Balmain	Within 50 metres of the mainline tunnels
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I121	A (historical) C (aesthetic) G (representativeness)	Local	99 Beattie Street	Balmain	Within 50 metres of the mainline tunnels
Street trees-various species	Leichhardt Local Environmental Plan 2013	I160	A (historical) C (aesthetic)	Local	Carrington Street	Balmain	Within 50 metres of the mainline tunnels
Commercial building, including interiors	Leichhardt Local Environmental Plan 2013	I199	A (historical) C (aesthetic) G (representativeness)	Local	363-377 Darling Street	Balmain	Within 50 metres of the mainline tunnels
Balmain Courthouse and Post Office; Balmain Police Station; Balmain Post Office, including interiors;	Attorney General's Department Section 170 Heritage and Conservation Registers	3080138	A (historical) B (historical association) C (aesthetic) D (social) F (rarity) G (representativeness)	Local	366B, 368-370, 386 and 391-393 Darling Street	Balmain	Within 50 metres of the mainline tunnels
	NSW Police Service Section 170 Heritage and Conservation Registers	4180266					

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
Balmain Courthouse and Police Station, including interiors; Balmain Town Hall, including interiors; Balmain Courthouse, Police Station and Post Office; Balmain Civic Group; Post box; Former post office mail box	Leichhardt Local Environmental Plan 2013	I197					
	Leichhardt Local Environmental Plan 2013	I198					
	Leichhardt Local Environmental Plan 2013	I200					
	National Trust of Australia (NSW)	6669					
	Register of the National Estate	1693					
	Register of the National Estate	1707					
Terrace, including interiors	Leichhardt Local Environmental Plan 2013	I214	A (historical) C (aesthetic) G (representativeness)	Local	8 Evans Street	Balmain	Within 50 metres of the mainline tunnels
Terrace, including interiors	Leichhardt Local Environmental Plan 2013	I215	A (historical) C (aesthetic) G (representativeness)	Local	10 Evans Street	Balmain	Within 50 metres of the mainline tunnels
Former Masonic Hall, including interiors	Leichhardt Local Environmental Plan 2013	I253	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	27A Llewellyn Street	Balmain	Within 50 metres of the mainline tunnels
Street trees-Brush Box and *Ficus hillii* sp	Leichhardt Local Environmental Plan 2013	I254	A (historical) C (aesthetic) G (representativeness)	Local	Llewellyn Street	Balmain	Within 50 metres of the mainline tunnels

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
Street trees-Brush Box and palms	Leichhardt Local Environmental Plan 2013	I256	A (historical) C (aesthetic) G (representativeness)	Local	Macquarie Terrace	Balmain	Within 50 metres of the mainline tunnels
Rowntree Memorial	Leichhardt Local Environmental Plan 2013	I257	A (historical) B (historical association) C (aesthetic) F (rarity)	Local	Macquarie Terrace	Balmain	Within 50 metres of the mainline tunnels
Former Masonic Hall, including interiors	Leichhardt Local Environmental Plan 2013	I258	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	6 Montague Street	Balmain	Within 50 metres of the mainline tunnels
Former Masonic Hall, including interiors	Leichhardt Local Environmental Plan 2013	I259	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	8 Montague Street	Balmain	Within 50 metres of the mainline tunnels
Former Central Methodist Mission, including interiors	Leichhardt Local Environmental Plan 2013	I260	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	19 Montague Street	Balmain	Within 50 metres of the mainline tunnels
Balmain Co-op Society Limited, including interiors; Balmain Cooperative Society Building (former)	Leichhardt Local Environmental Plan 2013	I261	A (historical) B (historical association) C (aesthetic) F (rarity) G (representativeness)	Local	28-30A Montague Street	Balmain	Within 50 metres of the mainline tunnels
	Register of the National Estate	14049					

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
House, including interiors	Leichhardt Local Environmental Plan 2013	I307	A (historical) C (aesthetic) F (rarity)	Local	40 Rowntree Street	Balmain	Within 50 metres of the mainline tunnels
Former corner shop and residence, including interiors	Leichhardt Local Environmental Plan 2013	I308	A (historical) C (aesthetic) D (social) G (representativeness)	Local	45 Rowntree Street	Balmain	Within 50 metres of the mainline tunnels
St John the Evangelist Anglican Church, including interiors	Leichhardt Local Environmental Plan 2013	I522	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	125 Birchgrove Road	Birchgrove	Within 50 metres of the mainline tunnels
	Register of the National Estate	59845					
Terrace house, including interiors	Leichhardt Local Environmental Plan 2013	I531	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	9 Cove Street	Birchgrove	Within 50 metres of the mainline tunnels
Terrace house, including interiors	Leichhardt Local Environmental Plan 2013	I532	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	11 Cove Street	Birchgrove	Within 50 metres of the mainline tunnels
Terrace house, including interiors	Leichhardt Local Environmental Plan 2013	I533	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	13 Cove Street	Birchgrove	Within 50 metres of the mainline tunnels
Terrace house, including interiors	Leichhardt Local Environmental Plan 2013	I534	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	15 Cove Street	Birchgrove	Within 50 metres of the mainline tunnels

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
Birchgrove Park	Leichhardt Local Environmental Plan 2013	I535	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	Grove Street	Birchgrove	Within 50 metres of the mainline tunnels
House, 'Leopoldville', including interiors	Leichhardt Local Environmental Plan 2013	I547	A (historical) C (aesthetic) G (representativeness)	Local	14 Louisa Road	Birchgrove	Within 50 metres of the mainline tunnels
Remnants of Birchgrove House	Leichhardt Local Environmental Plan 2013	I550 I551	A (historical) E (research potential)	Local	65 and 67 Louisa Road	Birchgrove	Within 50 metres of the mainline tunnels
House, 'Douglas', including interiors	Leichhardt Local Environmental Plan 2013	I552	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	76 Louisa Road	Birchgrove	Within 50 metres of the mainline tunnels
House, 'Geierstein', including interiors	Leichhardt Local Environmental Plan 2013	I553	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	85 Louisa Road	Birchgrove	Within 50 metres of the mainline tunnels
House, 'Carlowrie', including interiors	Leichhardt Local Environmental Plan 2013	I554	A (historical) C (aesthetic) G (representativeness)	Local	115 Louisa Road	Birchgrove	Within 50 metres of the mainline tunnels
Raywell	State Heritage Register Leichhardt Local Environmental Plan 2013 National Trust of Australia (NSW)	00093 I830 9456	A (historical) B (historical association) C (aesthetic) F (rarity)	State	144 Louisa Road	Birchgrove	Within 50 metres of the mainline tunnels

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
House, 'Glenarvon', including interiors	Leichhardt Local Environmental Plan 2013	I591	A (historical) B (historical association) C (aesthetic) F (rarity)	Local	1 Thomas Street	Birchgrove	Within 50 metres of the mainline tunnels
(Balmain) Birchgrove Colliery, including interiors	Leichhardt Local Environmental Plan 2013	A9	A (historical) E (research potential)	Local	2-8 Water Street	Birchgrove	Within 50 metres of the mainline tunnels
Birchgrove and Ballast Point Road Heritage Conservation Area[3]	Leichhardt Local Environmental Plan 2013	C8	-	Local	Birchgrove	Birchgrove	Within 50 metres of the mainline tunnels
Town of Waterview Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C4	-	Local	Birchgrove/ Balmain	Birchgrove /Balmain	Within 50 metres of the mainline tunnels
Beattie Street Stormwater Channel No. 15	Sydney Water Section 170 Register	4570329	A (historical) C (aesthetic) D (social) E (research potential) F (rarity) G (representativeness)	Local	Robert Street to Beattie Street	Rozelle/ Balmain	Within 50 metres of the mainline tunnels
Iron Cove Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C6	-	Local	Rozelle/ Balmain/ Birchgrove	Rozelle/ Balmain/ Birchgrove	Within 50 metres of the mainline tunnels
HMAS Waterhen, cliff face	North Sydney Local Environmental Plan 2013	I1042	F (rarity) G (representativeness)	Local	Waverton	Waverton	

[3] Other works being carried out in this Heritage Conservation Area are situated within Local Environmental Plan listed Yurulbin Park and are assessed in Section 5.4.4.

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
Former Quarantine Boat Depot	North Sydney Local Environmental Plan 2013	I1039	F (rarity)	Local	Balls head Drive	Waverton	Within 50 metres of the mainline tunnels
Oakhill	North Sydney Local Environmental Plan 2013	I1075	A (historical) B (historical association) C (aesthetic) F (rarity) G (representativeness)	Local	40 Larkin Street	Waverton	Within 50 metres of the mainline tunnels
Union, Bank and Thomas Streets	North Sydney Local Environmental Plan 2013	CA15	-	Local	McMahons Point	North Sydney	Within 50 metres of the mainline tunnels
Crows Nest Road Conservation Area; Crows Nest Road	North Sydney Local Environmental Plan 2013	CA23	-	Local	Crows Nest Road	North Sydney	Within 50 metres of the mainline tunnels
	Register of the National Estate - Indicative Place, Historic	100850					
St Thomas Anglican Church Group; St Thomas Anglican Church; St Thomas Church; St Thomas Anglican Church Memorial Hall; Memorial Hall of St Thomas; St Thomas Kindergarten Hall; St Thomas' Kindergarten Hall; St Thomas Anglican Church Rectory;	North Sydney Local Environmental Plan 2013	I0885	F (rarity) G (representativeness)	Local	Church Street McLaren Street 34 McLaren Street	North Sydney	Within 50 metres of the mainline tunnels
	North Sydney Local Environmental Plan 2013	I0886					
	North Sydney Local Environmental Plan 2013	I0887					
	North Sydney Local Environmental Plan 2013	I0888					
	National Trust of Australia (NSW)	9969					
	Register of the National Estate	2891					

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
St Thomas' Church Rectory	Register of the National Estate	2893					
	Register of the National Estate	2894					
	Register of the National Estate	2895					
	Register of the National Estate	102412					
'Torwood'	North Sydney Local Environmental Plan 2013	I0876	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	3 McLaren Street	North Sydney	Within 50 metres of the mainline tunnels
'Grahwey'	North Sydney Local Environmental Plan 2013	I0877	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	9 McLaren Street	North Sydney	Within 50 metres of the mainline tunnels
'Kelvin'	North Sydney Local Environmental Plan 2013	I0878	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	11 McLaren Street	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0879	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	12 McLaren Street	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0880	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	21-23 McLaren Street	North Sydney	Within 50 metres of the mainline tunnels

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
House	North Sydney Local Environmental Plan 2013	I0912	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	255-257 Miller Street	North Sydney	Within 50 metres of the mainline tunnels
North Sydney Council Chambers (including fountain in park adjacent to Council Chambers); North Sydney Council Chambers, Wyllie Wing	North Sydney Local Environmental Plan 2013	I0902	F (rarity) G (representativeness)	Local	200 Miller Street	North Sydney	Within 50 metres of the mainline tunnels
	North Sydney Local Environmental Plan 2013	I0903	G (representativeness)				Within 50 metres of the mainline tunnels
Shop	North Sydney Local Environmental Plan 2013	I0905	G (representativeness)	Local	232-232A Miller Street	North Sydney	Within 50 metres of the mainline tunnels
Shop	North Sydney Local Environmental Plan 2013	I0908	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	243 Miller Street	North Sydney	Within 50 metres of the mainline tunnels
Independent Theatre; The Independent Theatre	National Heritage List (Indicative only)	105905	F (rarity)	Local	269 Miller Street	North Sydney	Within 50 metres of the mainline tunnels
	North Sydney Local Environmental Plan 2013	I0914					
Gates and fence of former Crows Nest House; Gates and Fence of North Sydney Demonstration School	North Sydney Local Environmental Plan 2013	I0957	F (rarity) G (representativeness)	Local	182 and 176-186 Pacific Hwy	North Sydney	Within 50 metres of the mainline tunnels
	Register of the National Estate	2920					

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
Shop	North Sydney Local Environmental Plan 2013	I0959	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	265 Pacific Hwy	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0977	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	63 Ridge Street	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0978	A (historical) C (aesthetic) G (representativeness)	Local	81 Ridge Street	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0979	A (historical) C (aesthetic) G (representativeness)	Local	85 Ridge Street	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0980	A (historical) C (aesthetic) G (representativeness)	Local	87 Ridge Street	North Sydney	Within 50 metres of the mainline tunnels
'St Helen's'	North Sydney Local Environmental Plan 2013	I0981	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	91 Ridge Street	North Sydney	Within 50 metres of the mainline tunnels
'St Malo'	North Sydney Local Environmental Plan 2013	I0982	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	95 Ridge Street	North Sydney	Within 50 metres of the mainline tunnels

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
Wenona Girls' School Group, Wenona; Wenona Girls' School Group, Ralston House; Wenona Girls' School Group, 79 Ridge Street; Wenona Girls' School Group, 83 Ridge Street; Wenona Girls School Group, Karakatta	North Sydney Local Environmental Plan 2013	I0989	G (representativeness)	Local	182 Walker Street 184 Walker Street 79 Ridge Street 83 Ridge Street 186 Walker Street	North Sydney	Within 50 metres of the mainline tunnels
	North Sydney Local Environmental Plan 2013	I0990					
	North Sydney Local Environmental Plan 2013	I0991					
	North Sydney Local Environmental Plan 2013	I0992					
	North Sydney Local Environmental Plan 2013	I0993					
House	North Sydney Local Environmental Plan 2013	I0994	A (historical) C (aesthetic) G (representativeness)	Local	207 Walker Street	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0995	A (historical) C (aesthetic) G (representativeness)	Local	209 Walker Street	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0842	A (historical) C (aesthetic) G (representativeness)	Local	6 Hampden Street	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0843	A (historical) C (aesthetic) G (representativeness)	Local	8 Hampden Street	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0844	A (historical) C (aesthetic) G (representativeness)	Local	10 Hampden Street	North Sydney	Within 50 metres of the mainline tunnels

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
House	North Sydney Local Environmental Plan 2013	I0845	A (historical) C (aesthetic) G (representativeness)	Local	12 Hampden Street	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0846	A (historical) C (aesthetic) G (representativeness)	Local	14 Hampden Street	North Sydney	Within 50 metres of the mainline tunnels
Trewyn Terraces	North Sydney Local Environmental Plan 2013	I0906	A (historical) C (aesthetic) F (rarity) G (representativeness	Local	240 Miller Street	North Sydney	Within 50 metres of the mainline tunnels
Trewyn Terraces	North Sydney Local Environmental Plan 2013	I0907	A (historical) C (aesthetic) F (rarity) G (representativeness	Local	242 Miller Street	North Sydney	Within 50 metres of the mainline tunnels
Trewyn Terraces	North Sydney Local Environmental Plan 2013	I0909	A (historical) C (aesthetic) F (rarity) G (representativeness	Local	244 Miller Street	North Sydney	Within 50 metres of the mainline tunnels
Trewyn Terraces	North Sydney Local Environmental Plan 2013	I0910	A (historical) C (aesthetic) F (rarity) G (representativeness	Local	246 Miller Street	North Sydney	Within 50 metres of the mainline tunnels
Trewyn Terraces	North Sydney Local Environmental Plan 2013	I0911	A (historical) C (aesthetic) F (rarity) G (representativeness	Local	248 Miller Street	North Sydney	Within 50 metres of the mainline tunnels

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
House	North Sydney Local Environmental Plan 2013	I0975	A (historical) C (aesthetic) G (representativeness)	Local	49 Ridge Street	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0976	A (historical) C (aesthetic) G (representativeness)	Local	51 Ridge Street	North Sydney	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I0988	A (historical) C (aesthetic) G (representativeness)	Local	185 Walker Street	North Sydney	Within 50 metres of the mainline tunnels
McLaren Street Conservation Area; McLaren Street	North Sydney Local Environmental Plan 2013	CA19	-	Local	North Sydney	North Sydney	Within 50 metres of the mainline tunnels
	Register of the National Estate	100851					
Edward Street; Edward Street Conservation Area	North Sydney Local Environmental Plan 2013	CA17	-	Local	12-20 (even numbers only) Bay Road, 11-67 Edward Street, 2-15 Oak Street, 6 Napier Street, Oak Lane, 3-5 (Berry Street, 7-27 Riley Street	North Sydney	Within 50 metres of the mainline tunnels
	Register of the National Estate	100853					
Walker and Ridge Streets; Walker/Ridge Streets Conservation Area	North Sydney Local Environmental Plan 2013	CA20	-	Local	North Sydney	North Sydney	Within 50 metres of the mainline tunnels
	Register of the National Estate	100852					

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
Balls Head Reserve	North Sydney Local Environmental Plan 2013	I1041	F (rarity)	Local	Balls Head Drive	Waverton	Within 50 metres of the mainline tunnels
Balls Head Foreshore Relics Group, ring bolt;	North Sydney Local Environmental Plan 2013	I1044	F (rarity) G (representativeness)	Local	Balls Head Drive	Waverton	Within 50 metres of the mainline tunnels
Balls Head Foreshore Relics Group, ring bolt and iron screen;	North Sydney Local Environmental Plan 2013	I1045					
Balls Head Foreshore Relics Group, remains of windlass spindle;	North Sydney Local Environmental Plan 2013	I1046					
Balls Head Foreshore Relics Group, steps to former harbour pool;	North Sydney Local Environmental Plan 2013	I1047					
Balls Head Foreshore Relics Group, Uncle Tom's Cabin	North Sydney Local Environmental Plan 2013	I1048					
Waverton Railway Station group (including booking office, hut and tunnel)	North Sydney Local Environmental Plan 2013	I1051	A (historical) C (aesthetic) D (social) F (rarity) G (representativeness)	Local	Bay Road	Waverton	Within 50 metres of the mainline tunnels
	National Trust of Australia (NSW)	9423					
House	North Sydney Local Environmental Plan 2013	I1053	-	Local	22 Carr Street	Waverton	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I1054	-	Local	24 Carr Street	Waverton	Within 50 metres of the mainline tunnels
House	North Sydney Local Environmental Plan 2013	I1056	A (historical) C (aesthetic) G (representativeness)	Local	47 Carr Street	Waverton	Within 50 metres of the mainline tunnels

Heritage item name	Heritage register	Listing	Criteria	Significance	Address	Suburb	Activities within 50 metres of the project
Flat building	North Sydney Local Environmental Plan 2013	I1080	-	Local	26 Toongarah Road	Waverton	Within 50 metres of the mainline tunnels
Priory Road Conservation Area	North Sydney Local Environmental Plan 2013	CA24	-	Local	Waverton	Waverton	Within 50 metres of the mainline tunnels

5.4.19.1 Proposed works

In the vicinity of heritage items listed in Table 5-30, the project would involve the excavation of two main alignment tunnels at a depth of about 30-80 metres, with the minimum depth being under Sydney Harbour and the maximum depth within Rozelle, using road headers.

5.4.19.2 Impact assessment

Table 5-31: Impact assessment – Heritage items situated above the tunnel alignment

Impact type	Consideration
Indirect – Vibration	Vibration from tunnelling activities would be below 2.5 millimetres per second, and therefore there would be no impacts on heritage items.
Indirect - Settlement	Settlement and ground movement from tunnel excavation may cause damage to heritage items located directly above the mainline tunnels and ramps, or within the zone of influence based on geological conditions. Depending on the heritage item relative to the project, settlement modelling for this project indicates that the ground settlement levels would have a predicted maximum surface settlement of ranging from less than 10 millimetres to 25 millimetres, and a predicted maximum surface angular distortion of less than 1:2000 to 1:500. As such, the degree of severity to structures within the heritage item is 'slight' to 'very slight'. To protect the heritage item and reduce its exposure to settlement impacts, prior to and during construction the management measures summarised in Section 7.1 would be implemented to address any potential structural damage to the heritage item. Any repairs required as a result of the settlement damage, would be carried out under the guidance of a suitably qualified heritage professional.

5.4.19.3 Conclusion

With the implementation of the management measures described, the level of impact on the heritage items would be **negligible**, as the settlement modelling indicates that impact upon structures would be 'very slight' or 'slight'.

6. Assessment of cumulative impacts

6.1 Introduction

Cumulative impacts occur when impacts from the project interact or overlap with impacts from other projects and potentially result in a larger overall impact; and also when minor impacts on the overall heritage resource of the broader region add up to an eventual greater loss. Cumulative impacts may also occur when projects are constructed consecutively, resulting in construction fatigue for local receivers.

Relevant projects were identified based on criteria including location overlapping or adjacent to the current project, timeframe for construction overlapping or recently completed, size and scale of impacts, and status as approved or under statutory environment impact assessment. Chapter 27 (Cumulative impacts) of the environmental impact statement provides details of the methodology for the identification of relevant projects. This section provides an assessment of the heritage impacts of relevant projects, and the relationship of these impacts to the current project.

This cumulative impact assessment is based on the broad requirements set out by the Secretary's environmental assessment requirements. There are currently no NSW or Australian Government guidelines on carrying out cumulative impact assessments.

6.2 Projects assessed

6.2.1 Sydney Metro City and Southwest – Chatswood to Sydenham

The Chatswood to Sydenham component of Sydney Metro City and Southwest involves the construction and operation of a 15.5 kilometre metro line from Chatswood, under Sydney Harbour and through Sydney's CBD out to Sydenham. Components of the project relevant to this assessment include:

- Victoria Cross Station
- Blues Point temporary construction site
- Barangaroo Station.

6.2.1.1 Victoria Cross Station

The Sydney Metro project would impact on 11 heritage items of local heritage significance, with major adverse impact from complete demolition of a shop at 187 Miller Street, and moderate impact from the removal and reinstatement of one of the group of North Sydney bus shelters. The remainder of the impacts are of a minor nature (vibration, demolition of an adjoining structure, views and vistas from adjacent or nearby construction. There is also potential for up to major impact on archaeological remains related to 19th century to early 20th century residential and commercial development.

6.2.1.2 Blues Point temporary construction site

The Sydney Metro project would impact on seven heritage items, with moderate direct impact from the removal and reinstatement of one of the group of North Sydney bus shelters. The remainder of the impacts are of minor to moderate impact due to excavation of a tunnel support shaft, and temporary impacts on views and vistas until finalisation of the works and reinstatement of the construction site. The potential archaeological remains in this location are likely to be subject to major impact where substantial shaft excavation is proposed.

6.2.1.3 Barangaroo Station

The Sydney Metro project would impact on 14 heritage items, with minor direct impact on Warehouses and Dalgety's Bond Store Group (vibration), and Millers Point and Dawes Point Village Precinct (excavation for station); and minor to moderate indirect impact on views and vistas for Millers Point and Dawes Point Village Precinct, and Bridges over Hickson Road (temporary). The potential archaeological remains in this location are likely to be subject to major impact due to the complete removal from excavation for the cut-and-cover station.

6.2.1.4 Overall impact

For the areas of overlap or proximity for the Sydney Metro project, there are no additional heritage items subject to impact from the current project. There are two North Sydney bus shelters subject to moderate direct impacts, but their reinstatement would retain their heritage significance. The current project would potentially impact a further three of the North Sydney bus shelters, however protective measures are able to reduce this impact to negligible.

6.2.2 M4-M5 Link

The M4-M5 Link project includes an interchange at Rozelle with provision for a future connection to the Western Harbour Tunnel and Beaches Link. It also includes an underground tunnel from the Rozelle Interchange to Victoria Road near Iron Cove Bridge, known as the 'Iron Cove Link'.

The M4-M5 Link project will have direct impacts on four heritage items in the Rozelle area, including full demolition of Stormwater Canal, 'Cadden Le Messurier' on Lilyfield Road, Former Hotel on Lilyfield Road; and partial demolition of the Whites Creek Stormwater Channel No 95. The M4-M5 Link would also have impacts on the setting and minor curtilage encroachment on the White Bay Power Station. There are a further five heritage items subject to indirect impacts from M4-M5 Link, including impacts on setting, vibration, settlement, temporary visual impacts and demolition of non-contributory building in a heritage conservation area. Additionally, there are several structures in the Rozelle Rail Yards identified as potential heritage items which are subject to major direct impact by the M4-M5 Link project, including Victoria Road Bridge, Sandstone Cutting, and the Former White Bay Hotel site. This would have the cumulative impact of demolishing more listed and potential local heritage items at the Rozelle Rail Yards, in addition to demolition of items of potential local heritage significance from the Rozelle Rail Yards site management works (2016). The M4-M5 Link project will also have major adverse impact on archaeological remains due to deep excavation in the eastern section of the Rozelle Rail Yards.

There would be no additional impact from the current project on heritage items impacted by M4-M5 Link. In the vicinity of Rozelle, there would only be additional negligible impacts on the Glebe and Wentworth Park Railway Viaducts, which would be able to be managed through design and having the works occur outside the heritage boundary.

6.2.3 Glebe Island concrete batching plant

This proposal is for a concrete batching plant at Glebe Island Port facility, supported by new aggregate shipping terminal facilities with the capacity to manage up to one million tonnes of concrete aggregates per annum.

The proposed works would have an impact on views to the Glebe Island Bridge from Sommerville Road, and from the Balmain area. The potential for archaeological remains of the first Glebe Island Bridge may be impacted by excavation work for the proposal.

The proposed works for the Glebe Island concrete batching plant is situated immediately adjacent to the current project. There are negligible impacts from the current project on the Glebe Island Bridge through prevention of entry by any construction vehicles into the heritage curtilage. The archaeological remains of the first Glebe

Island Bridge appear unlikely to extend into the current project area. There would be no additional impact from the current project on heritage items impacted by the Glebe Island concrete batching plant.

6.2.4 Northern Beaches Bus Rapid Transit

The B-Line program is a new bus service and a series of roadworks and infrastructure improvements which are currently under construction. The 31km route will feature 11 stops extending from Newport on the Northern Beaches through Lower North Shore and ending in Wynyard. Bus stops and routes relevant to this assessment include Mosman and Neutral Bay.

One heritage item – one of the group of North Sydney bus shelters – would be directly impacted due to removal and relocation in a place close to its current location, as part of the Spit Bridge to Neutral Bay B-Line Road Infrastructure works. Therefore, the impact on this heritage item would be temporary and negligible. A further 16 heritage items are within close proximity to the proposed works, however the potential for impacts to these are assessed as being able to be managed.

For the areas of proximity for the B-Line project, there are no additional heritage items subject to impact from the current project. There is one North Sydney bus shelter subject to direct impact, but its reinstatement would retain their heritage significance. The current project will potentially impact a further three of the North Sydney bus shelters, however protective measures are able to reduce this impact to negligible.

6.2.5 Other relevant projects

The other relevant projects identified in Chapter 27 (Cumulative Impacts) of the environmental impact statement were assessed as not having impacts on heritage significance, or else having negligible, acceptable or minimal impacts on heritage, and therefore are not summarised further.

6.3 Conclusion

The current project traverses' areas of Sydney with a high concentration of heritage items. The project would have major impact on only one heritage item, moderate impact on one heritage item, minor impact on seven heritage items, and the remainder being subject to only negligible impacts. Given the extensive nature of heritage places in the project area, this level of impact is relatively minor. Much of the impact has been minimised through the subsurface tunnelling of the project through these highly dense heritage areas. Therefore, the level of cumulative impact created by the current project where it insects with other major projects, is low.

7. Management of impacts

7.1 General management measures

7.1.1 General construction management

Management measures will be implemented during construction to manage potential impacts to items of heritage significance from construction works in the vicinity of heritage items. This includes selection of construction equipment to minimise vibration, and delineation of exclusion areas to avoid inadvertent works occurring within the curtilage of heritage items.

Construction activities will be conducted in a manner to ensure vibration levels do not exceed 2.5 millimetres per second at non-Aboriginal heritage sites, where feasible and reasonable.

Where there is risk for the 2.5 millimetres per second threshold to be exceeded at the heritage item, structural condition assessments will be conducted at the heritage item to determine appropriate mitigation measures or monitoring approaches that will be implemented during vibration-intensive work.

7.1.2 Discovery of historical heritage materials, features or deposits

If at any time during construction of the project, historical heritage materials, features and/or deposits are found, the Roads and Maritime *Standard Management Procedure: Unexpected Heritage Items* (Roads and Maritime,2015) will be implemented.

7.1.3 Discovery of human remains

In the event that construction of the project reveals possible human skeletal material (remains), Roads and Maritime *Standard Management Procedure: Unexpected Heritage Items* (Roads and Maritime,2015) will be implemented. These guidelines have been developed in consultation with the Department of Premier and Cabinet (Heritage) (formerly Office of Environment and Heritage) and are consistent with the requirements of the *Skeletal Remains: Guidelines for Management of Human Skeletal Remains under the Heritage Act* (Heritage Office, 1998).

7.1.4 Heritage induction training

Non-Aboriginal historical heritage awareness training will be provided for contractors prior to commencement of construction works to ensure understanding of potential heritage items that may be impacted during the project, and the procedure required to be carried out in the event of discovery of historical heritage materials, features or deposits, or the discovery of human remains.

7.1.5 Heritage interpretation strategy

An overarching Heritage Interpretation Strategy for non-Aboriginal terrestrial and maritime heritage of the study area will be prepared during detailed design. This will include a broad framework that sets out the key interpretative themes and data that have been generated and will identify communication strategies. Detailed heritage interpretation plans for specific sectors will be prepared during detailed design to specify how the recommendations within the Strategy will be implemented.

7.1.6 At-property treatment

Should at-property treatment be required at premises that are heritage listed, this will be carried out in a manner to minimise heritage impacts and advice of a heritage conservation architect will be sought prior to carrying out the works. Any treatment will be sympathetic to the heritage values of the item and will be carried out in accordance with Burra Charter principles of reversibility and minimising unnecessary impact.

7.1.7 Settlement

Building/structure condition surveys will be carried out at heritage items as applicable prior to commencement of construction within the zone of influence of tunnel settlement (for example within the five millimetre predicted surface settlement contour and within 50 metres of surface works). Any impacts from settlement caused by the project will be rectified to the condition prior to construction works. Any repairs required as a result of the settlement damage, will be carried out under the guidance of a suitably qualified heritage professional.

7.2 Site-specific management measures

The following impact mitigation and management measures will apply at specific sites that have been identified as being subject to impact due to the activities associated with construction of the project. Details of the management and mitigation measures for each direct or indirect impact are provided in the Statements of Heritage Impact (Section 5.4).

7.2.1 Archival recording

Archival recording will be carried out in accordance with the *Photographic Recording of Heritage Items Using Film or Digital Capture* guideline for the following items:

- Item 2: The Valley Heritage Conservation Area, Rozelle and Balmain
- Item 4: Yurulbin Park, Birchgrove
- Item 6: Woodleys shipyard, Waverton
- Item 7: BP site, Waverton
- Item 9: North Sydney Bus Shelters
- Item 9: St Leonards Park (including W. Tunks Memorial Fountain, War Memorial, and North Sydney Oval), North Sydney
- Item 13: Cammeray Park (including Golf Course), Cammeray
- Item 14: Cammeray Conservation Area, Cammeray.

Archival recording will be completed prior to any works that have the potential to impact upon the items, and deposited with appropriate stakeholders as determined during detailed design (eg local councils).

7.2.2 Archaeological research design and methodology

A detailed research design and methodology has been prepared in accordance with *Archaeological Assessments: Archaeological Assessment Guidelines* (NSW Heritage Office 1996a) to support the proposed mitigation measures for archaeological investigation for the following sites:

- Item 4: Yurulbin Park, Birchgrove (Appendix B)
- Item 7: BP site, Waverton – for the land-based components of the site (Appendix C).

Archaeological investigations will be completed prior to any works that have the potential to impact upon the potential archaeology of heritage items. The archaeological research design and methodologies are presented in Appendix B and Appendix C.

Should design of Berrys Bay construction support site (WHT7) not avoid impacts to maritime heritage associated with Woodleys Shipyard (Item 6) or BP Site (Item 7), archaeological investigations would also be carried out for this site, following preparation of an archaeological assessment, research design and

methodology in consultation with the Department of Premier and Cabinet (Heritage) (refer to Technical working paper: Maritime heritage (Cosmos Archaeology, 2020)).

7.2.3 Item 4 – Yurulbin Park

To mitigate the physical impacts to stone flagging, paths, stone walls and steps elements, a condition survey will be completed prior to works commencing, and opportunities to temporarily remove, store and reinstate these elements on completion of construction work will be investigated and implemented if these elements need to be temporarily removed.

7.2.4 Item 6 – Woodleys shipyard

Should heritage buildings be changed externally, such as by adding cladding or extensions, further assessment would be carried out to identify approaches to avoid heritage fabric and/or minimise impact on heritage significance. This would include consideration of how works can be carried out to facilitate subsequent adaptive reuse or to minimise incremental impacts.

7.2.5 Item 7 – BP site

Following completion of construction, the construction support site WHT7 would be removed, and the heritage item would be rehabilitated and returned to an equivalent state as soon as practicable. Reinstatement of the site would include investigating the adaptive reuse of the site for the wider community.

Adjustments to the location of temporary structures to avoid direct impacts on heritage components or areas of archaeological potential would be considered, where reasonable and feasible. This includes changes to the location of the wharf or barge shed structures (refer to Technical working paper: Maritime heritage (Cosmos Archaeology, 2020)), or through the selection of construction methods that avoid the need for excavation.

7.2.6 Item 8 – Sydney Harbour Bridge, approaches and viaducts (road and rail), Milsons Point/Dawes Point

Should government elect to introduce northbound tolls, a toll gantry is required at the Lavender Street exit. The Lavender Street toll gantry would be designed to avoid direct impact with the heritage item and to minimise visual obstruction of the Lavender Street arch in consultation with relevant stakeholders.

The following policies from the *Sydney Harbour Bridge Conservation Management Plan 2007* would be complied with*:*

- *Policy 13 - Integrity of Original Design* and *Policy 23—Use of Approaches*. The portion of the heritage item impacted by construction support site WFU1, will be documented during a pre-construction survey and the heritage item will be monitored by a qualified heritage consultant during the site installation.
- *Policy 11 - Maintaining Key Views of the Sydney Harbour Bridge in its Setting*. Construction support site WFU1 will be designed to minimise obscuring or detracting from the views of the Sydney Harbour Bridge.
- The Heritage Council of NSW will be consulted on all works within the State Heritage Register or National Heritage Register listed curtilage of the Sydney Harbour Bridge, as well as any that are visually or physically proximate, to ensure that heritage impacts are minimised.

7.2.7 Item 9 – North Sydney bus shelters

Relocated shelters will be temporarily removed, stored and relocated on completion of construction work with council.

7.2.8 Item 12 – ANZAC Park, Cammeray

Impacts to areas of archaeological potential will be avoided by the project. In the event that works are required in the location of the air raid trenches, an archaeological excavation will be required with a test excavation methodology prepared in consultation with relevant stakeholders prior to the disturbance of this area.

7.2.9 Item 14 – Cammeray Golf Course

Prepare a thematic heritage study of golf courses in Sydney, for the region north of the Sydney Harbour. This study would assist in identifying other potential heritage items in the region that would demonstrate the same or similar significance as the Cammeray Golf Course, therefore reducing the overall impact on that type of heritage item.

8. References

Australia ICOMOS 2013 *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 2013*. Burwood, Victoria: Australia ICOMOS Incorporated.

Australian Bureau of Statistics 2001 *2001 Census QuickStats: Kirribilli*. Retrieved 28 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2001/quickstat/SSC12286.

Australian Bureau of Statistics 2006 *2006 Census QuickStats: Naremburn*. Retrieved 24 October from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2006/quickstat/SSC11701.

Australian Bureau of Statistics 2011a *2011 Census QuickStats: Balmain*. Retrieved 23 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/SSC10090.

Australian Bureau of Statistics 2011b *2011 Census QuickStats: Cammeray*. Retrieved 27 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/SSC10443.

Australian Bureau of Statistics 2011c *2011 Census QuickStats: Kirribilli*. Retrieved 27 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/SSC11270.

Australian Bureau of Statistics 2011d *2011 Census QuickStats: Milsons Point*. Retrieved 27 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/SSC11545.

Australian Bureau of Statistics 2011e *2011 Census QuickStats: Naremburn*. Retrieved 24 October from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/SSC11684.

Australian Bureau of Statistics 2011f *2011 Census QuickStats: Neutral Bay*. Retrieved 27 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/SSC11708.

Australian Bureau of Statistics 2011g *2011 Census QuickStats: North Sydney*. Retrieved 27 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/SSC11764.

Australian Bureau of Statistics 2011h *2011 Census QuickStats: Waverton*. Retrieved 27 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/SSC12445.

Australian Bureau of Statistics 2016a *2016 Census QuickStats: Balmain*. Retrieved 23 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC10164.

Australian Bureau of Statistics 2016b *2016 Census QuickStats: Cammeray*. Retrieved 27 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC10778.

Australian Bureau of Statistics 2016c *2016 Census QuickStats: Kirribilli*. Retrieved 27 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC12173.

Australian Bureau of Statistics 2016d *2016 Census QuickStats: Milsons Point*. Retrieved 27 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC12629.

Australian Bureau of Statistics 2016e *2016 Census QuickStats: Naremburn*. Retrieved 24 October from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC12898.

Australian Bureau of Statistics 2016f *2016 Census QuickStats: Neutral Bay*. Retrieved 27 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC12934.

Australian Bureau of Statistics 2016g *2016 Census QuickStats: North Sydney*. Retrieved 27 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC13010.

Australian Bureau of Statistics 2016h *2016 Census QuickStats: Waverton*. Retrieved 27 September from http://www.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC14202.

Australian Heritage Commission 2001 *Australian Historic Themes: A Framework for use in Heritage Assessment and Management*. Canberra: Commonwealth of Australia.

City of Canada Bay n.d. *The Wangal People*. Sydney: City of Canada Bay.

City of Sydney 2016a *Cammeray*. Retrieved 27 September from https://dictionaryofsydney.org/place/cammeray.

City of Sydney 2016b *Community Profile - Naremburn*. Retrieved 24 October from http://profile.id.com.au/willoughby/about?WebID=150.

City of Sydney 2016c *Rozelle Mechanics' Institute hall*. Retrieved 14 November from https://dictionaryofsydney.org/building/rozelle_mechanics_institute_hall.

Collins, D. 1804 *An Account of the English Colony in New South Wales: From Its First Settlement in January 1788, to August 1801*. London: T. Cadell and W. Davies.

Cosmos Archaeology 2020 - *Technical working paper: Maritime heritage*, Roads and Maritime Services, Sydney.

DECCW 2010 *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*, Sydney.

Department of Finance 2015 *Customs Marine Centre, Neutral Bay, NSW*, Sydney.

Department of Sustainability Environment Water Population and Communities 2013 *Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies: Significant Impact Guidelines 1.2*. Canberra: Commonwealth of Australia.

Department of the Environment 2013 *Matters of National Environmental Significance: Significant Impact Guidelines 1.1*. Canberra: Commonwealth of Australia.

ELA 2020 - *Technical working paper: Arboricultural impact assessment*. Prepared for Roads and Maritime Services, Roads and Maritime Services, Sydney.

Evans, C. 2008 *Naremburn*. Retrieved 6 October from https://dictionaryofsydney.org/entry/naremburn.

GML Heritage Pty Ltd 2015 *753-755 Darling Street, Lilyfield - Heritage Impact Statement*. Draft Report, Marango Investments, Sydney.

Godden Mackay 1993 *North Sydney Heritage Study Review 1993*. Final Report, Prepared for the North Sydney Council, Sydney.

Godden Mackay Logan 2000 *Waverton Peninsula Industrial Sites: BP, Caltex, Coal Loader, Conservation Management Plan*. Prepared for North Sydney Council, Godden Mackay Logan, with Mary Dallas, Meredith Hutton and Musecape, Sydney.

Godden Mackay Logan 2004 *Leichhardt Heritage Review: Stage 2*, Leichhardt Municipal Council, Redfern.

Godden Mackay Logan 2007 *Sydney Harbour Bridge Conservation Management Plan 2007*, Roads and Traffic Authority, Sydney.

Greenway Tenants Group n.d. *History of Greenway*. Retrieved 28 September from http://www.greenwaytg.com.au/history.html.

Heritage Council of NSW 2001 *NSW Historic Themes*. Sydney: NSW Government.

Heritage Council of NSW 2006 *Photographic Recording of Heritage Items Using Film or Digital Capture*. Sydney: NSW Government.

Hoskins, I. 2008 *Kirribilli*. Retrieved 28 September from https://dictionaryofsydney.org/entry/kirribilli.

Hoskins, I. 2010 *Waverton*. Retrieved 27 September from https://dictionaryofsydney.org/entry/waverton.

Hoskins, I. 2014 *St Thomas Rest Park Conservation Management Plan*, North Sydney Council, Sydney.

Inner West Council 2013a *Conservation Area 10 - Easton Park*. Retrieved 14 November from http://www.leichhardt.nsw.gov.au/Planning---Development/Planning-Controls--DCPs--LEPs--VPAs-/Heritage/Conservation-Area-10-Easton-Park.

Inner West Council 2013b *Conservation Area 14 - Birchgrove and Ballast Point Road*. Retrieved 23 September from http://www.leichhardt.nsw.gov.au/Planning---Development/Planning-Controls--DCPs--LEPs--VPAs-/Heritage/Conservation-Area-14-Birchgrove-and-Ballast-Point-Road.

Inner West Council 2013c *Easton Park*. Retrieved 14 November from http://www.leichhardt.nsw.gov.au/Recreation/Sporting-Grounds/Easton-Park.

Inner West Council 2013d *Our Suburbs: Balmain*. Retrieved 23 September from http://www.leichhardt.nsw.gov.au/Library/Local-History/Our-Suburbs/Balmain.

Inner West Council 2013e *Our Suburbs: Birchgrove*. Retrieved 23 September from http://www.leichhardt.nsw.gov.au/Library/Local-History/Our-Suburbs/Birchgrove.

Inner West Council 2013f *Our Suburbs: Rozelle*. Retrieved 21 September from http://www.leichhardt.nsw.gov.au/Library/Local-History/Our-Suburbs/Rozelle.

Kohen, J. n.d. *Focus on Ku-ring-gai*. Retrieved 26 September from https://www.khs.org.au/local/kuringgai.html.

LandArc Pty Limited 2002 *Willoughby Natural Heritage Register - Appendix VI: Historic Context*, Willoughby City Council, Avalon.

Latona Masterman and Associates 1981 *North Sydney Heritage Study*, Prepared for the North Sydney Municipal Council and the Department of Heritage Council of New South Wales, Woollahra.

Lawrence, J. and C. Warne 1995 *A Pictorial History of Balmain to Glebe*. Alexandria: Kingsclear Books Pty Ltd.

Lawson, H. and C.A. Roderick 1968 *Collected Verse: 1901-1909*. Sydney: Angus and Robertson.

Leichhardt Municipal Council 2002 *Leichhardt DCP Part A: A10.5 Rozelle Suburb Profile*. Sydney: Leichhardt Municipal Council.

Leichhardt Municipal Council 2003 *Leichhardt DCP Part A: A10.5 Balmain Suburb Profile*. Sydney: Leichhardt Municipal Council.

Lenehan, M. 1967 *Pioneer landowners in the Lane Cove district 1794-1796*. Sydney: Lane Cove Historical Society.

Luna Park Sydney n.d. *History*. Retrieved 27 September from http://www.lunaparksydney.com/history.

Masson, L. 2010 *North Sydney*. Retrieved 27 September from https://dictionaryofsydney.org/entry/north_sydney.

Masson, L. and I. Hoskins 2008 *Neutral Bay*. Retrieved 28 September from https://dictionaryofsydney.org/entry/neutral_bay.

Mayne-Wilson and Associates 2005 *Conservation Management Plan for Birchgrove Park, Birchgrove NSW*, Leichhardt Council, Paddington.

Monte Sant' Angelo Mercy College 2014 *Our History*. Retrieved 27 September from http://www.monte.nsw.edu.au/about-monte/our-history/.

Naremburn Progress Association 2017 *Naremburn Conservation Area*. Retrieved 24 October from http://www.naremburnprogress.org.au/about-us/about-naremburn/.

North Shore Historical Society 1994 *Historic North Sydney - Walk 1: Kirribilli from Milsons Point Railway Station*. Sydney: North Shore Historical Society.

North Sydney Council 2001 *North Sydney Heritage Leaflet 11: Independent Theatre*. North Sydney: North Sydney Heritage Centre.

North Sydney Council 2007 *North Sydney Heritage Leaflet 1: North Sydney's Aboriginal Past*. North Sydney: North Sydney Heritage Centre.

North Sydney Council 2012a *Draft North Sydney Development Control Plan 2012 - Section 2: North Sydney Planning Area*. Sydney: North Sydney Council.

North Sydney Council 2012b *Draft North Sydney Development Control Plan 2012 - Section 4: Cammeray Planning Area*. Sydney: North Sydney Council.

North Sydney Council 2012c *Draft North Sydney Development Control Plan 2012 - Section 7: Neutral Bay Planning Area*. Sydney: North Sydney Council.

North Sydney Council 2012d *Draft North Sydney Development Control Plan 2012 - Section 8: Kirribilli Planning Area*. Sydney: North Sydney Council.

North Sydney Council 2014 *Bradfield Park*. Retrieved 27 September from https://www.northsydney.nsw.gov.au/Recreation_Facilities/Parks_Reserves/Search_Parks/Bradfield_Park.

North Sydney Council 2016a *Balls Head Reserve*. Retrieved 27 September from https://www.northsydney.nsw.gov.au/Recreation_Facilities/Parks_Reserves/Search_Parks/Balls_Head_Reserve.

North Sydney Council 2016b *Cammeray Park*. Retrieved 27 September from https://www.northsydney.nsw.gov.au/Recreation_Facilities/Sports_Sportsgrounds/Sportsgrounds/Cammeray_Park.

North Sydney Council 2016c *Carradah Park*. Retrieved 27 September from https://www.northsydney.nsw.gov.au/Recreation_Facilities/Parks_Reserves/Search_Parks/Balls_Head_Reserve.

North Sydney Council 2016d *St Leonards Park*. Retrieved 27 September from https://www.northsydney.nsw.gov.au/Recreation_Facilities/Parks_Reserves/Search_Parks/St_Leonards_Park.

North Sydney Council 2016e *St. Thomas' Rest Park Plan of Management*, North Sydney Council, Sydney.

North Sydney Council 2017a *Green Park*. Retrieved 27 September from https://www.northsydney.nsw.gov.au/Recreation_Facilities/Parks_Reserves/Search_Parks/Green_Park.

North Sydney Council 2017b *Milson Park*. Retrieved 28 September from https://www.northsydney.nsw.gov.au/Recreation_Facilities/Parks_Reserves/Search_Parks/Milson_Park.

North Sydney Council 2017c *Olympic Pool*. Retrieved 27 September from https://www.northsydney.nsw.gov.au/Recreation_Facilities/Pool_Lane_9_Gym/Olympic_Pool.

North Sydney Council 2017d *Stanton Library History*. Retrieved 15 November from https://www.northsydney.nsw.gov.au/Library_Databases/Stanton_Library/History_Reports_Policies/Stanton_Library_History.

North Sydney Council n.d.-a *Estates*. Retrieved 26 September from http://www.athomeinnorthsydney.com.au/estates.html.

North Sydney Council n.d.-b *Greenway*. Retrieved 28 September from http://www.athomeinnorthsydney.com.au/greenway.html.

North Sydney Council n.d.-c *North Sydney History Walk: Far Enough Away*. North Sydney: North Sydney Heritage Centre.

North Sydney Council n.d.-d *North Sydney History Walk: From Bushland to Parkland*. North Sydney: North Sydney Heritage Centre.

North Sydney Council n.d.-e *North Sydney History Walk: From Milson to Medium Density*. North Sydney: North Sydney Heritage Centre.

North Sydney Council n.d.-f *North Sydney History Walk: Gem of the Harbour*. North Sydney: North Sydney Heritage Centre.

North Sydney Council n.d.-g *North Sydney History Walk: Waverton Peninsula*. North Sydney: North Sydney Heritage Centre.

North Sydney Council n.d.-h *Resident Action*. Retrieved 27 September from http://www.athomeinnorthsydney.com.au/residents-action.html.

North Sydney Council n.d.-i *Wollstonecraft/Berry Estate*. Retrieved 26 September from http://www.athomeinnorthsydney.com.au/berry-estate.html.

NSW Heritage Office 1996a *Archaeological Assessments: Archaeological Assessment Guidelines*. Sydney: Department of Urban Affairs and Planning.

NSW Heritage Office 1996b *NSW Heritage Manual*. Sydney: NSW Government.

NSW Heritage Office 2001 *NSW Heritage Manual: Assessing Heritage Significance*. Sydney: NSW Government.

NSW Heritage Office 2002 *NSW Heritage Manual: Statements of Heritage Impact*. Sydney: NSW Government.

NSW Heritage Office 2004 *NSW Heritage Manual: Investigating Heritage Significance (draft guideline)*. Sydney: NSW Government.

NSW Maritime 2007 *Development of Berrys Bay Maritime Precinct: Call for Registrations of Interest*, Sydney.

NSW Roads and Maritime Services 2015 *Cultural Heritage Guidelines*, Environment Branch, Roads and Maritime Services, North Sydney, NSW.

nutcote.org 2011 *May Gibbs' Nutcote: FAQs*. Retrieved from http://www.maygibbs.com.au/faqs/.

Office of Environment and Heritage 1993 *The Independent Theatre*. Retrieved 27 September from http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2180843.

Office of Environment and Heritage 2006 *Balmain Police Station*. Retrieved 14 November from http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4180266.

Office of Environment and Heritage 2007a *Balmain Courthouse and Post Office*. Retrieved 14 November from http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4180266.

Office of Environment and Heritage 2007b *Balmain Post Office*. Retrieved 14 November from http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=1940212.

Office of Environment and Heritage 2008 *Tarella*. Retrieved 14 November from http://www.environment.nsw.gov.au/heritageapp/visit/ViewAttractionDetail.aspx?ID=5045416.

Office of Environment and Heritage 2009 *Lavender Bay Railway Group*. Retrieved 27 September from http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4801022.

Office of Environment and Heritage 2010 *Raywell*. Retrieved 14 November from http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5045294.

Office of Environment and Heritage 2012a *Luna Park*. Retrieved 27 September from http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2180269.

Office of Environment and Heritage 2012b *Tarella*. Retrieved 14 November from http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5045416.

Office of Environment and Heritage 2013a *Balmain Courthouse and Police Station*. Retrieved 14 November from http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=1940213.

Office of Environment and Heritage 2013b *Yurulbin Park*. Retrieved 24 August from http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=1940572.

Office of Environment and Heritage 2016 *Balmain Town Hall*. Retrieved 14 November from http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=1940215.

Pacific Environment Limited 2020 - *Technical working paper: Air quality*, Roads and Maritime Services, Sydney.

Park, M. 2001 *Federation Faces and Places in North Sydney: A Walking Tour*. Sydney: North Sydney Council.

Park, M. 2008 *Milsons Point*. Retrieved 27 September from https://dictionaryofsydney.org/entry/milsons_point.

Phippen, A. 2008 *Ryde*. Retrieved 23 October from https://dictionaryofsydney.org/entry/ryde.

Read, S. 2016 Riverine Gardens of Sydney Waterways. In G. Poiner and S. Jack (eds), *Gardens of History and Imagination: Growing New South Wales*, pp.123-144. Sydney: Sydney University Press.

Reynolds, P. 2003 *William Balmain and John Gilchrist: Family and Property*. Balmain: Leichhardt Historical Journal Incorporated.

Roads and Maritime 2015 *Standard Management Procedure: Unexpected Heritage Items*, NSW Government, Sydney.

Roads and Maritime 2017 *WestConnex M4-M5 Link: Environmental Impact Statement*, NSW Roads and Maritime Services, NSW.

Royal Haskoning DHV 2020 *Tehcnical working paper: Navigation impact assessment*., Roads and Maritime Services, Sydney.

Russell, E. 1966 *Willoughby: a centenary history of the municipality from earliest times*. Willoughby: Council of the Municipality of Willoughby.

Slater, F. 1936 Kurraba Point. *Sydney Morning Herald*. 10 October 1936:14.

Spindler, G. 2011 *A Sydney Harbour Circle Walk 2011-12: Historical Notes and Background*: Sydney Coastal Councils Group.

Sydney Barani 2013 *Bungaree's Farm*. Retrieved 28 September from http://www.sydneybarani.com.au/bungarees-farm/.

Tanner Architects 2011 *Callan Park, Rozelle: Conservation Management Plan*. Report to Yarra Valley Water, Leichhardt Municipal Council, Darlinghurst.

The Australian Elizabethan Theatre Trust n.d. *About the Trust*. Retrieved 12 September from http://www.thetrust.org.au/.

The Independent Theatre 2016 *Welcome to the Independent Theatre*. Retrieved 12 September from http://www.theindependent.org.au/.

Thorp, W. 1990 *Leichhardt Heritage Study: Thematic History*, University of Sydney, Eastwood.

Warne, C. 2005 *Pictorial History Lower North Shore*. Alexandria: Kingsclear Books.

Wenona School 2016 *Our Heritage*. Retrieved 27 September from https://www.wenona.nsw.edu.au/different/our-heritage.

Williams, J. 2010 *Rozelle*. Retrieved 22 September from https://dictionaryofsydney.org/entry/rozelle.

Willoughby City Council n.d. *Heritage Plaques: Naremburn Public School*. Retrieved 24 October from http://www.willoughby.nsw.gov.au/your-neighbourhood/heritage/place/heritage-plaques/21/.

Willoughby City Library Services 2013 *History @ Willoughby - Fact Sheet No. 6: Naremburn*. Retrieved 24 October from www.kmc.nsw.gov.au/About_Ku-ring-gai/Land_and.../Grey-headed_Flying-fox.

Willoughby City Library Services 2014 *History @ Willoughby - Fact Sheet No. 13: Aboriginal People*. Retrieved 23 October from www.kmc.nsw.gov.au/About_Ku-ring-gai/Land_and.../Grey-headed_Flying-fox.

Willoughby District Historical Society Inc 2011a *Naremburn*. Retrieved 24 October from http://willoughbydhs.org.au/History/Suburbs/Suburbs-Naremburn.html.

Willoughby District Historical Society Inc 2011b *Northbridge*. Retrieved 24 October from http://willoughbydhs.org.au/History/Suburbs/Suburbs-Northbridge.html.

Willoughby District Historical Society Inc 2011c *Willoughby History and Heritage*. Retrieved 23 October from http://willoughbydhs.org.au/History/index.html.

Wolfe, R. 2014 *Aboriginal and Torres Strait Islander Cultural Protocol Guidelines*. Draft Report to the North Sydney Council, Sydney.

WSP and Arup 2020 *Technical working paper: Urban design, visual and landscape impact*, Roads and Maritime Services, Sydney

Appendix A. Heritage item descriptions and significance assessments

Contents

A.1 Item 1: Glebe Island Bridge, Pyrmont

Table A.1.1 : Glebe Island Bridge details

Alternative names	Location	Register	Register ID	Significance level
Glebe Island Bridge; RMS Bridge No. 61; RTA Bridge No. 61; Glebe Island Bridge, including abutments	Bank Street, Victoria Road, Pyrmont, New South Wales (NSW) 2037 James Craig Road, Rozelle, NSW 2039	State Heritage Register	01914	State
	Victoria Road, Johnstons Bay	Roads and Maritime Section 170 Register	4301666	
	Banks Street and former Victoria Road between Pyrmont and Rozelle	Register of the National Estate	15949	
		National Trust of Australia (NSW)	7749	
	c1901 pivoting bridge, including abutment	*Leichhardt Local Environmental Plan 2000*	Schedule 2	
	Blackwattle Bay	*Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*	68	

The information provided below is replicated verbatim from the State Heritage Inventory, the *Leichhardt Local Environmental Plan 2000*, the *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*, and the Register of National Estate, with any amendments or further additions included in **bold**.

A.1.1 History

Sydney was declared a city in 1842 and was concentrated in the area currently occupied by the modern **Central Business District**. In the mid-1800s, it was a mix of commerce, retail, residences, manufacturing works and factories, with the Botanic Gardens and Domain to the east, port activities to the west and north and road outlets at its southern border leading to the inner western suburbs via the Parramatta Road, which was also the beginning of the Great Western Highway. By mid-century, it had become clear that a shorter route out of the city was available, across Johnstons Bay to Glebe Island and on to Annandale.

The first Glebe Island Bridge was a private toll-bridge completed in 1862 and was a timber**-**beam viaduct with a small, one**-**arm, hand-cranked swing span tucked into the Pyrmont shore. After 30 years, this bridge was in need of extensive repairs**, so** the Colonial Government purchased the structure and the Public Works Department (PWD) began planning a replacement bridge.

The construction of the second bridge related also to a project **started** in the 1880s for the Five Bridges Route to facilitate traffic flow from the city to the northern and western suburbs of the expanding city. Bridges were to be built or replaced at Pyrmont Bay, Glebe Island, Iron Cove, Gladesville and Fig Tree (until these bridges were built, the only access to the northern shore of the **harbour** was by boat, punt or by road via Parramatta). For this project, the (old) Pyrmont Bridge and the (old) Glebe Island Bridge were purchased from their private owners and new bridges were built at Gladesville (1881), Iron Cove (1882) and Fig Tree (1885).

Once these were completed, attention turned to replacement of the Pyrmont and Glebe Island Bridges. The Sydney Morning Herald reported in September 1890:

"The Departmental Board appointed by the Minister for Public Works nearly a year ago to consider the desirability of constructing new bridges to replace the present Pyrmont and Glebe Island bridges ... has now furnished the Minister with a lengthy report on the subject. The Board has decided in favour of the construction of a new bridge adjoining the present Pyrmont Bridge. The structure recommended is an iron or steel superstructure on cast-iron cylinders, with a roadway 12ft, in width, and two 12ft. footpaths. With regard to the Glebe Island Bridge, the Board recommended the construction of a bridge close to the present one, of a character similar to the proposed Pyrmont Bridge, at a cost of (Pounds)140,000."

An international design competition for a new 'Pyrmont Bridge' was called in 1891. The Department of Public Works submitted a non-conforming design based upon a much larger bridge than specified in the design brief.

Prizes were awarded but no designs were selected**,** and the proposal was deferred, largely owing to the economic downturn of the early 1890s but also owing to different opinions **about** the best approach. The Chief Engineer for Harbour and Rivers, **C.W.** Darley, favoured the construction of a new bridge**, whereas** the Chief Engineer for Roads and Bridges, Robert Hickson, favoured the reclamation of Darling Harbour as far north as Bathurst Street and no replacement for the Pyrmont Bridge at all.

In 1894, the proposal was referred to the Parliamentary Standing Committee for Public Works (the Public Works Committee) and, reporting in June, the Committee favoured no particular scheme but recommended that, when renewal of Pyrmont and Glebe Island bridges became advisable, they should be replaced by timber structures.

On **21 November** 1894, the Public Works Committee (reformed in the interim under a new government) recommended that Pyrmont Bridge be replaced by a timber bridge with steel **swing span**, to cost (Pounds) 82,500, and that Glebe Island Bridge did not require renewal. No funds were allocated though**,** and no action resulted. By 1897, however, the Committee had reconsidered its stance and recommended the replacement of the old Glebe Island Bridge with a stone causeway and a bridge with a steel swing span, at a cost of (Pounds) 89,100. Parliament voted the funding for these works in 1898 and detailed design work **started** in the Public Works Drawing Offices.

Design of the bridges was led by Percy Allan, who had been appointed Engineer-in-Chief for bridge design in 1896. His assistant engineer was E.M. De Burgh and the junior engineers were **H.H.** Dare, **J.** Bradfield and **J.W.** Roberts, all of whom went on to have distinguished careers in public works engineering. Bradfield had charge of the team responsible for the substructure, foundations, abutments and retaining walls for both bridges. Tenders for the construction of both bridges (separate contracts) were invited in March 1899.

For both sites, Allan designed an electrically operated swing bridge, the earliest use of electrical power for this purpose in Australia. The bridges were considered very innovative at the time of their construction and attracted international attention. For the Glebe Island Bridge, the large pivot pier was founded on a nest of timber piles capped by concrete, whereas the Pyrmont pivot pier was founded on rock.

Construction **started** on the Glebe Island Bridge and Pyrmont Bridge at the same time**,** but Glebe Island involved more extensive (and time-consuming) land resumptions, extensive waterfront reclamation and the construction of an elevated causeway across Glebe Island. Over 10,000 tons of mud was dredged to establish the causeway and the fill was obtained by cutting down what was left of the hillock of Glebe Island, producing 5.3 hectares (**13** acres) of flat land for railway yards and 853 metres (2,800 feet) of deepwater frontage for wharfage. In August 1899, a large load of ballast being placed for the causeway to the new bridge slipped sideways and crushed the piles of the old bridge, rendering it unfit for anything but pedestrian traffic for the following two weeks.

Construction of the trussed swing spans at each site was by simple cantilevering out from the steel pivot ring. Where timber trusses were used for the approaches of the Pyrmont Bridge, the Glebe Island Bridge used two steel deck trusses, then stone-faced embankments to reach each shore. The use of steel trusses for the approach spans had been part of Allan's original design for the Pyrmont Bridge but the Parliamentary Standing Committee on Public Works directed that this material be replaced with timber, presumably as a cost-cutting measure. When Glebe Island Bridge was built, Allan's original specification was reinstated (perhaps owing to the use of built-up embankments and shorter approach spans, providing a more economical outcome).

The contractor for construction was **H.** McKenzie and Sons**,** and the bridge was opened on 1 July 1903 by Miss Lily See, daughter of Premier Sir John See.

The Glebe Island Bridge operated from 1903 to 1995 with little interruption and few major works, apart from maintenance, being **carried out**. In 1933, the bridge underwent an underwater upgrade, with underpinning to replace decayed piles around the central pier. In 1961, the **direct current** electricity supply from the Tramways system was shut down, as was the tramway system in Sydney. A new **alternating current** supply was obtained

from the local reticulated network and a set of rectifiers was installed in a small kiosk erected on the north-east side of the bridge. In the 1980s, the Control Cabin was burnt out and was subsequently rebuilt to the original design (NT, 2012).

The 1903 swing bridge still retains all the necessary features that make it a bridge of high heritage significance, enhanced by its "big brother" the 1902 Pyrmont Bridge at Darling Harbour. It's difficult not to talk of one without the other, being contemporary bridges with almost identical swing spans.

In 1995**,** the bridge was decommissioned**,** being made redundant with opening of the **ANZAC** Bridge.

A.1.2 Description

The Glebe Island Bridge over Johnstons Bay is an electrically operated, low-level, steel central swing-span road bridge. The central swing span is supported by a massive pivot pier, founded on a nest of timber piles capped by concrete, on which it can rotate through **90** degrees to allow passage of maritime traffic. The approach spans are two steel **decks** on stone-faced piers and stone-lined abutments. The bridge includes constructed embankments on both sides of its western approach.

The bridge has an approach span at each end of 24.7 **metres**, two main spans of 29.3 **metres** and an overall length of 108 **metres**. The roadway is 12.2 **metres** wide between kerbs and has a 1.5**-metre** wide footway on each side. The central pivot in the waterway is protected by an extensive ring of timber piles. The swing span is mounted on a steel roller track on the cylindrical stone masonry and concrete pivot pier (13.9 **metres** high and 12.9 **metres** wide) and is swung by means of a 600-volt motor. The swing spans rotate about a central vertical axis, being supported in the open position on a large**-**diameter circular nest of rollers. These spans have deck type metal trusses of Pratt geometry, with a curved lower chord providing a larger depth at the central pier. The 24.7**-metre** spans are deck type Allan timber trusses. The foundations are on piles and are finished in stone.

Traffic was controlled by lights and a pair of timber swing-gates on either end which were electronically interlocked to ensure that the bridge cannot open until the gates are closed.

The bridge includes a rare surviving operable **mercury-arc rectifier**, as well as some early silicon rectifiers, installed in 1960 when the reticulated **direct current** supply was discontinued (NT, 2012).

Both Pyrmont and Glebe Island Bridges were electrically operated and could swing in 44 seconds, much faster than contemporary bridges in the world. Pyrmont Bridge, also designed by Percy Allen, has more numerous fixed spans of timber than Glebe Island Bridge where they are of steel supplemented by stone causeways (Fraser, 1992). The swing span of Glebe Island Bridge is smaller than that of Pyrmont.

High quality Pyrmont yellow block sandstone is thought to be used for dimension stone and Pyrmont coloured sandstone on the abutment facing and causeway fill (NT, 2002).

A.1.3 Curtilage information

The boundaries are the limits of the bridge structure itself, its abutments and ramped approaches from Bank Street on the east and James Craig Road on the west.

A.1.4 Significance assessment

Table A.1.2 : Glebe Island Bridge significance assessment

Criterion	Local level
A – Historical significance	**State Heritage Register** – Glebe Island Bridge has historic significance at the state level as it demonstrates one of the earliest examples of an electrical powered bridge of its type in Australia. The Glebe Island Bridge, along with Pyrmont Bridge, both designed by Percy Allan at the turn of the century**,** were innovative in their day and attracted world-wide engineering interest, with Allan invited to present a

Criterion	Local level
	paper on the design of its older twin, the Pyrmont Bridge, to the Institution of Civil Engineers in London in 1907. The Glebe Island Bridge has been an important item of infrastructure in the history of Sydney, Australia's famous harbour city and the capital of **NSW**, for over 90 years. The bridge was a vital component of the 'five bridges' route from the city to the northern and western suburbs. The history of this crossing, going back to 1892, is closely associated with the economic and social development of Sydney at the end of the 19th century. **Section 170 Heritage and Conservation Register** – The **bridge** has high historical significance because it was one of the earliest uses of electrical power for this type of bridge in the world. It, and its neighbour the Pyrmont Bridge, are rare examples of this type of bridge in **NSW,** and **they** are still opened by electrical power in the manner designed by Percy Allan, **their** famous designer. The current structure has been an important item of infrastructure in the history of Sydney and the inner western suburbs for 90 years.
B – Historical association significance	**State Heritage Register** – Glebe Island Bridge is of **State** significance for its close associations with Percy Allan (1861-1930), a highly regarded Australian bridge designer of the late 19th and early 20th century. Percy Allan was responsible for the introduction of American timber bridge practice to NSW and designed over 500 bridges in NSW. The bridge is also associated with **J.J.C**. Bradfield (1867-1943), later known for his work on the Sydney Harbour Bridge. It is associated with the NSW Department of Public Works, a highly regarded, prolific and historically significant organisation in the history of NSW.
C – Aesthetic significance	**State Heritage Register** – Glebe Island Bridge is of **State** significance as its design and construction represented a significant technical achievement in the era that it was built. The bridge's innovative design included the size of the swing span and speed of operation; development of steel bridge truss; caisson construction; design of the swing span bearing; and use of electric power. The design of the Glebe Island Bridge represents the pinnacle of **19th** century engineering and material technology, **before** the development of locally produced modern steel. Aesthetically, the bridge is an impressive structure, sited in the middle of a wide and busy waterway, giving it landmark qualities that are apparent from numerous vantage points around Sydney Harbour. **Section 170 Heritage and Conservation Register** – Aesthetically, the **bridge** is an impressive structure presenting an attractive reminder of the past. It is sited in the middle of a wide and busy waterway, giving it landmark qualities. As such, the **bridge** has aesthetic significance. Technically, the Glebe Island Bridge has a **mercury-arc rectifier** which is an excellent, unitary example of a historically significant electrical technology which is one of the last examples in Australia still performing for the function for which it was installed. It is a key functional component within the operating system for the **State-significant** Glebe Island Bridge and is historically associated with the cessation of electrical tramway operations in Sydney (Brassil, 2011).
D – Social significance	**State Heritage Register** – The Glebe Island Bridge is valued by the Sydney community for its significant contribution to the social and commercial development of Sydney and the inner western suburbs, as demonstrated by the public statements and interest in its conservation demonstrated in the broad-ranging community consultation **carried out** for the Bays Precinct by the NSW Government (NT, 2012). **Section 170 Heritage and Conservation Register** – The Glebe Island Bridge has contributed significantly to the social and commercial development of Sydney and its inner western suburbs and was a vital component of the "short cut" route from the city to the Great Western Highway. The history of the **bridge** helps to give it a very important sense of identity to the local community.
E – Research potential	**State Heritage Register** – The bridge is a fine example of late **19th** and early **20th** century technology, and **it** is almost completely in **its** original condition. The combined structural, mechanical and electrical efficiency of the bridge established it as **the** epitome of well-designed bridge building **at** the time (DPWS, Jan 1999, p**.** 72).

Criterion	Local level
	Section 170 Heritage and Conservation Register – The **bridge** is a rare example of an electrically operated swing bridge. It was a technically sophisticated bridge structure for its time and was designed by famous **public works** bridge engineer, Percy Allen. Technically, it is a complementary structure to the already acclaimed Pyrmont Swing Bridge and has all the significant features.
F – Rarity	**State Heritage Register** – Glebe Island Bridge is of **State** significance as it is one of only two examples of an electrically operated steel swing bridge in **NSW**. It is the second oldest (after its older twin, the Pyrmont Bridge) surviving bridge across a Sydney Harbour waterway. The two bridges remain the only large, electrically operated swing spans in Australia. The **bridge** includes a rare surviving, operable **mercury-arc rectifier**, as well as some early silicon rectifiers, both of which were important early electrical technologies which have been superseded by solid-state technology. **Mercury-arc** rectifiers are now rare outside of museum situations and only a very few remain in their original context in Australia (NT, 2013). **Section 170 Heritage and Conservation Register** – It is a rare example of an electrically operated steel swing bridge in **NSW**.
G – Representativeness	**State Heritage Register** – Glebe Island Bridge is of **State** significance as it features all the significant structural and technical features of a swing-span bridge. It is an excellent example of one of the various types of opening bridges, which are the economical solution to constructing road bridges across navigable waterways, where high-level bridges are possible but unaffordable. Opening bridges have been a crucial factor in the economic development of NSW since the late **19th** century, with its high level of industrialisation but relatively low population levels on an international scale (NT, 2013). **Section 170 Heritage and Conservation Register** – It has all the significant structural and technical features of a swing bridge.

Figure A.1.1 : Glebe Island Bridge – general view – aerial (Source: Roads and Traffic Authority NSW)

Figure A.1.2 : View of Glebe Island Bridge from Rozelle, facing east

Figure A.1.3 : View of Glebe Island Bridge from Pope Paul VI Reserve, facing west-north-west

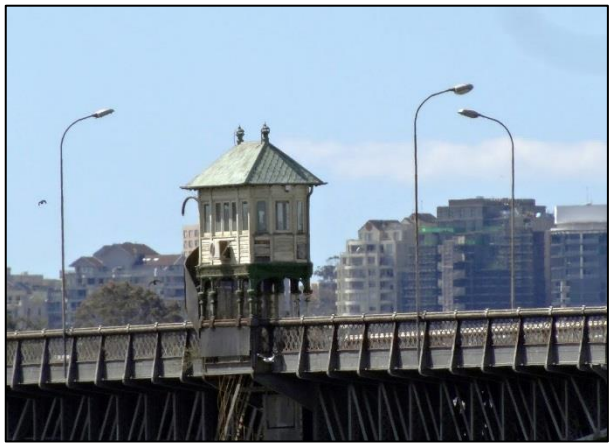


Figure A.1.4 : View of Glebe Island Bridge control cabin, facing west-north-west

Figure A.1.5 : State Heritage Register Plan 2590 (Source: Heritage Council of NSW)

A.1.5 Statement of significance

A.1.5.1 State Heritage Register

The Glebe Island Bridge, across Johnstons Bay, is of **State** significance as it demonstrates one of the earliest examples of an electric-powered swing bridge in Australia. Technically, it is a complementary structure to the already acclaimed Pyrmont Swing Bridge and has all the same significant features, including the electrically driven swing span. Both bridges were designed by Percy Allan, a highly regarded Australian bridge designer of the late 19th and early 20th century. Both represent the only examples of such types of bridges in **NSW** and are still operable.

A.1.5.2 Section 170 Heritage and Conservation Registers

The Glebe Island Bridge across Johnstons Bay has significance because:

- **The** current structure has been an important item of infrastructure in the history of Sydney and the inner western suburbs for over 90 years, and its history, going back to 1862, is intimately bound to the development of Sydney in the middle of the 19th century
- **It** is an impressive structure sited in the middle of a wide waterway
- **Technically**, it is a complementary structure to the already acclaimed Pyrmont Swing Bridge and has all the significant features
- **It** contributed significantly to the social and commercial development of Sydney and its inner western suburbs, and was a vital component of the "short cut" route from the city to the Great Western Highway
- **It**, and its neighbour the Pyrmont Bridge, are rare examples of this type of bridge in **NSW** and are still operated by electrical power in the manner designed by Percy Allan
- **The** structure also has one of the last **mercury-arc rectifiers** in Australia that is still performing the function for which it was installed.

The bridge has been assessed as being of State significance.

A.1.5.3 Register of the National Estate

The bridge is a significant technical accomplishment, being large for its period of construction. It is similar to**,** but smaller than**,** the nearby Pyrmont Bridge across Darling Harbour, opened in June 1902. The Glebe Island Bridge was opened in 1903. Both Pyrmont and Glebe Island are large swing bridges, powered by electricity. Concerning Pyrmont, Allan said that, at the time of its opening: this bridge was said to be provided with the fastest and most **up-to-date** swing span in the world. The Glebe Island Bridge has **two** swing spans of 29.1 **metres** and 29.1 **metres**, compared with Pyrmont, with two at 34 **metres**. These spans have not been surpassed in Australia for a swing bridge and were not exceeded by any movable span until the first Tasman Bridge at Hobart (1943, 54.6 **metres**).

A.2 Item 2: The Valley Heritage Conservation Area, Rozelle and Balmain

Table A.2.1 : The Valley Heritage Conservation Area details

Alternative names	Location	Register	Register ID	Significance level
The Valley Heritage Conservation Area; The Valley	Rozelle and Balmain	*Leichhardt Local Environmental Plan 2013*	C7	Local

The information provided below is replicated verbatim from the State Heritage Inventory, the *Leichhardt Development Control Plan 2013*, and the *Leichhardt Local Environmental Plan 2013*, with any amendments or further additions included in **bold**.

A.2.1 History

When sales of John Gilchrist's Balmain 550-acre grant were resumed in 1852, Surveyor Charles Langley subdivided the remaining acres into 46 (later 47) sections, using existing routes such as Darling Street and other contour hugging tracks, such as Beattie Street and Mullens Street**,** to delineate the parcels. The sections were purchased over the next **30** years by wealthy investors, local speculators and builders.

The largest of the estates put together from Langley's subdivisions was the 19 acres of the Merton Estate purchased by piano importers Paling and Starling, druggists George and Frederick Elliott and estate agent Alfred Hancock. It occupied the land between Terry Street and Evans Street. It was subdivided by its owners into 197allotments generally 30 **feet** x 100 **feet** with 50-**foot**-wide grid pattern of roads and was auctioned by local agent and developer, Alfred Hancock**,** from 1874.

A miscellaneous collection of service and consumer trades servicing these new dwellings appeared along Evans Street in the 1870s making it the main commercial thoroughfare along the upper reaches of the Balmain peninsula.

By the 1880s**,** the growth of industry, including noxious industry, in White Bay and along Whites Creek, made the south and east-facing slopes of the Darling Street ridge unattractive for a more affluent residential market. Those who could find employment in these industries would seek housing within walking distance, as public transport — then the horse drawn bus or later the steam tram — were too expensive. Canny speculators, such as Hancock (later Mayor of Balmain)**,** sold to small builders who constructed very dense workers' housing for rentees or purchasers on small budgets. By 1891**,** a large part of this area had been built upon.

The arrival of the government-owned steam tram at the junction of Darling Street and Victoria Road in 1892 provided relatively more affluent residents along its route with transport to the city, and a greater choice of employment away from places within immediate walking distance from home. The advent of the tramway probably explains the major impetus to growth in the area**,** particularly to the west of Evans Street, so that in the 1890s much of Terry, Wellington, Merton and Nelson **streets** were built upon with one-storey brick semis, pairs or small groups of terraces (two to an allotment) and double fronted single-storey houses (one to an allotment). Most of these buildings were constructed by local builders such as Robert Gordon, William Whitehorn and James Gibson, whose small-scale operations are indicated by the small groups of similar houses or terraces.

From the 1850s, Booth's Saw Mill on White Bay provided a cheap source of timber and weatherboards, promoting weatherboard houses as the norm for workers' housing throughout Balmain until brick terrace housing became prevalent in the late **19th** century. The extension of the steam tram service along Darling Street by 1900 encouraged shopkeepers to relocate there to catch the passing trade, and Evans Street was superseded as a commercial centre. The Metropolitan Detail Survey Sydney Water Archive suggests that almost all the land east of Wellington Street was built upon by 1905. By 1907**,** the precinct was generally known as Rozelle.

A.2.2 Description

- Contour hugging main roads – Evans, Beattie and Reynolds. Outline of subdivisions, size and aspect of allotments determined by route of main roads
- Wider residential roads off Darling Street ridge, with grid subdivision pattern
- Generally narrow roads between main access roads
- Narrow, often shallow allotments
- Back lanes are rare
- Dense urban environment
- Continuous lines of buildings create sharply defined lineal spaces
- Buildings stepped up and down hill, following the topography
- Houses sited close to road near Darling Street ridge and sited onto the road alignment nearer to White Bay
- Small front gardens near Darling Street; there are fewer gardens towards White Bay
- Tree planting is minimal except where wider main access roads provide enough room **–** Langley, Roseberry, Llewelyn and Reynolds Street
- Large stands of trees in parks and open spaces
- Small range of housing types: single-fronted, single-storey timber terraces, two-storey terraces, free-standing timber or stone single-storey cottages
- Some larger villas on high land around Smith Street, and more generous terraces in similar locations
- Scale predominantly limited to one or two storeys
- Pubs with verandahs act as punctuation marks in the streetscape
- Corner stores
- Commercial premises (and former commercial premises) with attached dwellings along Evans and Darling **streets**
- Small industrial/warehouse buildings occur throughout the area
- Variety of materials — large number of timber, plastered brick, some later (1890s+) face brick and a few stone buildings
- Roof materials vary — iron is common, terracotta tiles, some slate
- Stone retaining walls
- Remnants of iron palisade fences define some street frontages
- Suspended awnings to commercial facades along Darling and Evans **streets**
- Sandstone kerbs and gutters.

A.2.3 Curtilage information

The Valley Conservation Area comprises a large but tightly formed valley which falls south and east from the Darling Street ridge towards White Bay affording enclosed views to industrial workings of the port city in the bay. It includes a number of subdivisions/part subdivisions around the highest land in the Leichhardt Municipality on either side of the Darling Street ridge and across Victoria Road. It includes land east of Wellington Street to White Bay. It also includes the civic buildings and the commercial zone of Rozelle on both sides of Victoria

Road, the land east of the Darling Street ridge beyond the commercial zone, the civic and commercial buildings of Balmain retail centre, small groups of shops along Darling Street and the former retail area of Evans and Beattie **streets**.

A.2.4 Statement of significance

- One of a number of conservation areas which collectively illustrate the nature of Sydney's early suburbs and Leichhardt's suburban growth particularly between 1871 and 1891, with pockets of infill up to the end of the 1930s (ie **before** World War II)
- This area is important for illustrating development for workers' and artisan housing particularly from 1871–1891 which forms the major element of its identity
- It is significant for its surviving development from that period and the later infill development up to World War II (ie pre-1939)
- Retains evidence of all its layers of growth within that period from the late 1870s
- Through its important collection of weatherboard buildings, including the now rare timber terraces, it continues to demonstrate the nature of this important/major construction material in the fabric of early Sydney suburbs, and the proximity of Booth's saw mill and timber yards in White Bay
- Through the mixture of shops, pubs and industrial buildings it demonstrates the nature of a Victorian suburb, and the close physical relationship between industry and housing in **19th** century cities before the advent of the urban reform movement and the separation of land uses
- Demonstrates through the irregular pattern of its subdivision the small-scale nature of the spec builders responsible for the construction of the suburb.

Demonstrates the nature of some private subdivisions before the introduction of the Width of Streets and Lanes Act of 1881 required roads to be at least one chain wide.

A.3 Item 3: Railway electricity tunnel under Sydney Harbour, Birchgrove and Greenwich

Table A.3.1 : Railway electricity tunnel under Sydney Harbour details

Alternative names	Location	Register	Register ID	Significance level
Railway electricity tunnel under Sydney Harbour; Balmain to Greenwich Tunnel, including docking facilities and services buildings; Sydney Harbour (Balmain to Greenwich) Railway Electricity Tunnel; Sydney Harbour Tunnel - Greenwich to Balmain; Balmain to Greenwich Electric Cable Tunnel, including interiors	Birchgrove/Greenwich, NSW	State Heritage Register	01231	State
	From Long Nose Point, Balmain, NSW 2041 to Manns Point, Greenwich, NSW 2065	*Sydney Regional Environmental Plan No 23—Sydney and Middle Harbours 2005*	Schedule 4	
	Under Sydney Harbour, Birchgrove, NSW 2041	Transport for NSW Section 170 Register	5062542	
	146A and 146B Louisa Road, Birchgrove, NSW 2041	*Leichhardt Local Environmental Plan 2013*	A2	

The information provided below is replicated verbatim from the State Heritage Inventory, the *Leichhardt Local Environmental Plan* 2013, and the *Sydney Regional Environmental Plan No 23—Sydney and Middle Harbours 2005*, with any amendments or further additions, some update of the description from the site inspection for this project, included in **bold**.

A.3.1 History

The area around Snails Bay to Long Nose Point and bounded by Cove and Grove **streets**, **about** 30 acres, was originally granted to George Whitfield of the NSW Corps in 1796. He named his grant “Whitfields Farm”. The land changed ownership a couple of times before it was acquired by Lieutenant John Birch in 1810. Birch built Birch Grove House, the first house on the Balmain peninsula (at 67 Louisa Road, demolished 1967). Birch left the colony in 1814 and sold the house to Rowland Walpole Loane. Loane tried to subdivide the land into four lots in 1833**;** however, this was unsuccessful. The area was difficult to access (the ferry system was not started until 1836) and the odours from the mudflats around the bay may have also contributed to the lack of interest. Loane sold the house in 1838. A series of owners and tenants followed, but the house remained the only building in the area for another two decades.

In 1854**,** the **estate** was purchased by Didier Joubert, who with his brother was responsible for the development in Hunters Hill and also established the Parramatta Ferry Service. He commissioned Surveyor Brownrigg to subdivide the land which provided the backbone of the area today. The street names were derived from family members including Joubert’s wife (Louisa), children (Numa and Rose) and nephew (Ferdinand) with boundaries defined by (Iron) Cove Road and (Birch) Grove Road. Birch Grove House remained undisturbed. Louisa Road followed the ridge and prominent bend still stems from this time. The 1860 sale was premature**,** and within **six** years only **seven** allotments had been sold. Joubert sold Birch Grove House in 1860 to Jacob Levi Montefiore. His **bank** sold all the remaining land in December 1862.

A new consortium comprising Archibold McLean, Thomas McGregor, both merchants and auctioneer Lancelot Edward Threlkeld commissioned Surveyor Reuss Junior to re-examine the Brownrigg plan and make some amendments around the head of the bay and along the steepest part of Louisa Road to create more usable allotments. The estate was again put up for sale in 1878. Street frontages varied between 50 to 70 feet with a depth of about 150 feet. The terrain and generous proportions of the blocks made the precinct ideal for the construction of substantial free-standing dwellings, but by 1882 only 53 residences stood on the estate.

Stonemasons and quarrymen were among the first purchasers. Other early occupants were professionals who travelled to town by ferry and small speculators or builders who quarried the land or buildings elsewhere. The boom period, however, later saw more lots taken up and villas were constructed in stone or rendered brick with later grand residences constructed in the Federation period.

The site, part of Lot 24 Section 5 of the subdivision**,** was purchased by George Hitchcock, a quarryman from Booth Street in 1861. Hitchcock constructed a weatherboard cottage, "Tabak"**,** on the corner of the site and Louisa Road frontage in 1878. The site was subdivided in 1884 and western portion of the site with water frontage sold at this time.

A Sydney Water plan dating from the 1880s (Balmain Sheet No. 1), shows the divided lot occupied by two dwellings. The dwelling in the eastern portion is shown close to the Louisa Road frontage, near the shared boundary with No. 144 Louisa Road. Steps extend from the street frontage up to the front verandah which runs across the front of the building. A verandah is also shown across the rear of the building. Two detached structures are also clear behind the house. Hitchcock continued to occupy "Tabak" until 1901 from around which time it is assumed that the State Railways purchased the site. The house was demolished in 1912 and construction of a Sydney Harbour tunnel **started** from this time.

This was the first tunnel to be constructed under Sydney **Harbour**. It was built between Long Nose Point **at** Balmain and Manns Point **at** Greenwich from 1913 to 1924 to carry submarine electricity cables for the electric tramway system on the north side of the **harbour**. Submarine cables laid across the harbour earlier had suffered damage from ships dragging their anchors.

The tunnel was flooded **around** 1930, whether intentionally to avoid continual pumping or as the result of a sudden inrush of water is not clear from the records. The cables in the flooded tunnel remained in use until 1969 but are no longer used because ample supplies of electricity are available on the north side of the harbour from Electricity Commission substations.

When it was built, the tunnel was one of Australia's major engineering feats. At the **start** of the work, the necessary compressor was located on the south to supply power for the pneumatic drills. Work was started from three points **–** Long Nose Point, Greenwich, and a shaft at the extreme end of **Manns** Point. Progress was rapid for a while **–** about 25 yards per month at every point. But then residents of Long Nose Point, in letters and protests, caused the abandonment of the Long Nose end after a considerable distance had been excavated. Work, therefore, went slowly on from the north side until about May 1915, when a big fissure in the rock about the middle of the Parramatta River was met. The only solution was to seal up the tunnel and patch the fissure.

It was then found that the second sealing showed signs of weakness, and it was thought advisable to abandon the top tunnel and go deeper into the rock. A permanent bulkhead was built into the rock and the tunnel was sealed up with about 15 feet of concrete. Then**,** a second tunnel was commenced 50 feet below the first one. The down grade was increased to 1 in 1.3. The work was still being carried out with explosives, and progress was fairly fast**,** but on arrival at the point immediately below the original break-in, another crevice was struck, and water rushed in. On this occasion, the engineer in chief, R.L. Rankin**,** and the resident engineer, W.R.H. Melville, decided to go with the foreman and have a look at the fissure that had flooded the tunnel. Placing candles on pieces of wood, they swam about 40 feet into the centre of the tunnel.

The break-in was later sealed by placing **six**-inch pipes, about 15 yards long, into the crevice, and the whole of the tunnel in the immediate vicinity was packed with bags of clay, tightly rammed. In front of this was placed a steel bulkhead with a steel door, and through the bulkhead three-inch pipes were laid right into the crevice to allow the water to get out.

A detour was cut at this point to about **six** feet to get **around** the crevice, and when the men had passed it they worked back to the original line of excavation.

The section of the tunnel that had been sealed up was cut through, the detour filled in, and the original straight line of excavation restored. After going about 50 feet past the crevice, they struck another small fissure, which

was apparently a section of the original one, and water suddenly flowed in at the rate of about 2400 gallons an hour. This was not sufficient to stop the progress of the work, but pumps were installed to cope with the inflow.

Soon after, the men began to work on the up-grade, and here great care had to be exercised to prevent the material falling back on them. The material was cut out by channelling machines, which allowed it to be removed without difficulty. Eventually, the men broke through at the Long Nose Point side. Their calculations had been made with remarkable accuracy. The centre line, when the tunnel was connected, was only an 1/8th of an inch out, while the levels were absolutely correct.

In 1952, the Electricity Commission took over all power generation, but the railways retained the tunnel and cables. The tunnel ceased use in 1969 (Kennedy and Kennedy 1982).

A.3.2 Description

The site inspection **carried out** for this project indicated that the land-based section of the tunnel is situated on a corner site occupied by a pair of two-storey rendered-brick modern semi-detached buildings with curved and flat roof forms and garages constructed to the Louisa Road frontage. The buildings are constructed to the Numa Street frontage with high rendered walls located along the street corner and rear of the site and shared boundary with No. 2 Numa Street. Some stone kerbing runs along the south-western side of the Numa Street alignment. Stone walls and features are also located further along Numa Street. There is no visible evidence of the former entry to the tunnel which ran diagonally across the site previously known as No. 146 Louisa Road.

The description from existing information sources is as follows. The tunnel under the harbour and the entrances were built 1916-1926. The tunnel is lined with concrete in some areas, cast iron in some and the rock in others. At the centre of the tunnel is a large chamber where pumps were located to remove water. One side of the tunnel was lined with reinforced concrete shelves to house the cables. Running the length on one side are cement racks to hold the high-tension wires to supply electric power for trams and trains on the north side of the harbour. The tunnel held **12** cables, 8 x 11,000 volt, and two 50 pair communication cables. At one end was a pool some six feet in depth to collect soakage and be pumped to the surface. The tunnel was flooded in 1930. In 1952, the Electricity Commission took overall power generation, but the railways retained the tunnel and cables. The tunnel ceased use in 1969.

The tunnel is perfectly straight, except at Greenwich Point, where it takes a bend to allow an outlet. From outlet to outlet it measures 1,760 feet. At each shaft it descends steeply into the ground at a grade of 2 in 1, except in a section at the Greenwich end where a steep cut had to be made. Here the grade is 1 in 1.3.

This was the first tunnel to be constructed under Sydney **Harbour**.

A.3.3 Curtilage information

The listing boundary is the tunnel itself and the area left at each end (now sealed to general access). It is located at Lot 11 DP 839246.

A.3.4 Significance assessment

Table A.3.2 : Railway electricity tunnel under Sydney Harbour significance assessment

Criterion	Local level
A – Historical significance	**Leichhardt Local Environmental Plan 2013** – The site is significant as the entry point of the Balmain end of the first Sydney Harbour Tunnel built between Long Nose Point **at** Birchgrove and Manns Point **at** Greenwich from 1913 to 1924 to carry submarine electricity cables for the electric tramway system on the north side of the **harbour**.
B – Historical association significance	**Leichhardt Local Environmental Plan 2013** – The site is associated with the Railway Department who constructed, used and maintained the tunnel.

Criterion	Local level
C – Aesthetic significance	**Leichhardt Local Environmental Plan 2013** – No evidence of the entry remains above ground and **the** tunnel is now flooded**. However**, the shaft and tunnel structure (and early cabling) remain.
D – Social significance	N/A
E – Research potential	**Leichhardt Local Environmental Plan 2013** – **While** no longer in use, the tunnel was the first Sydney Harbour tunnel constructed in the early decades of the 20th century and continued to provide electricity for tram and railway services for over 40 years.
F – Rarity	**State Heritage Register –** This item is assessed as historically rare. This item is assessed as scientifically rare.
G – Representativeness	N/A

Figure A.3.1 : Sydney Harbour Tunnel – Greenwich to Balmain, 146A and 146B Louisa Road, Birchgrove (pre 1989) (Source: Leichhardt Municipal Council)

Figure A.3.2 : Present location of the Sydney Harbour Tunnel, corner of Louisa Road and Numa Street Birchgrove (Source: Leichhardt Municipal Council)

A.3.5 Statement of significance

A.3.5.1 State Heritage Register

The tunnel was a major technological and engineering achievement and was the first such venture to be **carried out** in Australia without overseas assistance. It was a major link in the power supply to the railway and tramway system between Sydney and the North Shore and**,** although flooded**,** is an important element of the development of public transport in Sydney.

A.3.5.2 Section 170 Heritage and Conservation Registers

The tunnel is significant as a major technological and engineering achievement and was the first such venture to be **carried out** in Australia without overseas assistance. It was a major link in the power supply to the railway and tramway system between Sydney and the North Shore and although flooded is an important element of the development of public transport in Sydney.

A.3.5.3 Leichhardt Local Environmental Plan

The site of 146A and 146B Louisa Road is of historic significance as the entry point and Balmain end of the first tunnel built under Sydney Harbour between Long Nose Point **at** Birchgrove, and Manns Point **at** Greenwich. Constructed between 1913 and 1926 to carry submarine electricity cables for the electric tramway and (later)

rail system on the north side of the **harbour**, it significantly continued to operate for over 40 years. **While** no longer in use (ceased use in 1969) and no evidence of the entry remains above ground at this end, the shaft and tunnel structure (and early cabling) remain below ground as evidence of significant infrastructure designed and constructed by State Rail.

A.4 Item 4: Yurulbin Park, Birchgrove

Table A.4.1 : Yurulbin Park details

Alternative names	Location	Register	Register ID	Significance level
Yurulbin Park; Long Nose Point Park	Louisa **Road**, Birchgrove NSW 2041	*Leichhardt Local Environmental Plan 2013*	I555	Local

The information provided below is replicated verbatim from the State Heritage Inventory, the *Leichhardt Local Environmental Plan 2013* and the *Western Harbour Tunnel Beaches Link. Yurulbin Park: Statement of Heritage Impact (Geotechnical Works)* (Roberts 2017), with any amendments or further additions included in **bold**.

A.4.1 History

"Yerroulbin" meaning "swift running waters" is said to be the Aboriginal name of the rocky spit enclosing Snail's Bay. Later the outcrop of land was likened to a nose-like projection which appears to have generated the name Long Nose Point. The land at the **point** comprised of Lot 9 of **Joubert's** 1860 subdivision purchased by Alexander William Cormack, a Sydney cooper. The sale was not regularised until 1888**. However**, by this time a number of galvanised steel workshops had been constructed close to the southern arm of Numa Street. Although the street was shown on the Brownrigg plan, it was taken over by Cormack who constructed a brick building over the end of the street. The site was known as Cormack's Wharf. Cormack continued to use the site and in 1906 the land became a store yard for his cooperage.

A Sydney Water Plan dating from 1889 (Balmain Sheet No. 1) shows the rectangular shaped brick building at the southern end of Numa Street and an irregular shaped workshop building extending east from the building to the waterfront directly to the north**-**west of the park area **(Figure A.4.1)**. There are no indications of buildings in the Yurulbin park area at this time. Photographs from the turn of the century indicate the Yurulbin park area remained unoccupied until at least 1905 **(Figure A.4.2 and Figure A.4.3)**. Between 1909 and 1916 the site was occupied by AW Cormack Ltd timber merchants. The Wallace Power Boat Co then occupied the site between 1917 and 1920.

In 1923 Morrison and Sinclair Pty Ltd shipbuilders established a shipyard on the site. Originally from Johnsons Bay **at** Balmain, they designed, constructed and repaired government vessels**;** naval, island trading and merchant ships**;** and many Sydney ferries and yachts **(Figure A.4.4 and Figure A.4.5)**. The firm continued to occupy the site until 1971–72. After this date it was acquired by the State Planning Authority for public recreation purposes.

Bruce Mackenzie and Associates, landscape architects, designed the park between 1972 and 1977. Mackenzie also designed the park at Illoura Point in 1970. Both parks were seminal works that demonstrated two main philosophies that would become dominant in Australian landscape architecture during the period. One was an attempt to create an environment in sympathy with its natural origins using Australian native plants, and the other sought to create an escape from urban pressures. Landscaping works were carried out by Leichhardt Council and the park placed under their care and management in 1981. Yurulbin Park, originally known as Long Nose Point Park, like Illoura Reserve, incorporates a sequence of spaces and uses natural stone elements and outcrops, but the slipway and heavy timber elements incorporated into the design also remain as a reminder of its former use. The design received the 1982 merit award of the Royal Australian Institute of Architects.

In 1994 the name of the point and park was changed to "Yurulbin Point" to reflect the Aboriginal heritage of the area. Aboriginal occupation sites including middens and art sites are located between the Ferry Wharf and northern end of Numa Street. Since that time Yurulbin Park has continued to be a popular waterfront space with some minor repairs and replacement of elements such as pathways evident. Some interpretive signage has also been placed in the park.

A.4.2 Description

Yurulbin Park (formerly Long Nose Park) is a 0.61-hectare public open space located at the end of Yurulbin Point on the Balmain Peninsula in the suburb of Birchgrove in the Inner West Council local government area in Sydney, **NSW**.

It comprises waterfront parkland located at the eastern point of the Birchgrove peninsula and south-eastern end of Louisa Road. A sealed turning circle and small carpark are located at the end of the street and south-western section of the park. The “entry” features cut wharf pylons, curved feature wall, stone flagged paths, and plantings including several large fig trees. An asphalted path extending along the Louisa Road alignment along the north eastern boundary of the **park** accesses the Birchgrove/Louisa Road ferry wharf. The park area comprises a sequence of spaces over two main levels with ashlar stone block walls, paths and steps, and open grassed and planted areas bounded on the water side by a stone sea wall. A prominent built feature is a timber stair/lookout structure located near the eastern point. The structure is constructed of wharf piles and hardwood with no finish applied. The northern side of the point also retains a slipway associated with the former use of the site. Natural and cut rock outcrops also form prominent features with planting including mature fig trees, casuarinas and other natives generally located around the entry and perimeter of the area. Historic plaques and interpretive signage has also been added to the park area.

The park contains the following heritage features of note:

1) Stone flagging, paths, ashlar stone walls and steps (Figure A.4.6)
2) Significant trees including Port Jackson Figs and native plantings (Figure A.4.7)
3) Designed landscape elements from the 1970s, including the cut timber pylon walls and timber stair/lookout (Figure A.4.8)
4) Potential archaeological remains connected to a 1920s shipyard (Figure A.4.9)
5) A slipway connected to the shipyard (Figure A.4.10).

A.4.3 Curtilage information

The park is situated on Lots 1 and 2, Section 9 DP 192096 and Lot 1 DP 1112881; road reserve.

A.4.4 Significance assessment

The significance assessment in Table A.4.2 is based on the *Leichhardt Local Environmental Plan 2013* with additions from Roberts (2017).

Table A.4.2 : Yurulbin Park significance assessment

Criterion	Local level
A – Historical significance	**Leichhardt Local Environmental Plan 2013** – The Park is of high local historic significance as part of the early subdivision and waterfront development of the local area from the 1860s. Its development as a public park from the 1970s represents the closing of maritime activities in the area and shift away from industrial to primarily residential use of the area and public use of prime waterfront sites. The park significantly retains a sense of the former slipway that remains as a reminder of the former use of the site.
B – Historical association significance	**Leichhardt Local Environmental Plan 2013** – The site is associated with a number of local land speculators and developers and local maritime and shipping industries which developed here from the 1860s. From the early decades of the 20th century it was associated with Morrison and Sinclair Pty Ltd, shipbuilders, who acquired and used the site until the 1970s. The park is associated with prominent landscape architects Bruce Mackenzie and Associates, and Leichhardt Municipal Council.
C – Aesthetic significance	**Leichhardt Local Environmental Plan 2013** – The Park is of high local aesthetic significance due to its Harbour side location, rock outcrops and stone walls and sequence of spaces created by built structures

Criterion	Local level
	and plantings. The park design demonstrates two philosophies that were dominant in landscape design in the 1970s – one was to attempt to design within an ecological framework using native plants to create an environment in sympathy with its natural environs, and the other sought to create a "natural" environment and escape in an urban context. **Roberts (2017)** – Views to and from the park are considered to have significance. The Park has 270-degree views of the harbour and provides views of a 'natural' prominent and undeveloped point to passing boat traffic including Sydney Ferries.
D – Social significance	**Leichhardt Local Environmental Plan 2013** – The area is of social significance to the local and wider community as an open public foreshore park area.
E – Research potential	**Leichhardt Local Environmental Plan 2013** – The Park retains some remnant stone outcrops, sea and stone walls which reveal information of the earlier character and development of the area (including earlier buildings associated with the shipyard). **Roberts (2017)** – Features within the park reflect the prior use of the site as a shipyard, including the slipway and morticing in the sandstone outcrop that held beams of the prior shipyard buildings.
F – Rarity	**Leichhardt Local Environmental Plan 2013** – Like the Illoura Reserve, the **park** is a relatively rare environment and cultural landscape that retains some evidence of the early use of the Balmain waterfront and evidence of landscape philosophies of the 1970s.
G – Representativeness	**Leichhardt Local Environmental Plan 2013** – Yurulbin Park is one of two waterfront parks in the **local government area** designed by Bruce Mackenzie and Associates between 1972 and 1977. The firm also designed Illoura Reserve in 1970.

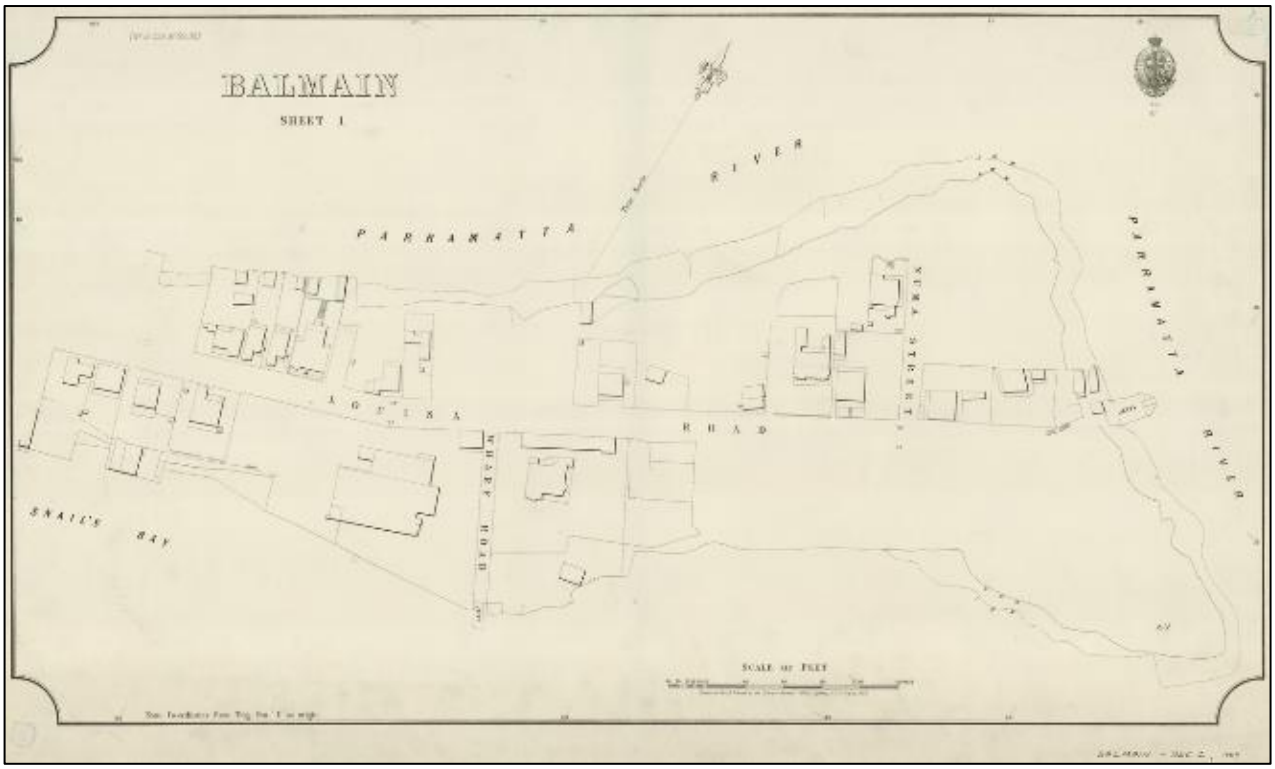


Figure A.4.1 : 1889 Plan of Yurulbin Park (Source: Local history heritage and archives, Inner West Council)

Figure A.4.2 : Long Nose Point around 1900 (Source: Local history heritage and archives, Inner West Council)

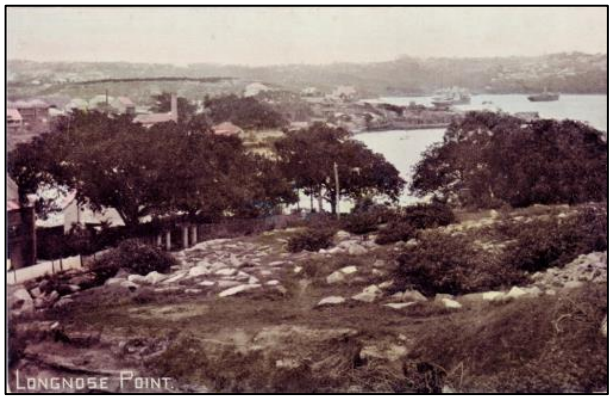


Figure A.4.3 : Long Nose Point 1905 (Source: Local history heritage and archives, Inner West Council)

Figure A.4.4 : Morrison and Sinclair shipyard at Long Nose Point (Yurulbin Park) in 1927, situated south-west of the extant slipway (Source: Local history heritage and archives, Inner West Council)

Figure A.4.5 : View of Sydney Showboat berthed at Snails Bay looking towards Yurulbin Park (background of photo) in 1955 (Source: Local history heritage and archives; Inner West Council)

Figure A.4.6 : Stone flagging, paths, stone walls and steps (Source: Andy Roberts 13/08/2017)

Figure A.4.7 : Significant trees (Source: Andy Roberts 13/08/2017)

Figure A.4.8 : Designed landscape elements from the 1970s development of Yurulbin Park (Source: Andy Roberts 13/08/2017)

Figure A.4.9 : Site of 1920s Morrison and Sinclair shipyard in east half of Yurulbin Park, facing north-west (Source: Andy Roberts 13/08/2017)

Figure A.4.10 : Remains of Morrison and Sinclair slipway, facing east towards Sydney Harbour Bridge (Source: Andy Roberts 13/08/2017)

Figure A.4.11 : Site of 1920s Morrison and Sinclair shipyard in southern section of Yurulbin Park, facing west

Figure A.4.12 : View of Yurulbin Park from Balls Head, facing west

Figure A.4.13 : View of the Sydney Harbour Bridge from Yurulbin Park, facing east-south-east

A.4.5 Statement of significance

Yurulbin Park is of high local historic, aesthetic and technological significance and of local social significance as an open park that retains evidence of the early use and character of the area and as a foreshore park established in the 1970s. The **point** is associated with a number of early local land speculators and developers and early maritime activities of Birchgrove. It is also associated with Bruce Mackenzie and Associates who designed the park and contributed to the formation of a relatively rare cultural landscape that demonstrates landscape philosophies of the 1970s.

A.4.6 Archaeological assessment

The following archaeological assessment is based on the historical background provided above, *the Western Harbour Tunnel Beaches Link, Yurulbin Park: Statement of Heritage Impact (Geotechnical Works)* (Roberts 2017) and information obtained during a field survey carried out in September 2017. Further details of maritime archaeology, including along the coastline of Yurulbin Park, is provided in Technical working paper: Maritime non-Aboriginal heritage (Cosmos Archaeology 2020).

There is one area of archaeological potential within Yurulbin Park, the site of the 1920s Morrison and Sinclair shipyard (Figure A.4.15). Established in 1923 at the site, they operated until 1971–72, when the site was acquired by the State Planning Authority and developed into the park which exists today. An historical photograph from 1927 (Figure A.4.4) shows a timber, two to three storey structure situated beside the slipway. The slipway remains extant in the park today (Figure A.4.10). The extent of structures on the site was extensive as indicated by the 1943 aerial imagery (Figure A.4.14), with structures occupying the flatter area currently grassed in the eastern half of the park, and the flatter area along the southern section of the park.

The open grassed area (Figure A.4.9) comprising the east half of the park does not show surface evidence of any archaeological remains of the 1920s shipyard. However, it appears this area of the park has only been subject to relatively low levels of landscaping. The flat area along the southern section of the park also shows no obvious evidence of archaeological remains subsurface **(Figure A.4.11)**. It is assumed that the shipyard structures shown in the 1943 aerial imagery, including the one shown in **Figure A.4.4**, were demolished as part of the redevelopment of the site into Yurulbin Park in the 1970s.

Depending on the level of demolition carried out, and the level of disturbance as part of the park development, there is some potential for subsurface archaeological evidence of the structures and activities of the 1920s shipyard to still remain. While the structural evidence related to timber buildings may be fairly unobtrusive, there

may be some evidence of these structures. Additionally, there is some potential for other archaeological features including rubbish deposits or pits, or drainage features.

Yurulbin Park offers a moderate level of archaeological research potential arising from the use of the site by Morrison and Sinclair for ship building activities from the 1920s to the 1970s. There may be evidence of the shipyard structures**,** and related deposits or ancillary features such as rubbish deposits and drains. These features have the potential to yield information about the history of the site, the 20th century local shipbuilding industry, and the role of Sydney Harbour in Sydney's maritime history, which are not available through other historical or documentary sources.

The area of archaeological potential is shown in Figure A.4.15.

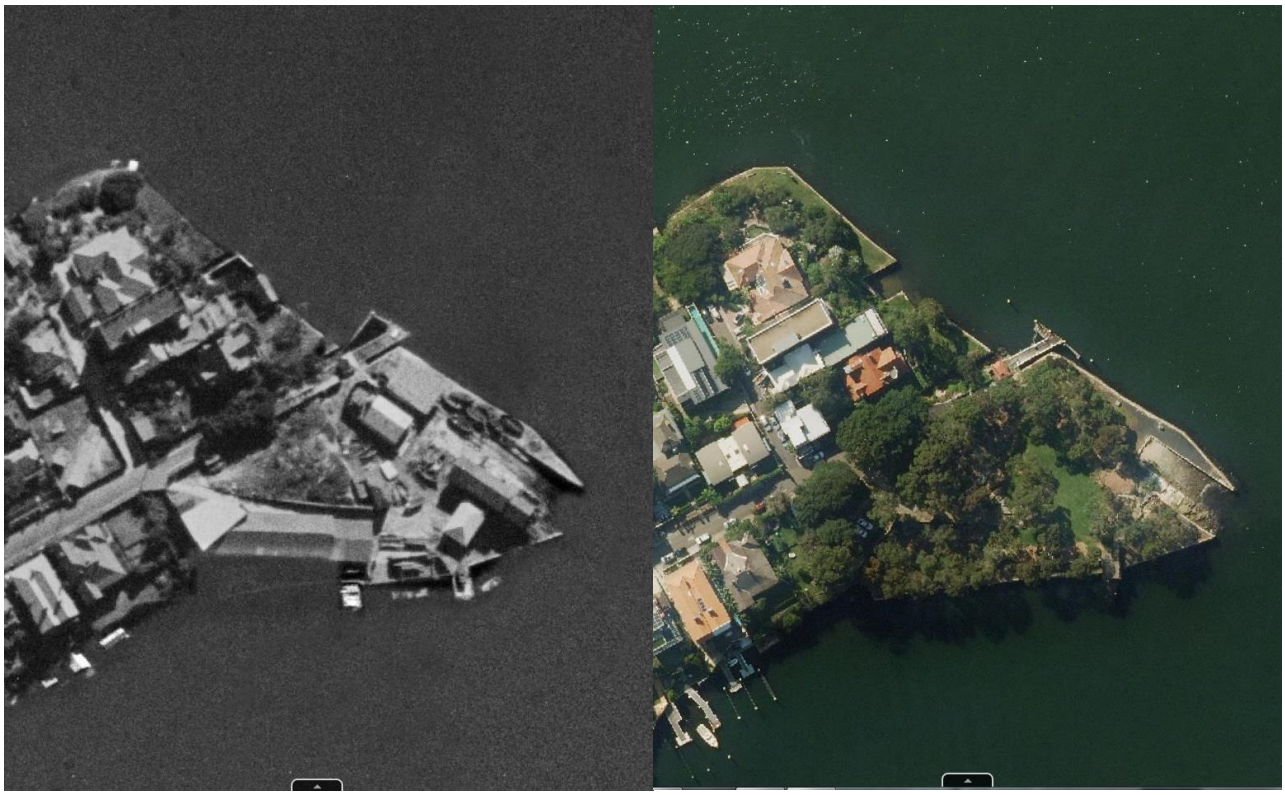


Figure A.4.14 : Aerial images of Yurulbin Park. L: 1943 showing Morrison and Sinclair shipyard (AusImage_1943); R: 2016 showing Yurulbin Park (AusImage_2016)

Figure A.4.15 : Area of archaeological potential, Yurulbin Park

A.5 Item 5: Former coal loader, Waverton

Table A.5.1 : Former coal loader details

Alternative names	Location	Register	Register ID	Significance level
Former coal loader; Coal loader; Balls Head Coal Loader	Balls Head Drive, Waverton, NSW 2060	*North Sydney Local Environmental Plan 2013*	I1040	Local
		Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005	Schedule 5	
		Register of the National Estate	19706	

The information provided below is replicated verbatim from the State Heritage Inventory, the *North Sydney Local Environmental Plan 2013*, and the *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*, with any amendments or further additions included in **bold**.

A.5.1 History

Established between 1913 and 1917, the coal loader originally functioned as a steam ship bunkering station, delivering Hunter Valley coal to ships in the harbour for fuel and for export. With the demise of steam-powered ships, the loader mainly operated for transhipping coal between ships and road carriers.

A.5.2 Description

The site contains six buildings of various ages and materials, two large liquid storage tanks and the **coal loader** itself, which consists of the storage platform, with tunnels and conveying equipment, a loading wharf, a large mobile crane and the various coal conveying equipment and controls. Small outbuildings.

A.5.3 Curtilage information

The former coal loader is situated on Lot 99 DP 1048930; Lots 1–3 DP 542933.

A.5.4 Significance assessment

Table A.5.2 : Former coal loader significance assessment

Criterion	Local level
A – Historical significance	**North Sydney Local Environmental Plan 2013 –** One of the oldest coal loaders and the last facility of comparable size that operated in Sydney Harbour. An important local industry and a feature in the development of Balls Head.
B – Historical association significance	N/A
C – Aesthetic significance	**North Sydney Local Environmental Plan 2013 –** A major structure with landmark qualities and a high aesthetic interest.
D – Social significance	N/A
E – Research potential	**North Sydney Local Environmental Plan 2013 –** Retains evidence of a range of technologies employed since establishment.
F – Rarity	**North Sydney Local Environmental Plan 2013 –** This item is assessed as historically rare statewide. This item is assessed as aesthetically rare statewide.
G – Representativeness	**North Sydney Local Environmental Plan 2013 –** Retains evidence of a range of technologies employed since establishment.

Figure A.5.1 : Coal loader (Source: North Sydney Council)

Figure A.5.2 : The early site office, now a storage room

Figure A.5.3 : The former caretaker's cottage, now the Coal Loader Centre for Sustainability

Figure A.5.4 : Part of the sandstone bund wall

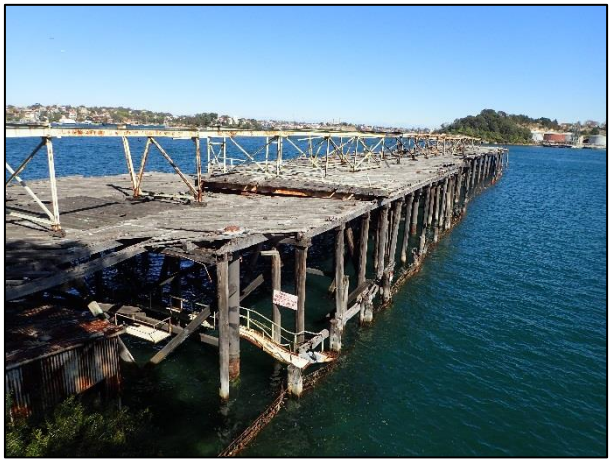


Figure A.5.5 : View along the loading wharf towards Manns Point, facing west

Figure A.5.6 : Coal loading skip in front of coal loader tunnels, facing south

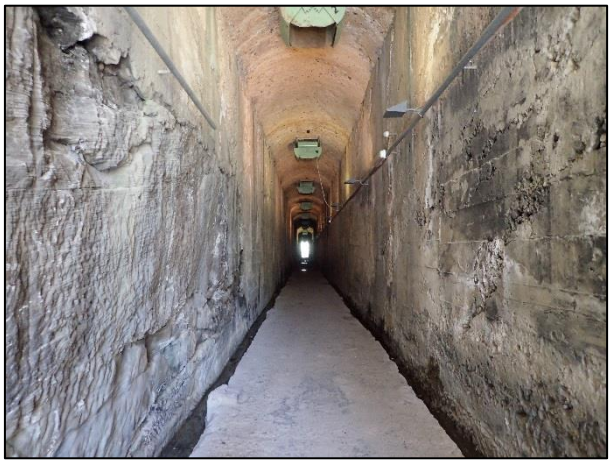


Figure A.5.7 : View within a coal loader tunnel

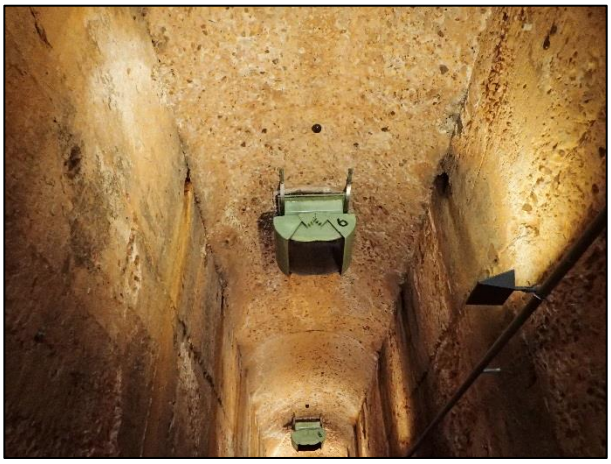


Figure A.5.8 : Coal loaders in the tunnel ceiling

Figure A.5.9 : Coal loader platform now being redeveloped as a roof-top garden, facing north-west

A.5.5 Statement of significance

One of the oldest coal loaders and the last facility of comparable size that operated in Sydney Harbour. A major structure with landmark qualities and a high aesthetic interest. An important local industry and a feature in the development of Balls Head. Retains evidence of a range of technologies employed since establishment.

A.6 Item 6: Woodleys shipyard, Waverton

Table A.6.1 : Woodleys shipyard details

Alternative names	Location	Register	Register ID	Significance level
Woodleys Shipyard; Woodleys Boatyard	1 Balls Head Drive, Waverton, NSW 2060	Roads and Maritime Section 170 Register	4920101	Local
		North Sydney Local Environmental Plan 2013	I1038	
		Sydney Regional Environmental Plan No 23—Sydney and Middle Harbours 2005	Schedule 5	

The information provided below is replicated verbatim from the State Heritage Inventory, the *North Sydney Local Environmental Plan 2013*, the *Sydney Regional Environmental Plan No 23—Sydney and Middle Harbours 2005*, and the *Woodleys Shipyard Statement of Heritage Impact* (RPS 2013), with any amendments or further additions included in **bold**.

A.6.1 History

Woodleys Boatyard was established in Berrys Bay on the lower North Shore in 1906 after relocating from Millers Point, where the previous site had been resumed by the government following the outbreak of plague in Sydney. Part of the site that Woodleys took up had been occupied previously by the NSW Torpedo Corps between 1877 and 1889, when they moved to Middle Head. In 1906**, E.J.** Woodley and his brother first leased the site and gradually developed a docking contractor, boilermaker, general engineer, blacksmiths and shipbuilders business, which was proclaimed as such in 1944.

By 1982 Woodleys had evolved into Woodley's Slipway Pty Ltd. This business comprised nine separate companies which employed a total of 50 people undertaking boiler making, ship repair, marine management and retail sale of boats, motors and accessories. The current business, Woodley's (Berrys Bay) Pty Ltd**,** specialises in boat building and repairs, although the staff total has been reduced down to 10, reflecting a decline in the industry overall. The site is occupied under lease from NSW Maritime.

A.6.2 Description

A complex of waterfront workshops, wharfs and piers (remnants of the 1906 stub wharf, 1968 short jetty and 1968 long jetty), slipways and sheds at the water's edge, including Woodley's shed, with a 1950s **two-storey** brick administration building behind. Significant sandstone seawall **next** to the **British Petroleum (BP) Site**. Sandy beach. Bushland setting at rear.

Woodleys shed

The site comprises a large, prominent corrugated galvanised iron-clad engineering workshop. The consistent use of corrugated iron and timber in the design is typical of marine industrial sites of this nature.

1950s two-storey brick administration building

A two**-storied** brick office building is located above and behind the shipyard. **It is a plain two-storey dark brick building with tiled roof and aluminium windows and doors.**

1906 stub wharf

This timber wharf dating from 1906 measures **about** 20 metres long x 10 metres wide. Although it still resembles its original form, the fabric of the wharf has substantially changed and significantly deteriorated. Until 2011 the wharf featured a tripod crane which was used to lift boats and machinery to the main shed level. This

crane has been removed but its concrete piers, base and stay points remain. The **stub wharf** shows evidence of extensive repairs and deterioration and slumps significantly in the **north-east** corner.

1968 short jetty

The **short jetty** measures **about** 32 metres in length and is constructed on timber piles with timber decking. The jetty appears to be in the same form as when it was constructed in 1968. Godden Mackay Logan's assessment of the condition of the **short jetty** was that some piles had deteriorated.

1968 long jetty

The **long jetty** was built in 1968 as a 32-berth marina. The jetty is **about** 85 metres long, constructed on timber piles with timber decking. The majority of the piles appear to be severely deteriorated with minimal cross bracing apparent. The jetty appears to be in the same form as when it was constructed, incorporating a distinctive crank in its line, presumably to maintain safe clearance for vessels approaching the slipways. The **long jetty** was assessed by Godden Mackay Logan in 2013 as having a high level of form integrity, but only moderate fabric integrity as some replacement of elements had occurred.

The **long jetty** is surrounded by freestanding piles used for mooring. Thirty-one piles extend along the length of the **long jetty**, located **about** 10 metres either side of the central structure. These piles are essential to the jetty's efficient function as a marina, allowing for full moored restraint of boats fore and aft. Attached to the piles are vertical steel rails with sliding rings to which mooring lines were secured allowing for tidal range. At the time of their inspection, Godden Mackay Logan described the **freestanding piles** as being in poor condition.

A.6.3 Curtilage information

Woodleys shipyard is situated on Lots 101 and 102 DP 1162896.

A.6.4 Significance assessment

Table A.6.2 : Woodleys shipyard significance assessment

Criterion	Local level
A – Historical significance	**Section 170 Heritage and Conservation Registers** – Woodleys Boatyard has occupied this site in Berrys Bay for over a century and is part of a ship and boat building tradition founded in Sydney Harbour as a port for communication with the rest of the world. Until the late **19th** century, boat building and repair was an important and thriving industry around the harbour shores, particularly on the Balmain peninsula and around Lavender and Berrys Bays, and Woodleys Boatyard continues these traditions. Woodleys Boatyard occupies a site in Berrys Bay with a long history of use as a boat landing and slipway. **Woodleys Shipyard Statement of Heritage Impact** – The **long jetty**, associated freestanding piles, and the **short jetty** have some historical significance as evidence of a new recreational boating venture for Woodley's operations during the 1960s, and as such they contributed to the understanding of the development and operations at the Woodleys Shipyard site. The **stub wharf** is associated with the early period of Woodleys activities on the site and has some historic significance as the location of the first wharf structure at Woodleys Shipyard. Generally, Woodleys Shipyard has strong local historical associations with the development of the Berrys Bay ship building tradition and is considered to be a component of the Waverton Peninsula maritime industrial precinct. The constant use of the site as a place of marine industry is demonstrated by the evolving nature of the shipyard.
B – Historical association significance	**Section 170 Heritage and Conservation Registers** – Woodleys Boatyard is associated with the Woodley family of boat builders, a notable family in the history of Sydney's boat repair industry.

Criterion	Local level
	Woodleys Shipyard Statement of Heritage Impact – Woodleys Shipyard has strong local associations with the Woodley family, who were prominent ship builders and maritime engineers, and operated the business at Berrys Bay from 1906 until its sale in 1986.
C – Aesthetic significance	**Section 170 Heritage and Conservation Registers** – Woodleys Boatyard presents as a visual assembly of corrugated-iron sheds, lean-tos and slipways on foreshore hardstands that is both honestly vernacular and a functional expression of an artisan's workspace. The simplicity and directness of its traditional construction form and materials give it a picturesque quality that is valued in the community. **Woodleys Shipyard Statement of Heritage Impact** – Woodleys Shipyard is demonstrative of a typical maritime precinct, with sheds, jetties, slipways, boat ramps and machinery located across the site. The site is aesthetically distinctive in that it is highly functional and austere in its design, comprising fundamental building forms which were laid out to **help** engineering and ship building processes. The consistent use of corrugated iron and timber in the design is typical of marine industrial sites of this nature. This type of maritime industrial precinct is now considered to be rare locally.
D – Social significance	**Woodleys Shipyard Statement of Heritage Impact** – Woodleys Shipyard as a whole is likely to have some local social significance for former Woodleys employees, marina/mooring users and the local community; however, further investigation would be required to confirm this.
E – Research potential	**Woodleys Shipyard Statement of Heritage Impact** – Woodleys Shipyard is unlikely to yield any specific research potential. The structures on the site are common maritime industrial buildings, jetty constructions and recreational boating structures from the **19th** and **20th** centuries. However, the structures would be better understood if recorded pictorially.
F – Rarity	**Section 170 Heritage and Conservation Registers** – Woodleys Boatyard is one of the few remaining active waterfront industrial sites still operating in a traditional site on the foreshores of the North Shore. **North Sydney Local Environmental Plan 2013** – This item is assessed as historically rare locally. This item is assessed as aesthetically rare regionally. **Woodleys Shipyard Statement of Heritage Impact** – Although the individual component parts of Woodleys Shipyard are considered to be consistent with Sydney Harbour maritime industrial structures, the site as a whole is considered to be a comparatively rare local example of North Sydney's maritime industry and history.
G – Representativeness	**Section 170 Heritage and Conservation Registers** – Woodleys Boatyard is a representative example of the once numerous small boat building and repair yards that have dotted the Sydney Harbour foreshores since the mid-**19th** century. **North Sydney Local Environmental Plan 2013** – This item is assessed as socially representative locally. **Woodleys Shipyard Statement of Heritage Impact** – The various built components of Woodleys Shipyard reflect the site's extended use as a maritime engineering complex, which is important in illustrating the principal characteristics of the former marine industry of Berrys Bay.

Figure A.6.1 : Woodleys Shipyard (Source: North Sydney Council)

Figure A.6.2 : Woodleys Shipyard and Berrys Bay Maritime Precinct (Source: NSW Maritime)

Figure A.6.3 : Woodleys Shipyard (Source: North Sydney Council)

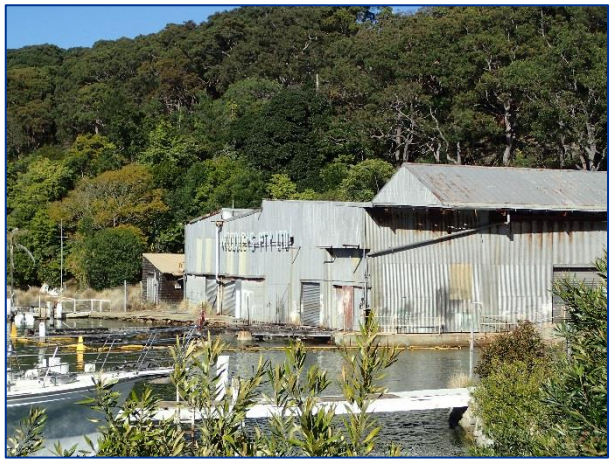


Figure A.6.4 : View of Woodleys Shipyard, facing south-west

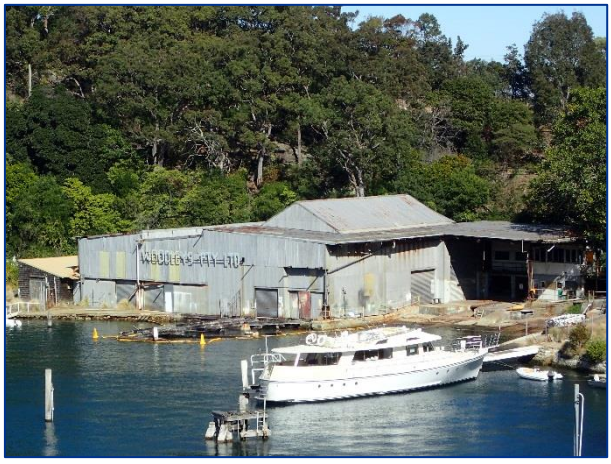


Figure A.6.5 : View of Woodleys Shipyard, facing west-south-west

A.6.5 Statement of significance

A.6.5.1 Section 170 Heritage and Conservation Registers

Woodleys Boatyard is a key part of the Berrys Bay ship building and repair tradition, with Berrys Bay containing the remnants of an industry that was once an important and thriving industry around the harbour shores, particularly on the Balmain peninsula and around Lavender and Berrys Bays. Woodleys Boatyard is associated with the Woodley family and the site demonstrates the robust attractions of a vernacular artisan workplace. Woodleys Boatyard is one of the few remaining examples of the once numerous small boat building and repair yards that have dotted the Sydney Harbour foreshores since the mid-**19th** century.

A.6.5.2 North Sydney Local Environment Plan 2013

This shipyard was the second largest shipyard in the council area and part of the Berrys Bay ship building tradition. It is named after the Woodley family who had a long involvement in this industry. Maritime function-working harbour significance. Some technological interest in equipment and slipways. Bushland setting at rear. Seawalls of sandstone and sandy beach.

A.6.5.3 Woodleys Shipyard Statement of Heritage Impact

Woodleys Shipyard has been associated with Berrys Bay since 1906 and is of local historical significance. The boatsheds and slipways that exemplify the maritime nature of Sydney Harbour represent one of its few surviving boat building complexes. The company was associated with the restoration of a number of vessels, including the *Landseer III* and *Ena*, and the construction of innumerable yachts, launches and boats. The site is situated in a prominent position in Berrys Bay and complements in scale and nature the Stannards Boat Shed on the opposite shore of the Bay (Godden McKay 1992).

The heritage significance of the Woodleys Shipyard site arises from its continuation of an historic activity and does not rely upon specific fabric or buildings **but** rather their generic maritime industrial character. Future development and use of the site should incorporate evidence of this maritime industry and aim to maintain the use of traditional approaches, materials, arrangements and activities where possible.

A.7 Item 7: BP Site, Waverton

Table A.7.1 : BP Site details

Alternative names	Location	Register	Register ID	Significance level
BP Site; General Screw Steam Company; NSW Torpedo Corps; Anglo-Persian Oil Company; BP Site (Former), Waverton	3A Balls Head Road, Waverton, NSW 2060	Roads and Maritime Section 170 Register	4920094	Local
		North Sydney Local Environmental Plan 2013	I1036	
	Berrys Bay	*Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*	Schedule 1	

The information provided below is replicated verbatim from the State Heritage Inventory, the North *Sydney Local Environmental Plan 2013*, and the *Waverton Peninsula Industrial Sites: BP, Caltex and Coal Loader Conservation Management Plan* (Godden Mackay Logan 2000), with any amendments or further additions included in **bold**.

A.7.1 History

The site would have been occupied by the Cammeraygal Aboriginals as there is evidence of occupation on the adjacent and nearby properties on the Waverton Peninsula in the form of engravings, paintings, middens and shelters. There is potential for Aboriginal archaeological relics to be present on the site in the area that is reclaimed land behind the sea wall.

The first phase of European occupation was during the 1820s when Edward Wollstonecraft, merchant, was given a land grant. Wollstonecraft and business partner Alexander Berry started to use the Berrys Bay site as a depot for produce from their Coolangatta Estate in the Shoalhaven and constructed a stone wharf c. 1830 including a crane. Remnants of the wharf may survive in the sandstone wall **next** to the former Woodley's Boat Yard. In 1834, Berry constructed a two-storey warehouse and a cottage for the overseer **W.G.** Mathews, a stone wharf at the foot of Balls Head Road, a stable and two wells. The stone warehouse was constructed by convict labour. Some of the stones have tooled margins and are believed to be marked with the number of the convict that cut them. There are stone cuttings and building foundations still visible in the south-western corner of the site.

Parts of the sandstone cliffs were quarried during the 1840s and an area was flattened for work yards. The site was also later used as a stone quarry during the early 1880s, with stone being removed to the east of the stone warehouse.

The wharf and stone store were leased to the Peninsula and Oriental Company **(P&O)** and then to the General Screw Steam Company in 1853 who used the site as a coal store and later as a fuel depot in 1920. Mr A.B. Black later used the site for the storage of ballast. In 1872 the stone warehouse was used as a distillery for the Rag and Famish Hotel, and as a timber yard. The NSW Torpedo Corps then occupied the site from 1877-1889 and the stone warehouse used for munitions storage. A compound was constructed containing workshops, an office and a hydraulic testing house, all surrounded by a paling fence. There was also a Blacksmith on the wharf edge in c. 1880.

The site had likely been used for the storage of kerosene drums since around 1906, when the area was leased to the State Government from the Berry Estate to whom it belonged. Kerosene was landed at the old stone wharf and transported to a storehouse at the top of the ridge by funicular tramway, from where it was distributed.

The former BP **Site** was developed in earnest by the Anglo-Persian Oil Company from 1922, the year the company purchased the site. In 1922 the site was leased by the Anglo-Persian Oil Company and sub-leased to the Commonwealth Oil Refineries Ltd (COR) who began to develop the site. COR was a joint project between the Anglo-Persian Oil Company and the Australian Federal Government. The first storage tank was installed in 1923 with a capacity of 10,000 gallons. The tank was built in England and transported for erection on site at a cost of £23,000. A funicular railway was constructed to carry drums of kerosene from the western wharf to the store. The stone cutting may be evidence of the railway. In 1933, COR demolished Berry's stone warehouse to make way for more fuel storage tanks. The convict-made stones were reused to build the existing bund wall on the western part of the site by 1936 and encircled five tanks by 1937.

In 1936 COR demolished the old stone store to make way for more storage tanks, which equalled **11** tanks by 1939. Stones from the store house were used on site to build a stone wall around the tanks, which was then cement rendered to aid in the prevention and containment of any spillage. This wall remains on site to date (2009). In 1952 the Anglo-Iranian (formerly Persian) Oil Company bought out the Federal Government's half share of COR.

By 1961 the number of tanks had risen to 31, with some areas of the cliff face excavated to make room for them. The tanks had been built in stages, with major construction in 1926, 1935-37 (when the cliffs were excavated) and 1956-1967. In 1954 the Anglo-Iranian Oil Company changed its name to the British Petroleum Company and, in 1957, COR changed its name to BP Australia.

From 1994 works at the site were scaled back and the site closed. The tanks along the waterfront were dismantled and the last one removed in 1996. With the leases from the NSW Government to BP and the nearby **coal loader** and Caltex depot coming to their end in the mid-1990s, North Sydney Council, at the request of Waverton Precinct, established the Waverton Peninsula Planning Taskforce, along with representatives of the Department of Planning and the Sydney Harbour Foreshores Committee. The Government pressed for major residential development on the site while the local representatives urged public open space for these harbour side sites.

In 1995, North Sydney Council endorsed the public open space proposals. In 1999, The Waverton Peninsula Strategic Masterplan was developed by North Sydney Council after consultation with stakeholders and the community to create strategies for working waterfront and open space land use for the BP, **coal loader** and Caltex ex-industrial sites. All relevant NSW Government departments were among the major stakeholders participating in the Reference Group for the project and they supported the final Masterplan. Remediation works on the site began soon afterwards and, in 2003, the site was handed to North Sydney Council for redevelopment as a public park. The parklands **next** to the subject BP **Site**, now known as Carradah Park, were opened in March 2005. The NSW Government retained 0.98 hectares of the site for the 'waterfront industrial' use. In December 2007, NSW Maritime called for Registrations of Interest to develop Berrys Bay Maritime Precinct. NSW Maritime sought proposals for development of a maritime precinct subject to the Waverton Peninsula Strategic Masterplan on **about** 1.6 hectares of land, comprising the BP 'working waterfront' of 0.98 hectares, plus the former Woodley's site of 0.61 hectares, together with **about** 2.4 hectares of **nearby** water area.

In August 2009, NSW Maritime issued a press release announcing Meridien Marinas Pty Ltd $40 million capital investment as the preferred proponent to redevelop the western area of Berrys Bay. The proposal differs from the strategic Masterplan and included:

- Capacity to berth 92 vessels ranging from 12 **metres** to 30 **metres** in length
- A dry stack storage facility for 60 vessels
- Vessel sewage pumpout and refuelling facilities
- Berths for visiting and pick-up/drop-off vessels
- 1150 square metre covered vessel maintenance facility
- Maritime workshops, offices and ancillary businesses including a café

- Launch area for small craft such as canoes and kayaks, with storage space
- Parking for 140 cars
- Foreshore access and retention of the heritage convict-era bund wall and original seawall.

A.7.2 Description

The former BP **Site** is located on the eastern side of Balls Head fronting Berrys Bay on the northern side of Sydney Harbour. The former BP **Site** has been cleared of most structures. The site contains a range of extant industrial relics which date from each phase of occupation, including the salvaged sandstone convict blocks from Berry's warehouse reused in the bund wall, footings, pipework, terraces, concrete pavement and excavated sandstone cliffs. The foreshore has also been modified through land reclamation and retained by a variety of concrete and stone sea walls. A remnant section of the Berry constructed seawall exits near the boundary of the former Woodley's site. There are two wharves: the western wide timber wharf and a timber T-wharf. This **is** set within a heavily excavated escarpment and terraced foreshore. The site may also contain archaeological evidence of its early uses.

A.7.3 Curtilage information

The BP Site is situated on Lots 2 and 20 DP 1048933.

A.7.4 Significance assessment

Table A.7.2 : BP Site significance assessment

Criterion	Local level
A – Historical significance	**Roads and Maritime Section 170 Register –** The BP **Site** is a product of the **19th** century alienation and **20th** century subdivision of large estates on the northern side of Sydney Harbour. The site is associated with early **20th** century government and private ventures aimed at developing an oil refinery in Australia, involving the Anglo-Persian Oil Company, **COR** and BP Australia Limited. It had over **70** years of use as an oil products storage and distribution depot in Sydney Harbour. The BP **Site** is significant for the 1930s decision to reuse the stone from Berry's Store to build the extant bund wall. It was recorded at that time as retaining some of the site's history and, as such, is an example of conservation practice of that time. The stones were hand hewn by convicts and are said to be identified with convict marks. The BP **Site** represents early **20th** century ambitions to develop the Waverton peninsula as an industrial area. **North Sydney Local Environmental Plan 2013 –** Associated with Edward Wollstonecraft, merchant**,** and Alexander Berry**,** his business partner**,** and their agricultural activities at the Coolangatta Estate in the Shoalhaven as a depot to receive grain. The site is associated with convict labour in that the bund wall contains sandstone hewn by convict labour salvaged from the demolition of Berry's four level sandstone warehouse. The site is also important for the government and private venture aimed at developing an oil refinery in Australia, involving the Anglo-Persian Oil Company, **COR** and BP Australia Limited. The site is also associated with the early use of torpedoes in Australia for Australian defence.
B – Historical association significance	**Roads and Maritime Section 170 Register –** The BP **Site** is significant for its historical association with prominent merchants Edward Wollstonecraft and Alexander Berry. The BP **Site** is associated with the NSW Torpedo Corps and the use of torpedo boats for Australian naval defence. **North Sydney Local Environmental Plan 2013 –** Associated with Edward Wollstonecraft, merchant and his business partner Alexander Berry.
C – Aesthetic significance	**Roads and Maritime Section 170 Register –** The BP **Site** is a prominent harbour side industrial site. The unusual modified landforms of the BP **Site**, including the stark form of curved cuttings and straight lines of massive masonry walls, impart a distinctive aesthetic value, making the sites instantly recognisable as industrial places.

Criterion	Local level
	North Sydney Local Environmental Plan 2013 – The site is a prominent harbour side landmark with dramatic views across Berrys Bay to Sydney Harbour and the city skyline. The site, when combined with the three industrial sites in the Waverton Peninsula Group**,** is typical of original topography, modified landforms and industrial relics which formerly characterised much of Sydney Harbour. The remnant industrial elements are strong visual features that communicate the industrial use of the site which are becoming a rarity in Sydney Harbour.
D – Social significance	**Roads and Maritime Section 170 Register –** The Waverton peninsula, including the former BP **Site**, is held in high esteem by the local community. In addition to other heritage values, the peninsula is now regarded as a major community asset which is being returned to the people as the result of sustained and effective community action. **North Sydney Local Environmental Plan 2013 –** The site is held in high esteem with the local community and is now considered to be a community asset. The BP **Site** and the other Waverton Peninsula Industrial Sites are an important opportunity for the enjoyment of natural and historic resources. The site is important to the Waverton Peninsula's 'sense of place' and the community's concerns for the Sydney Harbour foreshore.
E – Research potential	**Roads and Maritime Section 170 Register –** The BP **Site** has potential to contain archaeological deposits related to Aboriginal occupation, where it hasn't been excavated to bedrock. **North Sydney Local Environmental Plan 2013 –** There are potential Aboriginal archaeological deposits within the reclaimed areas of land. There is potential to reveal information about Mr **W.G. Mathews's** house, Berry's manager. The site shows land reclamation and the common practice of straightening the harbour foreshore to provide additional work space. The site shows examples of drainage channels and concrete footings for tanks. The BP **Site** demonstrates the environmental and legal requirements associated with the storage and handling of fuel through the survival of bund walls and drainage channels.
F – Rarity	**North Sydney Local Environmental Plan 2013 –** The site represents the use of the Sydney Harbour foreshore for industrial maritime activity for over one century.
G – Representativeness	**Roads and Maritime Section 170 Register –** The BP **Site** is representative of industrial harbour side places and demonstrates the common practice of straightening the harbour foreshores to create additional, level and flat work spaces. **North Sydney Local Environmental Plan 2013 –** The site represents the early **20th** century proposal to develop North Sydney as an industrial area. The bund wall has sandstone blocks hewn by convicts.

A.7.5 Statement of significance

A.7.5.1 Waverton Peninsula Conservation Management Plan

The BP **Site** is a prominent harbourside industrial landmark distinguished by physical changes to underlying topography, wrought by nearly two centuries of European use and development.

The BP **Site** is significant for its historical association with eminent merchants Edward Wollstonecraft and Alexander Berry. The site and neighbouring Woodley's Boat Shed property, as well as the site of **W.G. Mathews's** house, retain physical evidence of this early industrial occupation.

The BP **Site** also has the archaeological potential to reveal information about subsequent occupation, including The General Screw Steam Company, W.G. Mathews, Berry's overseer, distillery, torpedo depot, and the liquid fuel storage occupation commencing with the Anglo-Persian Oil Company, **COR** and **BP**.

The site is significant for its ability to demonstrate the physical requirements and scale of the oil storage facility, **evidenced** by the remnant rock cuttings, brick and concrete retaining walls, terraces and level work areas, **and** the provision of concrete channels, bund walls and drainage canals, **designed** to direct and contain liquid fuel.

The BP **Site** provides major views of Berrys Bay, Sydney Harbour and the Sydney **Central Business District**.

The site is associated with Aboriginal occupation, of which no physical evidence is known to survive.

A.7.5.2 Section 170 Heritage and Conservation Registers

The BP **Site** is significant for its long use as an industrial site, which commenced in the early **19th** century and continued through to the late **20th** century. Both in its early period as a warehouse and manufacturing site and its latter use as an oil products depot, the BP **Site** has been a significant place of industrial activity on the foreshores of Sydney Harbour. It is a relic of Australia's heavy dependence **on** maritime transportation within Sydney Harbour in its first two centuries. The BP **Site** associated with merchants Edward Wollstonecraft and Alexander Berry retains sandstone masonry which was originally cut in the 1830s for a warehouse. The site demonstrates the physical characteristics of an oil storage facility and the majority of the former site is now valued by the local community as a public open space.

A.7.5.3 North Sydney Local Environmental Plan 2013

The BP fuel storage site is significant for its historical association with eminent merchants Edward Wollstonecraft and Alexander Berry. The site retains evidence of its former industrial usage as well as physical evidence of the house lived in by Berry's manager, **W.G.** Mathews. The BP **Site** also has archaeological potential to reveal information about subsequent occupation including that of the: General Screw Steam Company, **W.G.** Mathews, the Rag and Famish Distillery, the NSW Torpedo Corps Depot, and then the liquid fuel storage functions commencing with the Anglo-Persian Oil Company, Commonwealth Oil refineries and **BP**. The site is jointly significant with Carradah Park for its ability to demonstrate the physical requirements and scale of oil storage facilities as made evident by the sandstone rock cuttings, extensive retaining walls, the bund wall and terraced areas. The bund wall on the BP **Site** is believed to **have been** constructed from **convict-hewn** sandstone, obtained from the demolition of Berry's warehouse on the site. The site is associated with Aboriginal occupation**;** however**,** no known evidence survives. The site has an expanded curtilage.

A.7.6 Archaeological assessment

The following archaeological assessment is based on the historical background provided above, details from the *Waverton Peninsula Industrial Sites: BP, Caltex, Coal Loader, Conservation Management Plan* (Godden Mackay Logan 2000), and information obtained during a field survey carried out in September 2017. Further details of maritime archaeology, including along the coastline of BP site is provided in *Western Harbour Tunnel and Warringah Freeway Upgrade: Appendix K - Technical working paper: Maritime non-Aboriginal heritage* (Cosmos Archaeology 2020).

A.7.6.1 Visible surface features or location of historical features

The Waverton Conservation Management Plan identifies a number of key features of the BP Site which are either still extant or are the locations of historically known structures or features. These are listed in Table A.7.3 and shown in Figure A.7.6.

Table A.7.3 : Description of visible surface features or location of historical features, BP Site

Feature[1]	Description
1. 1834 Berry's warehouse/store	Stone warehouse/store built by Berry in 1834. Also used by: • Peninsula and Oriental Company (P&O) and the General Screw Steam Company for coal store – 1853 • AB Black for storage of ballast – sometime between 1853 and 1872 • Rag and Famish Hotel as a distillery – 1872 • NSW Torpedo Corps as a munitions storage, with a surrounding compound enclosed by a paling fence, including workshops, an office and hydraulic testing house – 1877–1889.

[1] Numbers cross-reference features numbered in Figure A.7.6.

Feature[1]	Description
	Stone warehouse/store was dismantled in 1933 and stones reused to build the existing bund wall in 1936. Despite the removal by the Commonwealth Oil Refinery Ltd in 1936 to make way for a new storage tank, remnant features of the original building may be located within this area.
2. 1834 stone cottage	Location of a stone cottage associated with Berry's warehouse/store (1), lived in by Berry's Clerk and General Manager William George Matthews until 1854. Demolished in the 1930s.
3. Small Commonwealth Oil Refinery storehouse	Location of a small building related to the Commonwealth Oil Refinery, still visible in 1943 aerial imagery, situated to the north of the western wharf (8).
4. Large Commonwealth Oil Refinery storehouse	Location of a large building related to the Commonwealth Oil Refinery, still visible in 1943 aerial imagery, situated to the north-east of the western wharf (8).
5. c.1930 possible funicular tramway	Location of funicular tramway that carried four-gallon drums of kerosene from the western wharf (8) in a north-westerly direction to a storehouse on top of a rocky outcrop known as 'Gibraltar' (outside proposed project construction site).
6. Stone and concrete foundations	There is no further detail in the Conservation Management Plan about the origin of these foundations. During field survey, the location of this feature was not accessible.
7. Large 1923 fuel tank	Although the original 1923 steel tank itself is gone, the remnant infrastructure associated with the tank remains, including the tank's sandstone block footings, remain.
8. 1930 western wharf	Remnants of a timber structure that originally comprised timber piles, timber headstocks, timber girders, and a timber deck.
10. Site of Berry's sandstone quay style wharf	Remnants of Berry's sandstone block wharf, c.1830, may survive in the sandstone wall (11) next to Woodley's Shipyard.
11. Sandstone block wall	Remnants of Berry's sandstone block wharf, c.1830, may survive in the sandstone wall (11) next to Woodley's Shipyard.
12. 1936 bund wall	The existing coursed sandstone bund wall (12) built in 1936 reuses the sandstone blocks of the warehouse/store (1) built by convict labour for Alexander Berry in 1834. Some of the stones have tooled margins and are rumoured to be marked with the number of the convict that cut them. No numbers were found on the exterior face, and the interior face has been lined with concrete.
13. 1960 timber T-wharf	Built to replace earlier finger wharf.

In addition to the key individual features mapped in Figure A.7.6, and described in Table A.7.3, there are a wide range of remnant infrastructure components across the site demonstrating the dimensions of tanks and the methods used to channel fuel and water through the site as well as on and offshore, including:

- Mortises in rock walls for support for network of pipes
- Encircling drainage canals and concrete footings for metal fuel storage tanks
- Sandstone block footings for 1923 tank
- Brick retaining walls
- Pump room concrete footings (might be outside construction zone (near T-wharf))
- Elevated steel walkways and concrete paths between the admin block and waterfront areas
- Concrete drainage channels and retention structures with weirs, baffles and the associated remnant pipe work and valves (Figure A.7.12).

A.7.6.2 Areas of archaeological potential

Based on these key surface features and locations of known historical features, there are three main areas of historical archaeological potential situated within the area of the proposed project construction site. The terrestrial areas were identified in the Waverton Conservation Management Plan:

- Area A: The south-western section of the site near Berry's stone store, house and wharf

- Area B: The site of the first 1923 fuel storage tank, warehouse and building for the Anglo-Persian Oil Company

The location of each area is mapped in Figure A.7.6. Details of the features and activities associated with each area are presented in Table A.7.4.

Table A.7.4 : Areas of archaeological potential, BP Site

Area of archaeological potential	Associated features/occupation
Area A	Berry's sandstone block wharf (10) c.1820s wharf (Berry/Wollstonecraft) 1834 stone warehouse (1) 1834 stone cottage (2) Two wells associated with warehouse and cottage (exact location unknown) Stables (exact location unknown) Coal store for P&O and General Screw Steam Company (1) AB Black storage of ballast (1) 1872 distillery for the Rag and Famish Hotel (1) 1877–1889 NSW Torpedo Corps occupation including munitions storage and compound with workshops, office hydraulic testing house and paling fence (1) Blacksmith on wharf edge c.1880 (exact location unknown)
Area B	1923 fuel storage tank (7) Commonwealth Oil Refinery storehouses/buildings (3, 4) Funicular tramway (5)

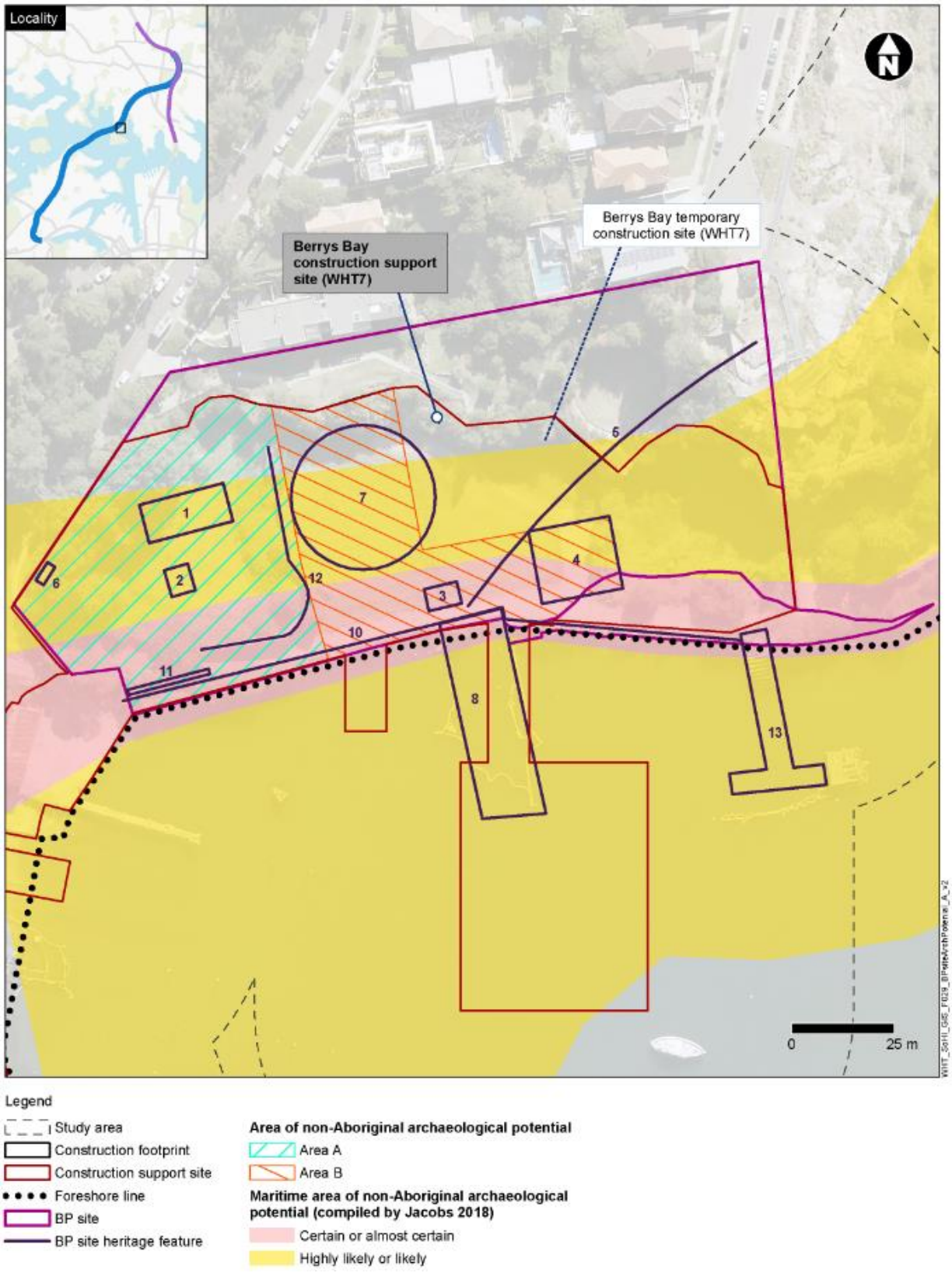


Figure A.7.6 : Location of key surface features, known historical features and areas of archaeological potential at BP Site

A.7.6.3 Assessment of archaeological potential

The historical archaeological research potential of the BP Site is assessed in the Waverton Conservation Management Plan (Godden Mackay Logan 2000:129) as follows:

> The BP **Site** offers substantial historical archaeological research potential, arising from the use of the site by Wollstonecraft and Berry during the early to mid-**19th** century. Specifically, there is high potential for in situ survival of Berry's stone store and an associated stone cottage. There may be related deposits or ancillary features such as wells, drains and rubbish pits. The stone from the store is present on site as facing for a bund wall. These stones are reputed to have 'convict marks' and if the wall or parts of it were to be disturbed, the obscured faces may also yield new evidence.
>
> Other archaeological features which may exist as buried foundations along the southern foreshore include Berry's sandstone quay-style wharf, a stone store **known** to have been standing prior to 1923 and Berry's stone wall.
>
> All of these elements and the deposits that may be associated with them have potential to yield additional information about the history of this site, **19th** century industrial activities undertaken, and the role of Sydney Harbour in Sydney's maritime and wider economic history, which are unavailable through traditional documentary research.

The archaeological potential for Aboriginal sites to be present at the BP Site was also assessed in the Waverton Conservation Management Plan. The only area of potential identified was along the foreshore towards the southern end of the site which is 'substantially reclaimed by fill and sandstone rubble from up slope'. While the likelihood of significant undisturbed archaeological remains surviving in this area is low, there is a possibility that deposits such as open foreshore shell midden may have been buried during reclamation activities. Further details of the assessment of Aboriginal heritage for the project are presented in the Technical working paper: Cultural heritage assessment report (Jacobs, 2020).

Figure A.7.7 : BP Site (former) at Waverton (NSW Maritime)

Figure A.7.8 : The former BP Site entry at Carradah Park

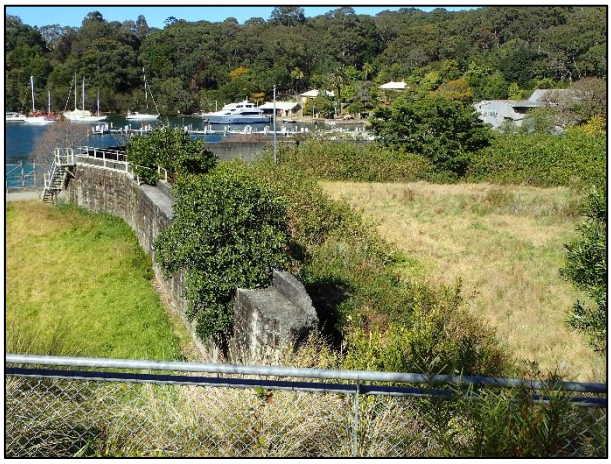


Figure A.7.9 : Bund wall (12) using convict hewn sandstone; Area of Archaeological Potential A to right of wall

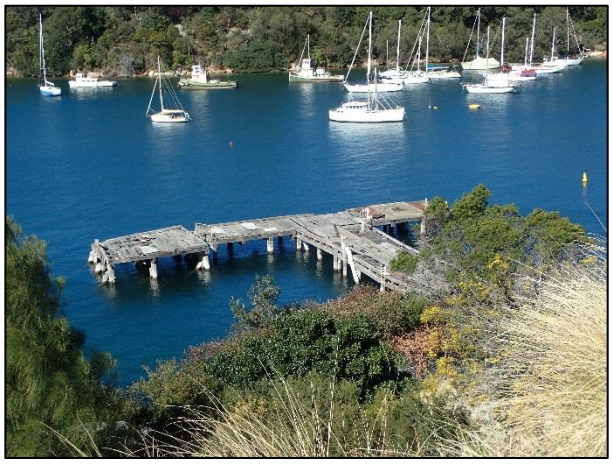


Figure A.7.10 : View of the 1960 timber T-wharf (13)

Figure A.7.11 : View facing north across the location of the former large 1923 fuel tank (7), with bund wall to the west

Figure A.7.12 : Tracks within the former BP Site, facing north, possibly related to funicular railway (5)

Figure A.7.13 : Location of a former tank (c. 1956), now a green space within Carradah Park, outside of the study area

A.8 Item 8: Sydney Harbour Bridge, approaches and viaducts (road and rail), Milsons Point/Dawes Point

Table A.8.1 : Sydney Harbour Bridge, approaches and viaducts (road and rail) details

Alternative names	Location	Register	Register ID	Significance level
Sydney Harbour Bridge, approaches and viaducts (road and rail); Sydney Harbour Bridge, approaches and viaducts; Sydney Harbour Bridge approach viaducts, arches and bays under Warringah Fwy; Sydney Harbour Bridge	Bradfield **Highway**, Dawes Point – Milsons Point, NSW	National Heritage List	105888	National
	Bradfield Highway and North Shore Railway, Milsons Point/Dawes Point, NSW 2000	State Heritage Register	00781	State
	Bradfield Highway (MR 632) Milsons Point/Dawes Point	Roads and Maritime Section 170 Register	4301067	
	Sydney Harbour Bridge and approach viaducts, including 2-4 Ennis Road and 2-74 Middlemiss Street, Milsons Point	*North Sydney Local Environmental Plan 2013*	I0530	
	Bradfield **Highway**, Sydney, NSW	Register of the National Estate	1857	
		National Trust of Australia (NSW)	C6075	

The information provided below is replicated verbatim from the State Heritage Inventory, the National Heritage List, the Register of the National Estate, and the *North Sydney Local Environmental Plan 2013*, with any amendments or further additions included in **bold**.

A.8.1 History

In 1815, government architect Francis Greenway, in a report to Governor Macquarie, proposed the building of a bridge from Dawes Point at the city's edge to the northern shore. However**,** it was not until 1922 that legislation was passed and acted upon, authorising the construction of a bridge. Tenders were invited in 1923 in accordance with general plans and specifications prepared by Dr J.J.C. Bradfield, Chief Engineer, Sydney Harbour Bridge and Railway Construction. The plans and specification provided the alternatives of a cantilever bridge or an arch bridge.

Twenty proposals were received from six different companies for various types of design, including suspension bridges not covered by Dr Bradfield's specification. The tender of Dorman Long and Co. Ltd., of **Middlesbrough,** England**,** for an arch bridge was accepted, the design being substantially in accordance with one of Dr Bradfield's proposals. The detailed design was carried out by the Contractor's Consulting Engineer, Sir Ralph Freeman, and the fabrication and construction were under the direct charge of Mr Lawrence Ennis, a director of the firm. The design and the construction of the bridge were supervised at all stages by Dr Bradfield and his staff.

First work on the bridge **started** in 1924, with construction of the bridge approaches and the approach spans. While the approach spans were being built, the foundations on either side of the harbour were prepared to take four steel bearings consisting of large hinge pins and massive steel bases for support of the arches.

At each end of the arch span of the bridge, and just behind the bearings, large abutment towers supporting the pylons were constructed. The abutment towers with the pylons are not a necessary structural feature of the bridge. They do not support the arch and were built principally to enhance the appearance of the structure.

As the erection of the steelwork was proceeding, the approaches were being constructed, including Milsons Point and North Sydney railway stations, and roadway approaches on both sides of the harbour.

The bridge was opened to roadway, railway and pedestrian traffic by the then Premier of **NSW**, Mr J.T. Lang, on 19 March 1932.

The time taken to complete the whole work, including bridge and approaches**,** was eight years. The contract for the bridge construction provided for six months' maintenance by the contractors from the date of opening, after which maintenance became the responsibility of the State (GHD Transportation Consultant**,** 1982:4).

Bradfield Park North (Sandstone Walls and Cesspit/Well)

Post-Contact History

1800: **Area** was part of a land grant given to Robert Ryan**.**

1850s: **Following** subsequent acquisitions, subdivision and sale, the area became known as the Milsons Point Wharf and Lane Cove Road (Alfred Street) development, with subsequent urban development (primarily **working-class** terrace housing)**.**

1924: **Construction** of the Sydney Harbour Bridge began, resulting in the demolition of all extant dwellings, structures and streets in the Milsons Point Wharf and Lane Cove Road (Alfred Street) development**.** (**A** total of 438 houses were demolished for the construction of the northern approaches of the Harbour Bridge**.**) Subsequent reclamation works provided more useable foreshore/public space**,** and the area became known as Bradfield Park North. Bradfield Park North was also used as a depot for large machinery and vehicles used during the construction phase of the bridge**.**

1930s: After the **bridge** was completed**,** the area required replanting and rehabilitation**.**

1932: **The** site was handed over to North Sydney Council for **long-term** management and was subsequently redesigned as described in the previous S60 assessment report in Annexure A**.**

c**.** 1940s: The **park** was briefly used by the Royal Australian Air Force as a mobilisation, movement and demobilisation depot.

Early 19th and 20th century surveyed plans as well as a 1926 photograph provide the primary evidence for the existence of these structures. The study area is located in an allotment which was formerly occupied by a Victorian terrace which was a **two-storey** dual residence at 115**–**117 Alfred Street. It was a typical 1890s residence constructed for occupation by the working to middle class. The photographs also show that large sandstone blocks were used under houses along Alfred Street to compensate for the sloping topography.

A.8.2 Description

The bridge is constructed of silicon steel trusses and joists painted dark grey. The pylons are faced with granite. The portion of the approaches nearest the arch are constructed of open work steel joists which are supported by granite-faced pillars. The remainder of the approaches are steel and masonry construction with render finish. The span of the arch, measured between the centres of the end pins, is 1670 feet. The arch is divided into 28 panels of open steel work, each panel being 58 **feet** 11 **inches**. The rise of the arch at its crown is 250 feet and the depth of the truss at the centre of the arch is 60 feet and at the end it is 188 feet.

Under the heaviest allowable load, the deflection at the centre of the bridge is **four** and half inches, and the maximum thrust at the hinges (ie at the ends of the arch) is 435,000,000 lb per hinge. The top of the arch is 445 **feet** above water level and the roadway suspended below the arch is 170 **feet** above the water level. The 'roadway' is 150 **feet** wide and total length including the approaches is 3816 **feet**.

The steelwork was manufactured in **NSW** and fabricated in Sydney in shops especially erected on the shores of Lavender Bay.

The steel sections were produced in the Britannia Works of Dorman Long and Co, **Middlesbrough**, England and fabricated in the company's workshops especially erected on the shores of Lavender Bay (Mackaness, C (ed): Bridging Sydney, Historic Houses Trust, 2006). The granite facing the towers and pylons is from Moruya (Walker and Kerr**,** 1974). The five million rivets were manufactured by Macphersons of Melbourne.

A.8.3 Curtilage information

Sydney Harbour Bridge, approaches and viaducts (road and rail), is situated on Lot PT7 DP 127637; Lot PT1 DP 743856; Lot PT1 DP 779561; Lot 22 DP 785020; Lots 1 and 4 DP 849664; and Lot 100 DP 879674, as per the State Heritage Listing. However, each register's curtilage varies.

A.8.4 Significance assessment

Table A.8.2 : Sydney Harbour Bridge, approaches and viaducts (road and rail) National Heritage List significance assessment

Criterion	Local level
A – Events, Processes	**National Heritage List –** The building of the Sydney Harbour Bridge as a transport facility linking the city with the north shore was a major event in Australia's history, and represented a pivotal step in the development of modern Sydney and one of Australia's most important cities. The bridge became a symbol for the aspirations of the nation, a focus for 'optimistic prognostications of a better future' following the Depression. The bridge represented an important step in transforming the city of Sydney into a modern metropolis. Internationally, the bridge was recognised as a symbol of progress and a vision of a splendid future. The building of the Sydney Harbour Bridge was an important part of the technical revolution of the 1930s and seen as evidence of Australia's industrial maturity. The bridge represented the mechanical age displacing the pastoral and agricultural way of life on which Australia's economy had been based. The scale of the operations was enormous and at the time of its construction**;** it was the widest long-span bridge in the world. The Sydney Harbour Bridge includes a steel arch spanning the harbour between Milsons Point on the north side and Dawes Point on the south side, and elevated approaches to the arch from both the north and south sides. The arch is made up of two 28-panel arch trusses set in vertical planes, 30 metres apart centre to centre, and braced together laterally. Two granite-faced concrete pylons, with a height of 89 metres above mean sea level, are located at each end of the arch. A deck carrying road and rail traffic is suspended from the arch. Pairs of hangers, ranging in length from 7.3 metres to 58.8 metres, support cross-girders, each weighing 110 tonnes, which support the deck. The northern and southern approaches each contain five spans, constructed as pairs of parallel-chord, six-panel steel trusses. The spans are supported by pairs of concrete piers faced with granite. The combined length of the approach spans is 646 metres. The Sydney Harbour Bridge is an outstanding cultural landmark for the nation and represents a highly significant place in Australia's cultural history. The opening of the Sydney Harbour Bridge was a momentous occasion, drawing remarkable crowds estimated at nearly one million people. Since its opening in 1932, the Sydney Harbour Bridge has become a famous and enduring national icon and symbol of Australia. The bridge remains one of Australia's most identifiable symbols.
E – Aesthetic characteristics	**National Heritage List – The** Sydney Harbour Bridge is an integral component of the Sydney Harbour vista and represents one of the most recognisable and iconic images in the world. It is the picturesque blending of the natural environment and man-made structures around the harbour foreshores that has proved an inspiration for generations of artists and writers. In its harbour setting, it has inspired a rich and diverse range of images in a variety of mediums – paintings, etchings, drawings, linocuts, photographs, film, poems, posters, stained glass – from the date of its construction through to the present day. The bridge is conceivably one of Australia's most-photographed cultural landmarks, and striking images of the bridge have been captured by some of Australia's best-known photographers.

Criterion	Local level
	The Sydney Harbour Bridge has also been replicated in tourist posters, postcards, crafts and the folk arts, its image reproduced in media including glass, ceramic, metal, shells and crochet cotton, embroidery and etchings in a huge array of objects.
F – Creative or technical achievement	**National Heritage List –** The Sydney Harbour Bridge may be considered the world's greatest arch bridge. Although not the longest arch span in the world, its mass and load capacity are greater than other major arch bridges. No other bridge in Australia compares in its technical significance with the structure of the Sydney Harbour Bridge and its pylons and constructed approaches between Argyle Street in the south and Arthur Street in the north. The construction of Sydney Harbour Bridge combined available technology with natural advantages provided by the site. The bridge is an outstanding technical and construction achievement of the **20th century**. The designers took advantage of the sandstone base on which Sydney was built, which enabled them to tie back the cables during construction of the arch and to experiment with massive structures. Although designed during the 1920s and 1930s**,** the bridge has still not reached its loading capacity.
G – Social value	**National Heritage List –** It was part of John Job Crew Bradfield's vision for the bridge that it be used at times of national rejoicing. Since its opening it has regularly supported flags, banners, and especially fireworks, becoming a focus for national and local celebrations. Community ceremonial and celebratory occasions centred on Sydney Harbour Bridge, either for the people of Sydney or the broad Australian community, are well recognised and have been widely noted. Since 1932, the broad Australian community has identified the Sydney Harbour Bridge as one of the most nationally and internationally recognised **symbols** of Australia and the bridge in its harbour setting represents a composite national symbolic image.
H – Significant people	**National Heritage List –** John Job Crew Bradfield ranks with other engineers whose close involvement in a broad range of projects contributed to Australia's national development. As principal design engineer for the **NSW PWD**, Bradfield was largely responsible for finally bringing the Sydney Harbour Bridge to fruition. As Chief Engineer, he prepared the general design specification and supervised the whole project on behalf of the Government of **NSW**, also integrating the bridge into the Sydney road, tram and rail system. Bradfield was nationally recognised through his appointments to the Australian National Research Council and the Australian Commonwealth Standards Advisory Committee. The Institution of Engineers, Australia awarded him the Peter Nicol Russell Memorial Medal in 1932, and he also received the Kernot Memorial Medal from the University of Melbourne in 1933 and the Telford Gold Medal from the Institution of Civil Engineers, London**,** in 1934.

Table A.8.3 : Sydney Harbour Bridge, approaches and viaducts (road and rail) significance assessment

Criterion	Local level
A – Historical significance	**State Heritage Register** – The bridge is one of the most remarkable feats of bridge construction. At the time of construction and until recently it was the longest single span steel arch bridge in the world and is still in a general sense the largest (Walker and Kerr**,** 1974). Bradfield Park North (Sandstone Walls): "The archaeological remains are demonstrative of an earlier phase of urban development within Milsons Point and the wider North Sydney precinct. The walls are physical evidence that a number of 19th century residences existed on the site which were resumed and demolished as part of the Sydney Harbour Bridge construction" **(**Statement of Heritage Impact - Sandstone Walls: Bradfield Park North, Milsons Point (2003: 8), McFadyen and Stuart, HLA Envirosciences**)**. **Section 170 Heritage and Conservation Registers** – The bridge was the outcome of the personal vision and commitment of Dr **J.J.C.** Bradfield, Chief Engineer, Sydney Harbour Bridge, City Transit and Metropolitan Railway Construction, and the leading figure in the development of Sydney's transport system in the first part of the **20th** century.

Criterion	Local level
	- The bridge has been in continuous use since 1932 as the main road and rail connection across Sydney Harbour. Together with the city railway system, it constituted a radical expansion of Sydney's transportation network. - The construction of the bridge allowed a major acceleration in the growth of the northern residential suburbs of metropolitan Sydney, particularly in the post-World War II years, as well as the extension of the Central Business District into North Sydney in the 1960s and 1970s. - The bridge approach spans provide the physical evidence of extensive urban redevelopment within **the** Rocks/Milsons Point precinct and the wider North Sydney precinct. Large parts of the early subdivision patterns and built forms in both of these early parts of Sydney were demolished **before** the construction of the bridge. - The bridge approach spans and roadways (especially the Warringah Freeway at North Sydney) truncated established and homogeneous neighbourhoods, creating distinctive precincts whose land use and built forms developed separately. - The construction of the bridge consumed a major portion of the public works capacity and budget of **NSW** and was a very significant undertaking for the public sector at the time. - The bridge became an early focal point for political tensions and national celebrations, starting with the 'De Groot' incident in 1932, and more recently the 'Walk for Reconciliation' in 2000, the Sydney Olympic Games in 2000 and the annual role it continues to play as part of New Year's Eve and Australia Day celebrations.
B – Historical association significance	**Section 170 Heritage and Conservation Registers** – The construction of the bridge is also associated with the British team of engineers, Sir Ralph Freeman and contractors Dorman Long and Co. The bridge was the outstanding work of Freeman's career**,** but his contribution was marred by a dispute with Bradfield **about** who was actually responsible for its design. - The bridge has strong associations with the families and **descendants** of the workers who built it, and who recognise its role during the Depression as the so-called 'iron lung' in providing employment and protection from hardship or the dole. - The items in the SHB Movable Heritage Collection are memorabilia of the ceremonies and celebrations for the Opening Day of the bridge and are associated with the people from all classes who participated in the Opening Day events and activities. - The technical items and instruments within the SHB Movable Heritage Collection were used by staff and workers associated with the construction and maintenance of the Sydney Harbour Bridge, sometimes over many years.
C – Aesthetic significance	**State Heritage Register** – The bridge, its pylons and its approaches are all important elements in townscape of areas both near and distant from it. The curved northern approach gives a grand sweeping entrance to the bridge with continually changing views of the bridge and harbour (Walker and Kerr, 1974). **Section 170 Heritage and Conservation Registers** – The bridge is a monumental landmark in the centre of the city of Sydney and an important visual element in the cityscape when viewed from many key points within the city. - The pylons and abutment towers designed by English architect Thomas Tait exhibit a sophisticated degree of Art Deco design influence comparable with other examples in Sydney and **NSW**, such as the former Maritime Services Board building and the Hyde Park War Memorial. - The sweeping curve of the northern approach spans exhibits a dramatic aesthetic quality and is the subject of many works of art and photos. - The consistent detail treatment of the components that make up the approaches (ie arched and flat-topped voids utilised as tenancies, retaining walls, balustrades, steps, lighting) is of a high quality and makes a major contribution to the streetscapes of Milsons Point and The Rocks/Millers Point. - The approach span arches, slabs and retaining walls of the bridge are important examples of the use of in situ reinforced concrete on a massive scale, combined with the fine scale use of the material for detail components such as balustrades, step and bass relief decoration.

Criterion	Local level
	- The scale and design of the viaducts forming the approach spans to the bridge are notable within the **NSW** context. - The masonry pylons and abutments of the approach spans designed by the English architect Thomas Tait exhibit a sophisticated degree of Art Deco design influence comparable with other examples in Sydney and **NSW**. - The SHB Movable Heritage Collection commemorates the technical achievement evident in the design and construction of the Sydney Harbour Bridge. It contains steel samples, rivets, bolts and examples of the instruments utilised for the fabrication of components for the bridge. The tools and equipment used by Dorman Long Company in the fabrication and construction of the bridge are also illustrative of the processes used during the manufacture, installation and testing of the **bridge**.
D – Social significance	**State Heritage Register** – The bridge has been an important factor in the pattern of growth of metropolitan Sydney, particularly in residential development in post-World War II years. In the 1960s and 1970s the Central Business District had extended to the northern side of the bridge at North Sydney which has been due in part to the easy access provided by the bridge and also to the increasing traffic problems associated with the bridge (Walker and Kerr**,** 1974). **Section 170 Heritage and Conservation Registers** – The bridge is a focal point for cultural events and national celebrations, as exemplified by the 'Walk for Reconciliation' in 2000, the Sydney Olympic Games in 2000, the Sydney Running Festival, Bicycle NSW's Spring Cycle and the annual role it continues to play as part of New Year's Eve and Australia Day celebrations. - As a major public work of the time, the bridge represented a substantial investment by the taxpayers of **NSW**, and the toll still paid by motorists crossing the bridge is a constant reminder to the citizens of **NSW** of the huge cost burden imposed by its construction. - The construction of the bridge affected the lives of almost a generation of workers, and its role during the Depression as the so-called 'iron lung' which provided employment and protected workers and their families from hardship or the dole is still remembered. - The bridge was an important factor in the pattern of growth of metropolitan Sydney, particularly in allowing the opening up of the northern suburbs for residential development. - The SHB Movable Heritage Collection contains items which are family heirlooms and memorabilia associated with the Sydney Harbour Bridge that were collected or retained by members of the public and which would continue to be considered valuable to the families of these people. - The bridge provides a reference point for the families and descendants of those who worked on its design and construction, its opening and subsequent operation over **70** years. - Movable heritage items associated with the Sydney Harbour Bridge have a strong social significance for those who worked on the bridge, the staff of the RTA as the custodians of the bridge and to residents of Sydney who in the past watched the bridge being constructed and still use the bridge today.
E – Research potential	**State Heritage Register** – Bradfield Park North (Sandstone Walls): "The archaeological remains have some potential to yield information about the previous residential and commercial occupation of Milsons Point **before** the construction of the Sydney Harbour Bridge transport link" [Statement of Heritage Impact **–** Sandstone Walls: Bradfield Park North, Milsons Point (2003: 8), McFadyen and Stuart, HLA Envirosciences]. **Section 170 Heritage and Conservation Registers** – The bridge allows for the understanding of working conditions in the 1930s. - The archaeological remains in Dawes Point have the potential to yield further information about the early development of this very historic area of Sydney, particularly the Dawes Point Battery and later alterations. - The SHB Movable Heritage Collection contains original fabric elements such as the samples of original steel shavings and rivets, which provide a future opportunity for materials testing and analysis without the requirement for taking samples directly from the standing structure.
F – Rarity	**Section 170 Heritage and Conservation Registers** – The bridge is a uniquely important development in Sydney's transportation network.

Criterion	Local level
	- As it introduced a main road and rail connection across Sydney Harbour, the bridge was the single most important factor in the expansion of metropolitan Sydney north of the harbour. - The SHB Movable Heritage Collection is a collection of rare surviving relics relating to the construction methodology, technology and materials of the bridge, assembled as part of the overall construction program, the first time in Australia that the construction of a bridge had been approached in this manner. - The SHB Movable Heritage Collection comprises original relics of the ceremonies and celebrations for the Opening Day of the **bridge** and represents a rare record of Sydney society in the period during the construction of the **bridge**. It also contains rare surviving relics of the **50th** birthday celebrations of the **bridge** and of the **bicentennial** celebrations in 1988
G – Representativeness	**Section 170 Heritage and Conservation Registers** – The SHB Movable Heritage Collection comprises components and materials which are representative of the technologies in use at the time and utilised for the construction of the bridge. It contains tools, instruments, documents and equipment used in the fabrication and construction of the bridge which are representative of the specialised technology of the period and which illustrate typical processes used during the manufacture, installation and testing of the bridge. The collection also comprises equipment representative of the ongoing operation and maintenance operations of the bridge, including toll collection. - The SHB Movable Heritage Collection contains original memorabilia of the ceremonies and celebrations for the Opening Day of the **bridge**, such as newspaper special supplements, published books and souvenir editions, as well as badges, postcards and pictures. This material is representative of the aesthetic and cultural context during the construction of the bridge, as well as of the media technologies and materials prevalent at the time.

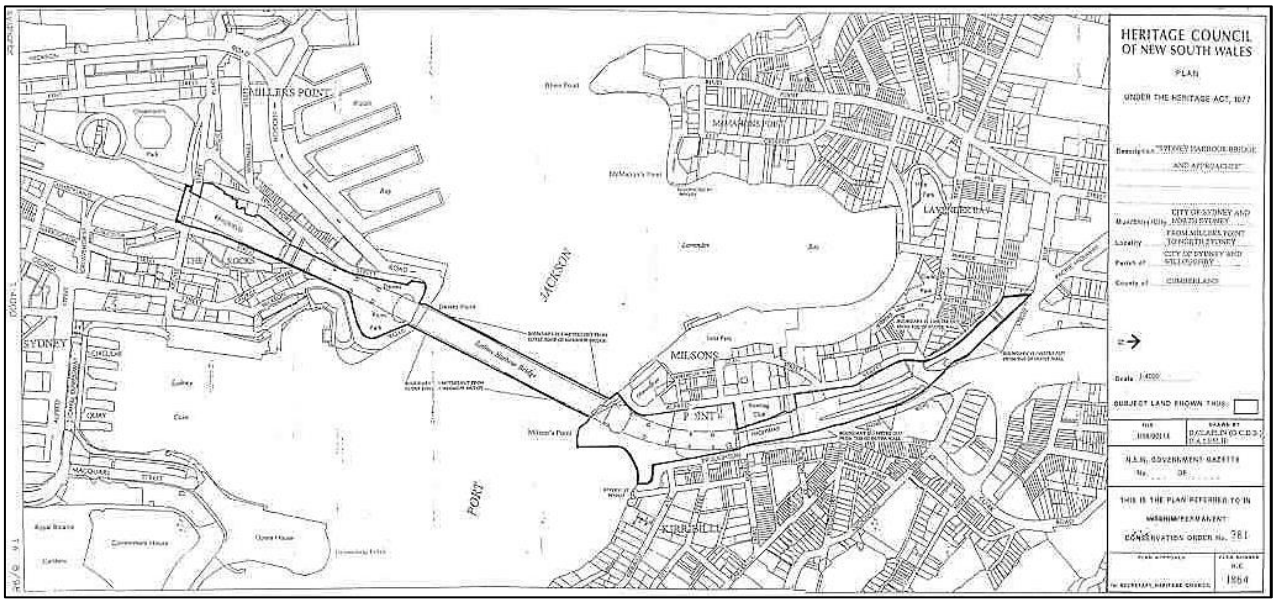


Figure A.8.1 : PCO Plan Number 781 (Source: Heritage Council of NSW)

Figure A.8.2 : Tenancy bays which form the underneath of the bridge approaches along Pacific Highway, facing south-east

Figure A.8.3 : Tenancy bays which form the underneath of the bridge approaches along Pacific Highway, facing north-west

Figure A.8.4 : Lavender Street bridge arch, facing south-west

Figure A.8.5 : Tenancy bays forming the underneath of the bridge approaches along Middlemiss Street, facing north-west

Figure A.8.6 : Steel trusses and the concrete arch of the Milsons Point (Fitzroy Street) Underbridge at corner of Broughton and Fitzroy streets, facing south-west

Figure A.8.7 : Steel trusses of the Sydney Harbour Bridge approach span adjoining the concrete arch of the Milsons Point (Fitzroy Street) Underbridge, facing north

Figure A.8.8 : Sydney Harbour Bridge and pylon

Figure A.8.9 : Sydney Harbour Bridge pylon

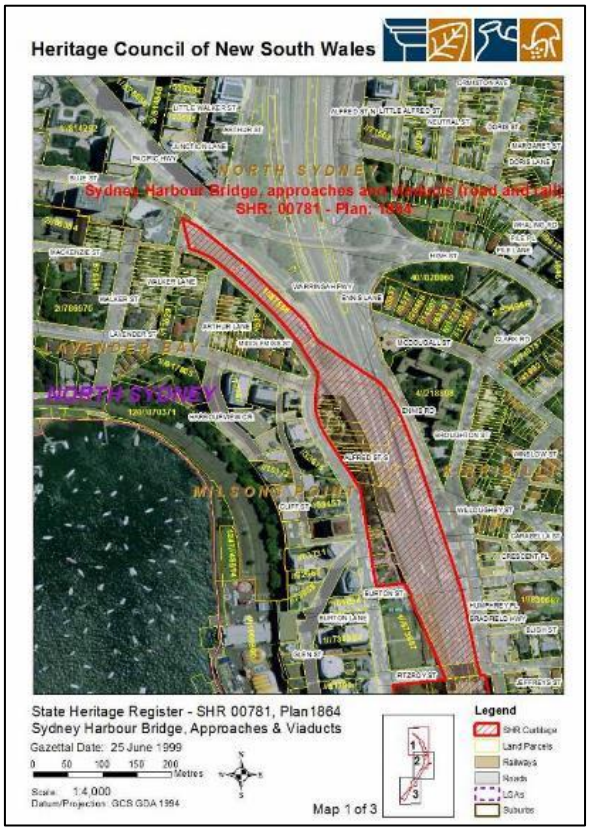


Figure A.8.10 : State Heritage Register Plan No 1864 (Source: Heritage Council of NSW)

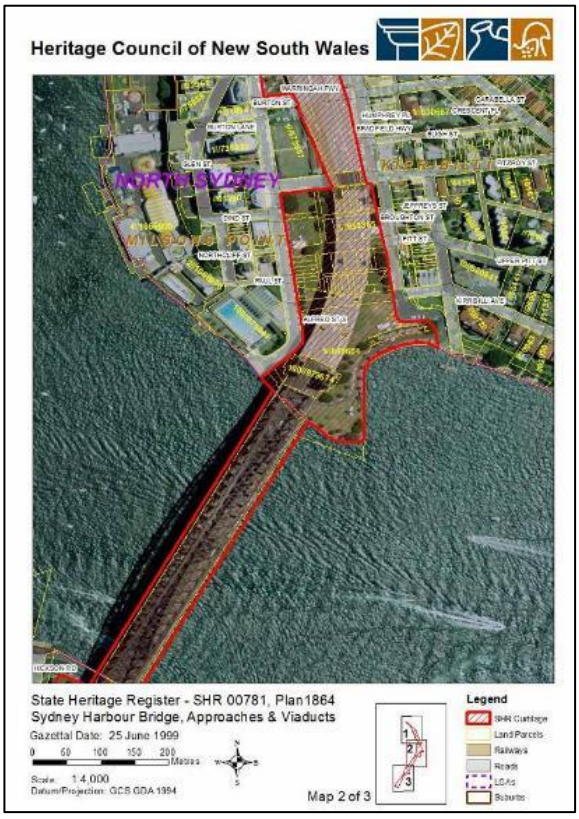


Figure A.8.11 : State Heritage Register Plan No 1864 (Source: Heritage Council of NSW)

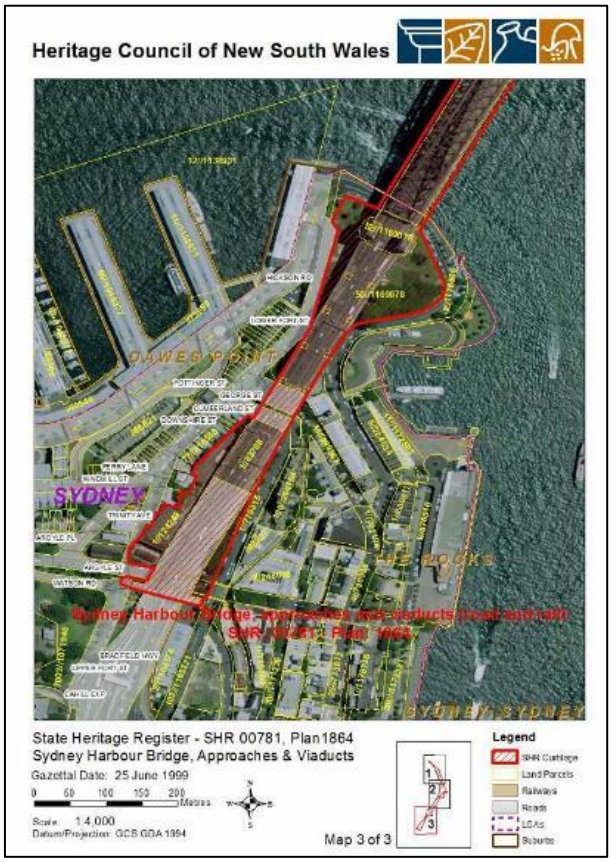


Figure A.8.12 : State Heritage Register Plan No 1864 (Source: Heritage Council of NSW)

A.8.5 Statement of significance

A.8.5.1 National Heritage List

The building of the Sydney Harbour Bridge was a major event in Australia's history, representing a pivotal step in the development of modern Sydney and one of Australia's most important cities. The bridge is significant as a symbol of the aspirations of the nation, a focus for the optimistic forecast of a better future following the Great Depression. With the construction of the Sydney Harbour Bridge, Australia was felt to have truly joined the modern age, and the bridge was significant in fostering a sense of collective national pride in the achievement.

The Sydney Harbour Bridge was an important economic and industrial feat in Australia's history and is part of the nationally important story of the development of transport in Australia. The bridge is significant as the most costly engineering achievement in the history of modern Australia, and this was **an** extraordinary feat given that it occurred at the severest point of the Great Depression in Australia.

The bridge is also significant for its aesthetic values. Since its opening in 1932, the Sydney Harbour Bridge has become a famous and enduring national icon and remains Australia's most identifiable symbol. In its harbour setting, it has been the subject for many of Australia's foremost artists and has inspired a rich and diverse range of images in a variety of mediums – paintings, etchings, drawings, linocuts, photographs, film, poems, posters, stained glass **–** from its construction phase through to the present.

The Sydney Harbour Bridge is also significant as one of the world's greatest arch bridges. Although not the longest arch span in the world, its mass and load capacity are greater than other major arch bridges, and no other bridge in Australia compares with the Sydney Harbour Bridge in its technical significance. In comparing

Sydney Harbour Bridge with overseas arch bridges, Engineers Australia has drawn attention to its complexity in combining length of span with width and load carrying capacity. The construction of Sydney Harbour Bridge combined available technology with natural advantages provided by the site. The designers took advantage of the sandstone base on which Sydney was built, which enabled them to tie back the support cables during construction of the arch and to experiment with massive structures. Although designed more than 80 years ago, the bridge has still not reached its loading capacity.

The bridge is also significant for its important association with the work of John Job Crew Bradfield, principal design engineer for the **NSW PWD**, who ranks as one of Australia's greatest civil, structural and transport engineers.

A.8.5.2 State Heritage Register

The bridge is one of the most remarkable feats of bridge construction. At the time of construction and until recently it was the longest single span steel arch bridge in the world and is still in a general sense the largest. The bridge, its pylons and its approaches are all important elements in **the** townscape of areas both near and distant from it. The curved northern approach gives a grand sweeping entrance to the bridge with continually changing views of the bridge and harbour. The bridge has been an important factor in the pattern of growth of metropolitan Sydney, particularly in residential development in post-World War II years. In the 1960s and 1970s the Central Business District had extended to the northern side of the bridge at North Sydney which has been due in part to the easy access provided by the bridge and also to the increasing traffic problems associated with the bridge (Walker and Kerr**,** 1974).

A.8.5.3 Section 170 Heritage and Conservation Registers

The bridge is a monumental landmark in the centre of the city of Sydney and an important visual element in the cityscape when viewed from many key points around the harbour.

The bridge was the outcome of the personal vision and commitment of Dr **J.J.C.** Bradfield, Chief Engineer, Sydney Harbour Bridge, City Transit and Metropolitan Railway Construction, and the leading figure in the development of Sydney's transport system in the first part of the **20th** century. It is also associated with the British team of engineer Sir Ralph Freeman and contractors Dorman Long and Co. Its construction consumed a major portion of the public works capacity and budget of **NSW** and was a very significant undertaking for the public sector at the time.

The bridge remains synonymous with the names of a broad range of personalities associated with either its construction or subsequent history, eg Premier Jack Lang, De Groot, Paul Hogan.

The approach span arches, slabs and retaining walls of the bridge are important examples of the use of in situ reinforced concrete on a massive scale, combined with the fine scale use of the material for detail components such as balustrades, step and bass relief decoration, and the scale and design of the viaducts forming the approach spans to the bridge are notable within the **NSW** context. The masonry pylons and abutments of the approach spans designed by the English architect Thomas Tait exhibit a sophisticated degree of Art Deco design influence comparable with other examples in Sydney and **NSW**.

The bridge has been in continuous use since 1932 as the main road and rail connection across Sydney Harbour. Together with the city railway system, it constituted a radical expansion of Sydney's transportation network and allowed a major acceleration in the development of the northern residential suburbs, particularly in the post-World War II years, as well as the extension of the Central Business District into North Sydney in the 1960s and 1970s.

The bridge approach spans provide the physical evidence of extensive urban redevelopment within The Rocks/Milsons Point precinct and the wider North Sydney precinct where large parts of the early subdivision patterns and built forms were demolished **before** the construction of the bridge. The bridge approach spans and roadways (especially the Warringah Freeway at North Sydney) truncated established neighbourhoods, creating distinctive precincts whose land use and built forms developed separately.

The construction of the bridge affected the lives of almost a generation of workers, and its role during the Depression as the so-called 'iron lung' which provided employment and protected workers and their families from hardship or the dole is still remembered.

The bridge became an early focal point for political tensions and national celebrations, starting with the 'De Groot' incident in 1932, and more recently the 'Walk for Reconciliation' in 2000, the Sydney Olympic Games in 2000 and the annual role it continues to play as part of New Year's Eve and Australia Day celebrations.

In terms of archaeological value, the surviving standing walls at Bradfield Park have the potential to yield further information about the early residential and commercial occupation of Milsons Point, and the archaeological remains in Dawes Point have the potential to yield further information about its early development, particularly the Dawes Point Battery and later alterations.

The Sydney Harbour Bridge has been assessed as being of State significance and is listed on the State Heritage Register and the National Heritage List.

A.9 Item 9: North Sydney Bus Shelters

Table A.9.1 : North Sydney Bus Shelters group details

Alternative names	Location	Register	Register ID	Significance level
North Sydney Bus Shelters	Cammeray / Cremorne / Cremorne Point / Crows Nest / Kurraba Point / McMahons Point / Milsons Point / Neutral Bay / North Sydney / Waverton / Wollstonecraft	North Sydney Local Environmental Plan 2013	I0407	Local

The information provided below is replicated verbatim from the State Heritage Inventory, and the Bus Shelter Heritage Review (David Scobie Architects Pty Ltd 2015), with any amendments or further additions included in **bold**.

A.9.1 History

The installation of the bus shelter(s) was supervised by architect Hugh Slatyer, and the construction was **carried out** by Stephen Edwards Construction in 1984.

In an interview with the then Mayor, Ted Mack, he stated:

'When I started those bus-stops, you have no idea how nervous I was. I thought people would scream about the waste of tax payers' money, scream about pinko colours – and it didn't happen. People liked them because it gave them a feeling of belonging; it gave them a sense of local identity. The biggest problem of cities all over the world is the alienation of people – and to a lot of people, especially older people, a sense of identity is important.' (*Sydney Morning Herald***, 15 August 1987**: 'Ted's Town')

The first cable car ran from Blues Point to Ridge Street on **22** May 1886. This line was extended along Falcon Street to Lane Cove Road in 1893. The first electric cable cars ran along Military Road to Spit Junction on **20** September 1893 and were replaced by trams in February 1900. Refer to the two maps of the tram routes in North Sydney provided at Section 6. Pp. 228-229. The last tram in North Sydney ran on **29** June 1958. The Northbridge tram line closed in 1936 because of the defective bridge over Long Gully, but services resumed in 1941 when the suspension bridge was re-opened, after the steel suspension structure was replaced with a concrete arch and continued until 1948. The Mosman line closed in 1955, followed by Cremorne and Neutral

Bay in 1956. The lines to Chatswood, Lane Cove, The Spit and Athol were closed in June 1958, and were replaced by buses.

Bus services were originally privately owned and were subsequently taken over by the Government. Currently the majority of bus services are provided by the NSW State Government, with some regional services provided by **bus contractors**.

All shelters are provided and maintained by local Councils.

A.9.2 Description

Each shelter is a small square or rectangular structure comprising stop-chamfered timber posts on concrete pads, supporting a timber framed pyramidal or hipped roof covered with terracotta shingle tiles. The back wall is typically of timber and glass, returned partly around one or two sides. A standard bench seat is provided. The front fascia beam bears the painted name of the bus stop and sometimes above that is the logo of the Council. These buildings are designed in a late 20th century nostalgic style.

All of the bus shelters are modelled on an original former tram shelter constructed in the 1920s (BS004 - The Oval) located on Miller Street, just to the north of its intersection with Ridge Street. This shelter differs from the nostalgic items constructed in the 1970s as follows:

1) **Corrugated** profile terracotta tiled roof
2) **Terracotta** finials on its roof
3) **Picket** fencing on the side returns
4) **Built** in seating
5) **No** use of glass.

A.9.3 Curtilage information

Specific bus shelters to which this listing relates are as follows.

Bus shelter	Location	Within project area
BS001 – Bridge	Adjacent 503 Miller Street	No
BS002 – Cambridge	Adjacent Miller Street Gardens, Miller Street	No
BS003 – Anzac	Adjacent 331 Miller Street	No
BS004 – The Oval	Miller Street, north of Ridge Street	No
BS005 – McLaren	Adjacent 225 Miller Street	No
BS006 – Monte	Adjacent 196 Miller Street	No
BS007 – Marist	Adjacent 288 Miller Street	No
BS008 – Falcon	**Adjacent 127 Falcon Street on Miller Street**	**Yes**
BS009 – Hampden	Adjacent 221 Military Road	No
BS010 – Miller	**South eastern corner of Miller Street and Falcon Street**	**Yes**
BS011 – Sirius	Adjacent Sirius Street Playground, Milson Road	No
BS012 – Cricketers	Adjacent 30 Murdoch Street	No
BS013 – St Peters	Adjacent 31–35 Waters Road	No
BS016 – Primrose	Adjacent 50–52 Earle Street	No
BS019 – Ixion	Adjacent 64 Amherst Street	No
BS020 – Ernest	Adjacent 190 West Street on Ernest Street	No

Bus shelter	Location	Within project area
BS022 – Milner	Adjacent 50 Milner Crescent	No
BS023 – Brennan	Opposite 55 King Street	No
BS024 – Waverton	Opposite 94A Bay Road	No
BS025 – Berrys Bay	Opposite 18-20 Wollcott Street	No
BS026 – Euroka	Opposite 2B Union Street	No
BS028 – Centenary 86	Adjacent 175-177 Ben Boyd Road	No
BS029 – Wallaringa	Adjacent 71 Kurraba Road, Lower Wycombe Road	No
BS031 – Phillips	Adjacent 12 Phillips Road, Ben Boyd Road	No
BS033 – Lady Hay	Adjacent 71 Crows Nest Road, Pacific Highway	No
BS034 – Mater	Adjacent 41 Rocklands Road, Pacific Highway	No
BS035 – Crowie	North-western corner of Pacific Highway and Myrtle Street	No
BS038 – St Johns	**Opposite 7-9 Broughton Street**	**Yes**
BS041 – Eaton	South-western corner of Rawson Street and Eaton Street	No
BS042 – Rawson	Adjacent 49 Rawson Street	No
BS043 – Anderson	Clarke Road Island	No
BS045 – Woodstock	Adjacent 172 Pacific Highway	No
BS046 – Service Club	Adjacent Bradfield Park, Fitzroy Street	No
BS050 – St Leonards Park	**South-eastern corner of Falcon Street and Miller Street**	**Yes**
BS051 – Iredale	Adjacent 1 Murdoch Street	No
BS052 – All Saints	Adjacent 3A Colin Street, Carter Road	No
BS053 – Watson Stand A	South-western corner of Military Road and Watson Street	No
BS054 – Watson Stand B	South-western corner of Military Road and Watson Street	No
BS056 – Zig Zag	Adjacent 31 Willoughby Road, Burlington Road	No
BS057 – Fire Station	Adjacent 306 Pacific Highway, Shirley Road	No
BS058 – High Street Jetty	High Street Jetty	No
BS059 – Justinian	Adjacent 40 Rocklands Road	No
BS061 – Henry Lawson	Adjacent Henry Lawson Reserve, Henry Lawson Avenue	No
BS066 – Unnamed	Adjacent 19 Gerard Street	No

A.9.4 Significance assessment

Table A.9.2 : North Sydney Bush Shelters significance assessment

Criterion	Local level
A – Historical significance	**North Sydney Local Environmental Plan 2013 –** The bus shelters are locally significant as items of Municipal design.
B – Historical association significance	**North Sydney Local Environmental Plan 2013 –** The bus shelters are locally significant due to their association with former Mayor Ted Mack, who was influential in their design and colour scheme.
C – Aesthetic significance	N/A
D – Social significance	**North Sydney Local Environmental Plan 2013 –** The shelters positively contribute to the character of North Sydney.
E – Research potential	N/A

Criterion	Local level
F – Rarity	N/A
G – Representativeness	N/A

Figure A.9.1 : Original tram shelter on which other bus shelters are modelled (Source: North Sydney Council)

Figure A.9.2 : Interior photograph of the original tram shelter (Source: North Sydney Council)

Figure A.9.3 : BS008 'Falcon' (Source: David Scobie Architects Pty Ltd (2015))

Figure A.9.4 : BS010 'Miller' (Source: David Scobie Architects Pty Ltd (2015))

Figure A.9.5 : BS038 'St Johns' (Source: David Scobie Architects Pty Ltd (2015))

Figure A.9.6 : BS050 'St Leonards Park' 1986 (Source: David Scobie Architects Pty Ltd (2015))

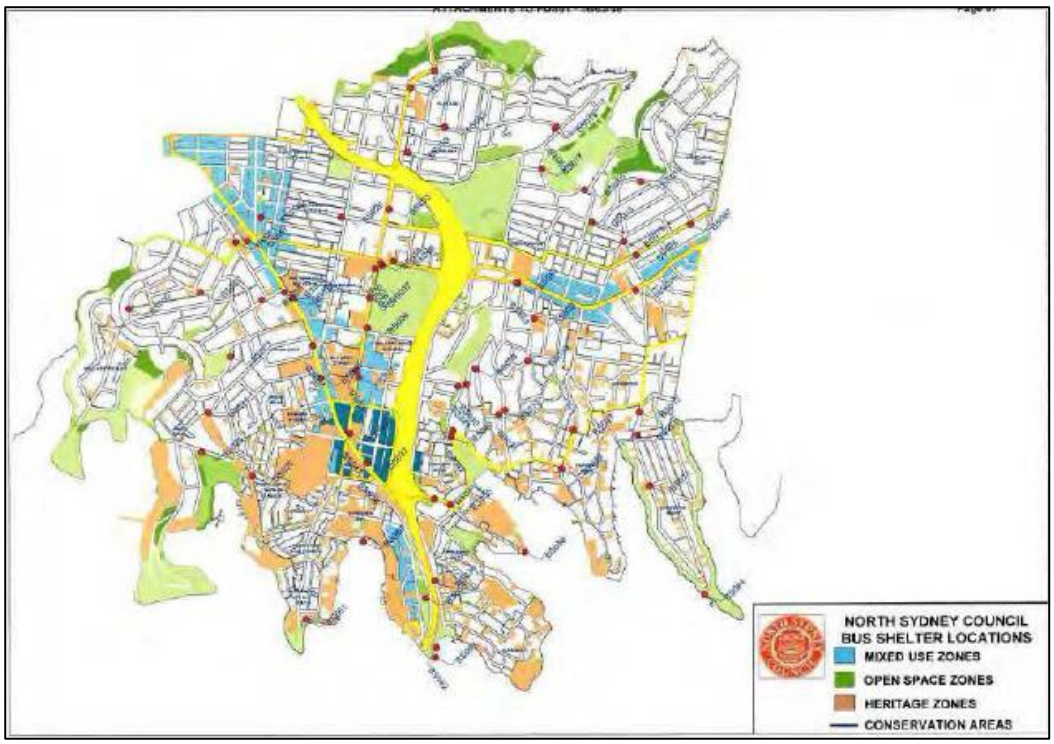


Figure A.9.7 : North Sydney Council Bush Shelter Locations map (Source: David Scobie Architects Pty Ltd (2015))

A.9.5 Statement of significance

Small and effective functional buildings of handsome design and good workmanship. They are traditional and conservative in form and detail and designed to their varied locations. Historic interest as elements of a particular and controversial attempt at Municipal civic design.

A.10 Item 10: St Leonards Park (including W. Tunks Memorial Fountain, War Memorial, and North Sydney Oval), North Sydney

Table A.10.1 : St Leonards Park details

Alternative names	Location	Register	Register ID	Significance level
St Leonards Park	283A Miller Street, North Sydney, NSW 2060	State Heritage Register	01941	State
	Miller Street, North Sydney	*North Sydney Local Environmental Plan 2013*	I0916	Local
		National Trust of Australia (NSW)	S9878	
		Register of the National Estate	19563	
North Sydney Oval		*North Sydney Local Environmental Plan 2013*	I1125	Local
W. Tunks Memorial Fountain		*North Sydney Local Environmental Plan 2013*	I1124	Local
War Memorial	Ridge Street, North Sydney	*North Sydney Local Environmental Plan 2013*	I1123	Local

The information provided below is replicated verbatim from the State Heritage Inventory, and the *North Sydney Local Environmental Plan 2013*, with any amendments or further additions included in **bold**.

A.10.1 History

St Leonards Park

Identified and gazetted in the original town plan of 1838. Through roads used by convention until 1870s when, led by the then Mayor, William Tunks, the roads were closed and the park dedicated in 1879. Fountain erected in park by residents as memorial to Tunks in 1885, following his death in 1883. Park reproclaimed by amalgamated North Sydney Council in September 1891. Grandstand opened on **cricket ground** in 1928. Grounds provided for **cricket** and **football** since late **19th** century. Main oval redeveloped and grandstands reconstituted during 1980s, completed 1987. Oval occupies the site of the original **cricket ground**, dedicated as such in 1867.

*Phase 1: 'Reserve' **alienation** 1838-1867*

The 40-acre (16.2 hectares) site for St Leonards Park was first identified and then gazetted when the original township of St Leonards was laid out in 1838. During this early phase, no development was **carried out** other than a track which crossed diagonally across the **park**. A tributary of Willoughby Falls Creek ran across the site in the current location of the Music Shell and there was also a swamp near the existing Fig Tree Lane.

*Phase 2: The **park established** 1867-1900s*

William Tunks, the first mayor of the newly created township of St Leonards, made it his first duty to have the public reserve dedicated as a public park in 1867 as a centrepiece for the new municipality. The first portion of land was dedicated in 1867 and set aside for public recreation and cricket**. The** second section **was** not dedicated until 1869. The original cricket ground, now known as North Sydney Oval, was dedicated and the first pitch laid on 6 December 1867, making it one of the oldest continuously used cricket pitches in Australia. The first pavilion for spectators was constructed in 1879 on the south-western side of the oval and then replaced in 1909. This was further replaced in 1929 with the current Duncan Thompson Stand on the north-western side of the oval. An Act of Parliament in 1879 gave the land its name St Leonards Park.

Mayor Tunks was very interested in the development of St Leonards Park and took a personal interest in its construction, attending to the location of pathways, the plantings of shrubs and trees, some even cultivated from his own garden. Local residents raised funds in 1873 for a perimeter fence and for further **planting** of pines, camphor laurels and figs. The design was influenced by the English Public Parks Movement and Charles Moore, the Director of the Sydney Botanical Gardens, as he promoted the use of Moreton Bay and Port Jackson figs in many parks across Sydney. The large fig trees in the formal avenue of Fig Tree Lane were most possibly planted at this time and were influenced by the middle-class practice of leisurely **promenades**.

In 1883, Tunks suffered a fatal fall in the park. **However, his** memory is perpetuated on a Carrara marble fountain erected in his honour in 1885 with funds raised by the public. The fountain is still present today to the north of the War Memorial and is known as the Tunks Memorial Fountain.

Under the provisions of a by-law of the Public Parks Act of April 1884, North Sydney Council was given status as Trustee for St Leonards Park. In 1885, a number of citizens proposed that **the council**, as **trustee**, grant space for the playing of bowls. The by-laws and the Local Government and Crown Lands Acts**,** however, did not allow **the council** to lease parkland, only allowing **the council** to enter into renewable occupancy agreements. By May 1887 an area for a bowling green was gazetted with rules established by the Public Parks Branch of the Department of Mines (then the **department** responsible for public parks) ensuring free access to the public when no sport was being played. The first annual general meeting was held in 1888, naming the club the St Leonards Bowling Club with the then Mayor of St Leonards, Captain Jenkins, as the first chairman.

The bowling club obtained a lease over the crown land in 1888 (NSW LEC 2016/170886).

In 1894, the Acting Under Secretary of Lands approved two areas for the playing of cricket and football totalling 2.3 **hectares** as well as a **five**-year licence for over 2000 **square metres** for a bowling club. A plan was created showing the outline of each area. The current Bon Andrews Oval is in the location of the space originally known as the 'Football Ground' although the oval has been used for both cricket and football.

By 1886, the park was connected to the ferry terminal at Milsons Point by the tramway. The Jubilee Fountain was erected in 1897 to the north-east of the existing bowling club, in honour of the Diamond Jubilee of Queen Victoria. This fountain, however, was subsequently re-located to Civic Park between Stanton Library and the North Sydney Council Chambers in 1982.

The North Sydney Sewer Vent (SHR No 1641) was constructed by the Metropolitan Board of Water Supply and Sewerage between 1891 and 1899. Originally designed to vent the reticulation system that took waste water from North Sydney and Mosman, it was located within St Leonards Park until it was separated by the construction of the Warringah Expressway.

*Phase 3: Early **20th century development** 1900-1930*

Australia's first outdoor cinema **started** operation at St Leonards Park in 1909 by opticians Osbourne and Jerdan. The screening of movies continued in 2014 by Sunset Cinemas after being operated by Starlight Cinemas for the previous decade.

After the First World War, North Sydney Council established a War Memorial Committee to raise funds and to identify a site for a memorial to commemorate the sacrifice made by the armed services. The site at the crest of Ridge **Street** and the northern end of Walker **Street** was chosen, along the park's central axis in direct alignment with the Tunks Memorial Fountain. The design, by Frank Thorp, a student working **at** Peddle Thorp and Walker, was chosen after a design competition and approved by the Public Monuments Advisory Board. The foundation stone was laid in 1924 for **an** Art Deco style 13**-**metre cenotaph made of Bowral trachyte and was unveiled in 1926. At the time of construction, it was visible from parts of Sydney Harbour and was the largest and most imposing war memorial in Sydney.

In 1921, the World War I German Field Gun allotted by the State War Trophy Committee was mounted on a pedestal in the north-west corner of St Leonards Park and unveiled by Major-General Sir Granville Ryrie.

Two tennis courts were constructed **before** 1930 on the site of the current playground. In 1904, the original grandstand at North Sydney Oval was replaced with a more substantial structure**,** and in 1909 a low picket fence was constructed to enclose the oval after an agreement was reached between North Sydney Council, the NSW Rugby Football League and Osbourne and Jerdan, the firm that conducted open-air picture shows on the Oval.

By 1924, **the council** awarded a prize to Mr **F.G.** Leslie Allen of Martin Place for the design of a brick grandstand. Now known as the Duncan Thompson Stand, it was the largest suburban grandstand in NSW at the time of its construction, seating 772 spectators. It was officially opened in 1928.

*Phase 4: The **inter-war and early post-war years** 1930s-1960s*

During the early 1930s, St Leonards Park was a site for various government established work projects to create jobs. A Works Depot was constructed at this time near North Sydney Oval and rusticated stone work fences with a rough concrete finish were constructed.

A playground was established on the original tennis court site during the 1930s and included rows of swings and climbing equipment. By the 1940s, the park's activities had been extended to **include** dance and drama programmes, as well as sporting events. The playground was staffed by the Leadership Training College where Mr Edgar Herbert was the principal, a leading Australian authority on physical training and children's development. The area was to become a model community centre**,** but **this** was never achieved by Herbert due to the advent of World War II and the death of Herbert in 1948.

Ornamental gardens were planted near Miller **Street** with the name St Leonards Park formed by planted garden beds.

World War II also resulted in the construction of slit air raid trenches in a zig-zag pattern across the northern area of the park as well as near the War Memorial. These were later in-filled in 1944.

A stone gazebo, constructed for the 'Old Age and Invalid Pensioners'**,** was constructed with funding from the Department of Local Government and Housing using rock faced stone and a terracotta tile roof.

In 1948 the Music Shell, designed by Peddle Thorp and Walker**,** was completed and officially opened on 13 November by the Honourable Clive **R.** Evatt, Minister for Housing**,** with an audience of 4000 **and** a performance by the Sydney Symphony Orchestra and the North Shore Choral Society.

A brick wall was constructed around North Sydney Oval during 1936, resulting in the removal of a double avenue of Moreton Bay figs along the Miller **Street** frontage. This wall was to enclose the **Oval** and to allow concrete terrace style seating for 1200 people.

The Cunningham Pavilion was constructed at the Bon Andrews Oval in 1930. H.M. Queen Elizabeth II and H.R.H. Duke of Edinburgh drove through St Leonards Park in front of 48**,**000 school children on 18 February 1954. A plaque set in sandstone is located in a low stone wall opposite Carlow **Street**, facing Miller **Street** within the **park** to commemorate the occasion.

*Phase 5: The **post-war boom** 1960s-**present***

The construction of the Warringah Expressway altered the eastern boundary of the park, with the resumption of 1.2 hectares of parkland and the separation of the Sewer Vent from the park.

Grass netball courts were constructed during the 1960s to the south of the bowling club near Ridge **Street** for use primarily by local schools. An additional two asphalted courts were constructed in 1992.

In 1960, the North Sydney Leagues Bowling Club was granted a special lease 1960/227 for perpetuity to exclusive occupation upon the Crown Land. **The council's** trusteeship was terminated. Approval for a new

clubhouse was given, financed and constructed by the **club**. The **club** also received an additional 1.4 hectares of land for car parking and for a larger clubhouse.

The club house building was built in 1960-61 after approval on 11 October 1960 (NSW LEC 2016/170886).

In 1984, the Bob Stand was relocated from the Sydney Cricket Ground to North Sydney Oval. Originally constructed in 1895, it is a fine late **19th** century shelter covering tiers of seating.

On 10 February 1984 there was a land exchange involving North Sydney Council exchanging the car park (532.6 **square metres**) to the south of the bowling club house (Lot 1104 DP46990) for equal areas of land to the north and east of the bowling greens (Lots 1106 and 1107 DP 46990) to be transferred back to being part of St Leonards Park (NSW LEC 2016/170886).

The Sydney 2000 Olympic Games **marathon** event on 1 October 2000 **started** outside St Leonards Park with spectators viewing from the **park**. The starting line **was** painted across Miller **Street at** North Sydney **and** is still visible today **next** to the **park**. A 42.2-**kilometre** blue line was painted along Miller **Street** to mark the course of the Marathon, across the Sydney Harbour Bridge, to finish at the Olympic Stadium

North Sydney Oval continues to be used for local, regional and interstate sporting events. A record crowd of 23**,**089 was set in 1994 for a match between North Sydney and the Manly Sea Eagles.

DA 81/12 in 2012 proposed alterations to the bowling club house to provide office accommodation for the RSL sub-branch. The application was granted consent on **4 March** 2013. Unauthorised paving was carried out, **before** 21 November 2014, to part of the northern bowling green and this paved area **is used** for the service of alcohol and outdoor dining (NSW LEC 2016/170886).

In September 2016 the NSW Land and Environment Court upheld an appeal against North Sydney City Council's deemed refusal of DA78/16 for the internal refurbishment of the main bowling club house**,** to provide extra toilets**,** continued use of part of the most-northern green and specify hours of operation and patron no's for the NSBC subject to conditions. (NSW LEC 2016/170886).

North Sydney Oval

Park identified in 1836 in Town Plan of St Leonards. Oval originally dedicated as **a cricket ground** in 1867 **and** in continuous use since. Major development, opened 1928, saw enclosure of **Oval** by brick walls, grandstands and turnstile booths erected. Redeveloped in early 1980s with new grandstands erected, with original main grandstand and turnstile booths retained. The Bob Stand transferred from Sydney Cricket Ground and main structural elements reused in 1984.

W. Tunks Memorial Fountain

William Tunks was Mayor of East St Leonards from 1867 to 1883 and Member of the Legislative Assembly for St Leonards from 1864-1874. As Mayor, he was re-elected **15** times. He was widely admired and often led fire fighters to put out bush fires. He was passionately interested in open space and was in the first cricket team from **NSW** to play Victoria. He was particularly noted for his work in preserving parkland and open space for public usage and is credited with causing the then roads extending through St Leonards Park to be closed in 1874. He persistently attacked private ownership of harbour foreshore and criticised local gentry. **Tunks died** in 1883, aged 67 years. **A memorial was** erected in 1885 by public subscription. **The memorial was damaged** by vandalism in early 1980s but restored and re-erected by North Sydney Council in 1988.

War Memorial

Officially unveiled in 1926.

A.10.2 Description

St Leonards Park

A large urban park of **about** 180,000 square metres, square in plan, bound by Miller Street, Falcon Street, Ridge Street and the Warringah Expressway. Mostly grassed and undulating in topography with large mature trees and some managed garden beds. Combined football and cricket oval contained by brick walls and grandstands in south-west corner. Fountain, War Memorial, Entry Gates, Main Oval and Grandstands are listed individually. Music Shell, WW1 Field Gun, No. 2 Oval (former football ground), Bowling Club, Amphitheatre, practice cricket pitch of concrete, basketball courts are other features. Tables and benches are scattered throughout the park. Some paths and access roads are **bituminised**.

St Leonards Park is a **19th** century area of parkland that covers **about** 15 hectares. The dominant feature, other than the open areas of **the** park**,** is the North Sydney Oval complex with its playing field, grandstands and commercial spaces, the **parks** depot and a childcare centre. North Sydney Oval (Oval No 1) **–** The original open village-green oval that has remained in existence since its dedication in 1867, making it one of the oldest cricket grounds in Australia. The National Trust Listing of 1993 refers to it as the oldest. It includes the Bob Stand, constructed in 1895 and re-located from the Sydney Cricket Ground to St Leonards Park in 1983. The Duncan Thompson **Stand** was constructed in 1929 and was, at the time of construction, the largest suburban grandstand in NSW.

Other architectural features of note include **the following**:

Bon Andrews Oval (Oval No 2) **–** A rectangular sports field with an amenities building named the Cunningham Pavilion. It is constructed in the Inter-War style with a 1990s addition by architect Feiko Bouman. The oval has been in use since 1894.

Music Shell **–** The Music Shell was designed by acclaimed architects Peddle Thorp and Walker in the Art Moderne style.

It is a two**-**level building at the rear which provided a band practice room with storage for chairs. At the front, the stage area is enhanced by a dramatic roof structure that is enhanced by relief sculptures and other refined detailing, including urns and decorative grilles on either side of the stage.

Tunks Memorial Fountain **–** This fountain is a Sicilian marble fountain that was installed in the park in 1885 in honour of William Tunks, first Mayor of East Leonards and Member of State Parliament. Tunks was instrumental in the establishment of St Leonards Park, its early layout and plantings.

War Memorial **–** The War Memorial, constructed 1926, is an imposing Inter-War Art Deco style cenotaph made from Bowral trachyte. It is 13 **metres** in height and was, at its time of construction, the largest and most imposing war memorial constructed in Sydney. Subsequent plaques have been added to the war memorial to commemorate later wars.

World War I Field Gun **–** This is a 77**-millimetre** field gun mounted on a pedestal in the north-west corner of the park. The field gun was captured from the Germans in France in 1918. This and other similar war weapons were distributed to **army** units, schools and communities as a reminder of the sacrifice of the armed services.

Playground **–** The children's playground is located on what was the site of two tennis courts in the 1930s and is contained within a Depression period concrete rusticated fence.

Stone Shelter **–** This shelter was constructed from rock-faced sandstone in 1943 with four arches and a terracotta tiled roof. There are four concrete tables.

Oval Bus Shelter **–** Originally a former tram stop, the Oval Bus Shelter is a small timber rectangular structure comprising stop-chamfered timber posts on concrete pads, supporting a timber framed hipped roof covered with terracotta shingle tiles. It is designed in the Late **20th** Century Post**-**Modern style.

Air Raid Trenches **–** Although filled in, the Second World War saw the construction of slit air raid trenches in St Leonards Park in a zig-zag configuration across the northern end of St Leonards Park and in the area now near the War Memorial.

North Sydney Leagues Bowling Club **–** The land for a bowling green was set aside in 1887**,** with the first clubhouse constructed in 1880s and since demolished in the 1960s. The existing club building was financed by the club.

Open Parkland **–** St Leonards Park has a gardenesque character with open lawns studded by both remnant native trees and planted specimens of indigenous species that represent the site's original plant community. These include *Callitris rhomboidea* (Port Jackson pine)**,** *Corymbia gummifera* (red bloodwood)**,** *Eucalyptus haemastoma* (scribbly gum)**,** *Eucalyptus piperita* (Sydney peppermint) **and** *Syncarpia glomulifera* (turpentine)**.** Other trees that have been planted include: *Ficus macrophylla* (Moreton Bay figs)**,** *Ficus rubiginosa* (Port Jackson figs)**,** *Ficus hillii* (Hills weeping fig)**,** *Araucaria bidwillii* (Bunya pine)**,** *Toona australis* (red cedar)**,** *Lophostemon conferta* (brush box)**,** *Macadamia integrifolia* (macadamia)**,** *Melaleuca quinquenerivia* (paperbark)**,** *Eucalyptus citriodora* (lemon-scented gum)**,** *Eucalyptus botryoides* (Bangalay)**,** *Eucalyptus cinerea* (Argyle apple)**,** *Quercus robur* (English oak)**,** *Populus nigra var. italica* (Lombardy poplar) **and** ***Phoenix canariensis*** (Canary Islands palm)

A few dead tree stumps have also been retained for their habitat value for nesting sites of the local parrot species and possums.

Significant group plantings include the: **Fig** tree avenue in Fig Tree Lane which **commemorates** the closure of the portion of Carlow **Street** within the **park**; Araucaria trees and *Eucalyptus citriodora* (lemon**-**scented gum) row plantings along the Falcon **Street** edge; *Lophostemon conferta* (brush box) row plantings along the Miller Sedge; *Phoenix canariensis* (Canary Islands palm) row plantings in the north-western corner of the park and either side of Tunks Avenue, north of the War Memorial Rotary Wheel Rose Garden and Tree. Memorial trees commemorating significant people and events include the: Judge Bouler Tree **and** J.D. Fletcher Tree**, named** after James Duncan Fletcher.

North Sydney Oval

A traditional cricket/football oval enclosed by picket fence and ringed by substantial grandstands, with a high brick barrier wall or steel gates linking the spaces between stands. Main Grandstand (The Duncan Thomson Stand) dates from 1928, as do the three small turnstile booths. The 'Ken Irvine Scoreboard' is from a similar period. The Bob Stand occupies the eastern side. New grandstands on north, south and western sides designed to reflect Edwardian roofscapes of earlier buildings, and this theme is repeated for smaller structures such as kiosk and observation towers.

W. Tunks Memorial Fountain

An elaborate Sicilian marble fountain of three levels which was unusually elaborate for its time and particularly when the area was struggling with the basic issues of water sewerage and road building. The fountain is surrounded by a garden of annual flowers with a palisade fence enclosure as the junction of several paths. Strong visual connection with the **war** memorial**;** however, they both impinge on **each other's**' curtilage.

War Memorial

A rectangular monument of lined concrete on a stepped plinth. This building was designed in the Inter-War Art Deco style. It commands a prominent position at the top end of Walker **Street** and was visible from the harbour when constructed. Wide red bitumen paths and shrub plantings emphasise the War Memorial**,** and the vista to the **memorial** is reinforced by a double row of palms.

A.10.3 Curtilage information

St Leonards Park

Situated on Lots 1104–1107 DP 46990; Lot 1108 DP 48839; Lot 7321 DP 1149783; and Part Crown Land Plan 316–3000.

North Sydney Oval

Situated on Lot 1108, DP 48839.

W. Tunks Memorial Fountain

Situated on Part Crown Land Plan 316–3000.

War Memorial

Situated on Part Crown Land Plan 316–3000.

A.10.4 Significance assessment

Table A.10.2 : St Leonards Park significance assessment

Criterion	Local level
A – Historical significance	**State Heritage Register** – St Leonards Park is of state heritage significance for its historical values as one of the earliest established public parks in NSW being set aside as a recreation reserve in 1838 and gazetted as a public park in 1867. It contains one of Australia's oldest, continuously used cricket grounds and bowling clubs established in 1867 and 1887 respectively.
B – Historical association significance	**State Heritage Register –** The park has state significant associations with Mr Edgar Herbert**,** a noted pioneering specialist in physical education. He was also a valued supervisor of **playgrounds** to the Kindergarten Union, a colleague of Walter Burley Griffin and actively involved in the Castlecrag Progress Association. In the 1940s Herbert was Principal of the Leadership Training College which staffed the playground and implemented a program of dance and drama activities as well as sporting events.
C – Aesthetic significance	**State Heritage Register –** St Leonards Park is of state heritage significance as a surviving and relatively intact example of a Victorian public park in the gardenesque style. It retains many of its original aesthetic characteristics including an axial layout, formal pathways culminating in memorials, including an ornate Victorian style memorial fountain to Mayor William Tunks**;** and picturesque vistas. The park also includes distinctive examples of early 20th century architecture including the Bob Stand**,** which was relocated to St Leonards Park from the Sydney Cricket Ground in the 1980s**;** the WWI Memorial, a fine example of an Inter-war Stripped Classical WWI Memorial, designed by Frank Thorpe; and the Music Shell**,** designed by Peddle Thorp and Walker in the Art Moderne style. The 1960s Bowling Club is a good and intact example of Modern Movement architecture applied to a popular leisure activity. These features are aesthetically distinctive and demonstrate a high level of creative and technical achievement.
D – Social significance	**State Heritage Register** – St Leonards Park has a high level of local social significance as a recreational facility for cricket and various forms of football.
E – Research potential	N/A
F – Rarity	**State Heritage Register –** The site is of state heritage significance as a rare and intact example of a Victorian**-**era park designed in the gardenesque style with its original layout still appreciable. It is also rare as a continuously used cricket ground and bowling club dating from 1867 and 1887 respectively. The Music Shell is a rare intact surviving example of a **post-**WWII Music Shell, sympathetically adapted to serve contemporary purposes. The 1960s Bowling Club building is a rare, surviving, intact example of a Modern Movement style building serving as a **sporting** facility. Many sports club buildings designed in this style in the 1960s have been demolished or substantially modified. **North Sydney Local Environmental Plan 2013 –** This item is assessed as historically rare regionally. This item is assessed as aesthetically rare regionally. This item is assessed as socially rare regionally.

Criterion	Local level
G – Representativeness	**State Heritage Register –** The park has representative value within NSW, as it displays elements typical of Victorian-era parks including an axial layout, formal avenues of trees, open grassed areas, decorative architectural elements as well as sporting facilities. It is a fine, relatively intact example of a wider group of public parks constructed during the **19th** century.

Table A.10.3 : North Sydney Oval significance assessment

Criterion	Local level
A – Historical significance	N/A
B – Historical association significance	N/A
C – Aesthetic significance	N/A
D – Social significance	N/A
E – Research potential	N/A
F – Rarity	**North Sydney Local Environmental Plan 2013 –** This item is assessed as historically rare regionally. This item is assessed as aesthetically rare regionally. This item is assessed as socially rare regionally.
G – Representativeness	N/A

Table A.10.4 : W. Tunks Memorial Fountain significance assessment

Criterion	Local level
A – Historical significance	**North Sydney Local Environmental Plan 2013 –** This item is assessed as historically representative locally.
B – Historical association significance	N/A
C – Aesthetic significance	N/A
D – Social significance	N/A
E – Research potential	N/A
F – Rarity	**North Sydney Local Environmental Plan 2013 –** This item is assessed as historically rare regionally. This item is assessed as aesthetically rare locally. This item is assessed as socially rare locally.
G – Representativeness	N/A

Table A.10.5 : War Memorial significance assessment

Criterion	Local level
A – Historical significance	N/A
B – Historical association significance	N/A
C – Aesthetic significance	**North Sydney Local Environmental Plan 2013 –** This item is assessed as aesthetically representative locally.
D – Social significance	**North Sydney Local Environmental Plan 2013 –** This item is assessed as socially representative locally.
E – Research potential	N/A
F – Rarity	N/A

Criterion	Local level
G – Representativeness	**North Sydney Local Environmental Plan 2013 –** This item is assessed as historically representative regionally. This item is assessed as aesthetically representative regionally. This item is assessed as socially representative locally.

Figure A.10.1 : St Leonards Park Group (Source: North Sydney Council)

Figure A.10.2 : View of St Leonards Park to stone shelter (Source: Office of Environment and Heritage)

Figure A.10.3 : View of a gate to St Leonards Park (Source: Office of Environment and Heritage)

Figure A.10.4 : Bon Andrews Oval and Cunningham Pavilion (Source: Office of Environment and Heritage)

Figure A.10.5 : War Memorial in the park, facing south

Figure A.10.6 : War Memorial (Source: North Sydney Council)

Figure A.10.7 : Bon Andrews Oval sandstone fence and gate

Figure A.10.8: North Sydney Oval Group (Source: North Sydney Council)

Figure A.10.9 : Moreton Bay fig tree near Bon Andrews Oval

Figure A.10.10 : W. Tunks Memorial Fountain (Source: Monument Australia)

Figure A.10.11 : State Heritage Register Plan No 2827 (Source: Office of Environment and Heritage)

A.10.5 Statement of significance

A.10.5.1 State Heritage Register

St Leonards Park

St Leonards Park is of state heritage significance for its historical values as one of the earliest established public parks in NSW being set aside as a recreation reserve in 1838 and gazetted as a public park in 1867. It also contains one of Australia's oldest, continuously used cricket grounds and bowling clubs established in 1867 and 1887 respectively.

St Leonards Park is of state heritage significance as a surviving and relatively intact example of a Victorian public park in the gardenesque style. It retains many of its original aesthetic characteristics including an axial layout, formal pathways culminating in memorials, including an ornate Victorian style memorial fountain to Mayor William Tunks, and picturesque vistas. The park also includes distinctive examples of early 20th century architecture and Modern Movement architecture which are aesthetically distinctive and demonstrate a high level of creative and technical achievement.

St Leonard's Park has state significant historic associations with Mr Edgar Herbert**,** a noted pioneering specialist in physical education who was involved in the establishment of the playground and educational programs at the park in the 1930s and early 1940s.

The site is of state heritage significance as a rare and representative example of a largely intact Victorian-era park designed in the gardenesque style with its original layout still appreciable. It is also rare as a continuously used cricket ground and bowling club dating from 1867 and 1887 respectively. The post-WWII music shell and Modern movement style **bowling club** are rare surviving examples of these types of structures.

A.10.5.2 North Sydney Local Environmental Plan 2013

St Leonards Park

Important local urban park, with continuous history from 1838. Part of original town plan of North Sydney. Expansive open space in close proximity to town centre, with a combination of **19th** and **20th** century design features, mirroring the built environment nearby. Contains a number of significant built features, monuments and **a number** of native trees and historic plantings. Centre for large scale recreational activities as well as passive recreation in the area.

North Sydney Oval

The most used and familiar facility in St. Leonards Park and one of the oldest cricket grounds still in use in Australia. Fine example of a traditional Cricket Oval, with Edwardian features and buildings creating an ambience associated with the English cricketing tradition. Contains some interesting buildings, the **grandstand**, **scoreboard** and three **turnstile** buildings all dating from 1928 and the Bob Stand (1895) relocated from the Sydney Cricket Ground. (See also under St. Leonards Park Group.)

W. Tunks Memorial Fountain

Reconstructed fountain first erected in 1885 in this location. Built as a memorial to William Tunks, a figure in local politics, being first Mayor of East St. Leonards and Member of State Parliament for the area for **10** years. Important to the park**,** as Tunks was largely responsible for maintaining the integrity of the park in the 1870s. **(**See also under St. Leonards Park Group.**)**

War Memorial

See also under St. Leonards Park Group 2180911. Prominent and imposing monument which occupies significant position on Ridge Street, opposite Walker Street. Important local representative of such monuments, in major central parkland.

A.10.5.3 Register of the National Estate

St Leonards Park

In particular, its close association with Mayor Tunks and also its being the oldest playing field still in use in Australia. It has been assessed as being more intact than Hyde Park. The **park** is closely associated with the formation of St Leonards as a municipality, in fact its first civic work. The **park** yields an understanding of the evolution of this area including remnants of the original flora. St Leonards Park **was** the starting venue for the marathon events for the Year 2000 **Summer** Olympics.

A.11 Item 11: North Sydney Sewer Vent

Table A.11.1 : Sewer Vent details

Alternative names	Location	Register	Register ID	Significance level
North Sydney Sewer Vent; Sewer Vent; Sewerage Vent Stack; Alfred St Sewer Vent; Sydney Sewerage System; Lewisham Sewer Ventilation Shaft; Sewer Vent Shaft	Falcon Street (**south-west** of Warringah Freeway)	State Heritage Register	01641	State
		North Sydney Local Environmental Plan 2013	I0839	
	Falcon Street, North Sydney, NSW 2060	Sydney Water Section 170 Register	285047	
		National Trust of Australia (NSW)	S10072	
		Register of the National Estate	101165	

The information provided below is replicated verbatim from the State Heritage Inventory, and the North Sydney Local Environmental Plan 2013, with any amendments or further additions included in **bold**.

A.11.1 History

Part of the original North Sydney sewerage system built by the government between 1891 and 1898. It was built as part of the Northern Suburbs Ocean Outfall Sewer, opened 1927. Oral history sources have revealed that **before** the construction of the Bradfield Expressway, foul odours permeated the area. Successive complaints may have led to the removal of the dome which is no longer in situ. Odours are still detectable under certain climatic conditions. Expressway construction in the 1960s may have been responsible for severe movement in the shaft of the structure which may have caused cracking. Stabilisation has been **carried out**, involving the introduction of steel hoops around the brickwork. The stack was originally wholly within St Leonards Park**. However,** as this was reclaimed by the **highway**, the vent now stands on an island separate to the **park**.

A.11.2 Description

A brick ventilation stack built 30 metres high, dof 1.70 metres, tapering to 1.1 metres at the top of the structure. The original design included a pagoda-like dome at the apex of the structure**;** however**,** the top is currently defined by a cement rendered parapet. The base of the structure contains an iron inspection hatch into which is engraved, “Metropolitan Board of Water Supply and Sewerage 1899”. Brickwork is slightly ornamental but is more austere than that of similar stacks built earlier on the southern side of the **harbour**. Parallel steel bands now encircle the structure, introduced during the 1960s as a stabilisation device.

The **vent shaft** is located alongside the Cahill Express Way. Some of the cracks that are present along the length of the **vent shaft** may be the result of earth movements during the construction of the expressway in the 1960s. As such, a series of circular steel bands have been applied to the exterior of the **vent**, at evenly spaced intervals, as a stabilisation measure.

A.11.3 Curtilage information

The operational curtilage of this item will be all the original fabric within the property boundaries of the land (owned by SWC) upon which the sewer vent is located.

A.11.4 Significance assessment

Table A.11.2 : Sewer Vent significance assessment

Criterion	Local level
A – Historical significance	**State Heritage Register –** The **vent shaft** is an important and essential part of the original North Sydney sewerage system, which still remains. It played a large role in dissipating odorous gases from the system and away from residential/street levels.
B – Historical association significance	N/A
C – Aesthetic significance	**State Heritage Register –** The **vent shaft** is an excellent example of brick work with ornate sections at and around the base and entail to the shaft. It is a landmark on the North Sydney expressway and adds to the landscape of the **nearby** park, St Leonards Park and North Sydney Oval.
D – Social significance	**State Heritage Register –** The **vent shaft** is significant in the development of the sewerage system itself. Without the **vent shaft,** gases built up within the system were extremely dangerous to the community and the workers**. The vent shaft** is therefore likely to be held in high regard by the community for its function. It has been identified by the National Trust of Australia (NSW).
E – Research potential	**State Heritage Register – Vent shafts** and their development show the progress made in understanding how and why gases formed in the sewerage system. They also show how the different types of **vent shafts** were employed to dissipate odorous gases.
F – Rarity	**State Heritage Register –** Rare in the SWC system and in NSW as one of a small number of **vent shafts** of its type limited to the late **19th** century period.
G – Representativeness	**State Heritage Register –** An excellent representation of a tall brick ventilation constructed around the turn of the century. Unique in its brickwork. **North Sydney Local Environmental Plan 2013 –** This item is assessed as historically representative regionally. This item is assessed as aesthetically representative regionally. This item is assessed as socially representative locally.

Figure A.11.1 : Sewer Vent, North Sydney (Source: Sydney Water)

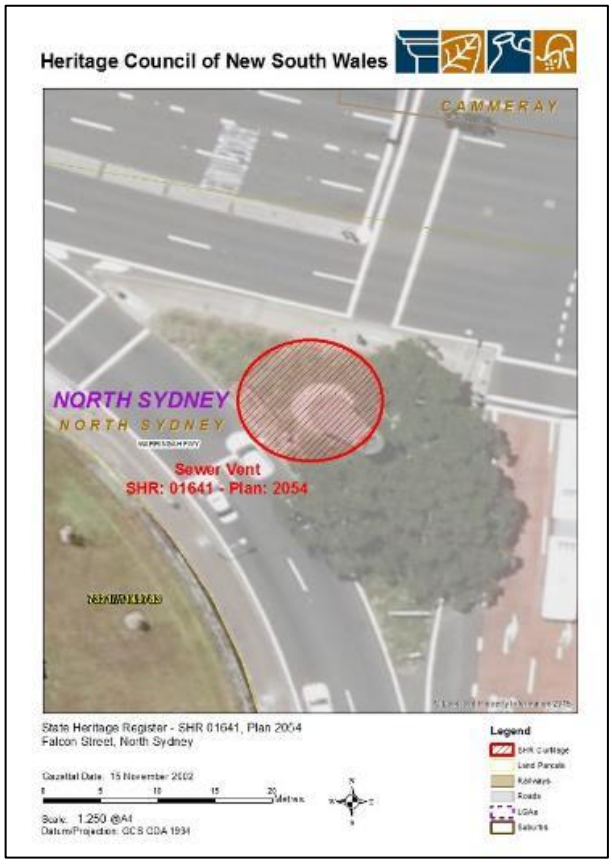


Figure A.11.2 : State Heritage Register Plan 2054 (Source: Heritage Council of NSW)

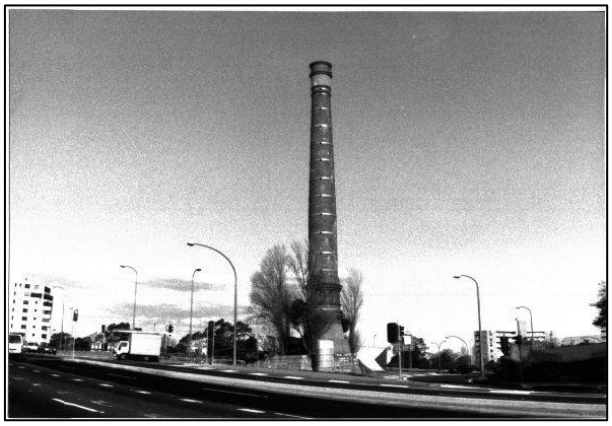


Figure A.11.3 : Sewerage Vent Stack (Source: North Sydney Council)

Figure A.11.4 : Doorway at base of the sewer vent stack, facing south-west

Figure A.11.5 : Sewer vent stack, facing east

Figure A.11.6 : Sewer vent stack sandstone retaining wall

A.11.5 Statement of significance

A.11.5.1 State Heritage Register

The North Sydney Sewer Vent is an excellent representative example of the tall brick sewer ventilation shafts which were constructed around the turn of the century to facilitate the efficient functioning of the major outfall sewers. Its functional design is embellished by a successful application of architectural motifs, such as line and texture which lend the structure an element of formalism and classical detail including entasis. In addition, it displays high quality workmanship in the brickwork.

By virtue of its scale and form, it has landmark value within the Cremorne/Crows Nest area and acts as a navigational beacon for motorists using the Bradfield Highway. It has the potential to invoke a sense of the past as its style and design contrast dramatically with the modern styles of architecture endemic to the North Sydney streetscape. It is currently serves the Northern Suburbs Ocean Outfall Sewer in the manner in which it was originally designed.

A.11.5.2 North Sydney Local Environmental Plan 2013

Major local landmark and fine example of early **20th** century brick craftsmanship. Important reminder of urban infrastructure**,** and its aesthetic design reflects period attitudes.

Located between Warringah Expressway and Falcon Street exit ramps.

A.12 Item 12: ANZAC Park, Cammeray

Table A.12.1 : ANZAC Park details

Alternative names	Location	Register	Register ID	Significance level
ANZAC Park	Corner of Anzac Avenue and Ernest Street, Cammeray, NSW 2062	-	-	Local

The information provided below is sourced from the State Heritage Inventory for Cammeray Park, and from Anzac Park Public School (2016); Cammeray Golf Club (2017); Godfrey Eugene (2014); Godfrey Eugene and Williamson (2014); Monument Australia (2010); North Sydney Council (2008; 2016; 2017a; 2017b); Park and Karadimas (2001); The Australian War Memorial (2016).

A.12.1 History

ANZAC Park was originally part of the reserve that makes up the present-day ANZAC, Cammeray and Green parks before the construction of the Warringah Expressway. This large park was detailed in an 1887 map, where it is noted as 'Reserve for public recreation and for access to water' (Figure A.12.14). This map shows Alfred Street and Cammeray Road running through Cammeray Park, and the park being bounded by Ernest Street in the south, Walker Street in the west, Willoughby Falls Creek in the north-west, and land owned by various individuals in the north and east. This park was dedicated as a reserve in 1886 by Alderman Tunks, Mayor of St Leonards from 1867-1883. This land may have been reserved prior, as an 1859 map shows it as 'Reserved for access to water', and an 1868 plan shows it as 'St Leonards Rifle Range'. The association between Cammeray Park and golf first started in 1906, with the establishment of a golf club by the Neutral Bay Lawn Tennis Club. In 1926, the part of the reserve to the north and west of Cammeray Road was dedicated to Henry Green, who had been Mayor of North Sydney from 1921-1922, and was named Green Park. World War II also resulted in the construction of slit air raid trench in a zig-zag pattern across the western border of the park (Figure A.12.13, Figure A.12.15), under which the present-day War Memorial is situated. These were later in-filled, likely done at the same time as the St Leonards Park air raid trenches, which were in-filled in 1944. Cammeray Park was transformed into a golf course in the 1950s and, after the construction of the Warringah Expressway in the 1960s, was fixed in its current layout by 1968. The Warringah Expressway also bisected Cammeray Park, resulting in a small section of the south-eastern corner of the park being excised from the park's original layout.

The remaining section of parkland was located next to the North Sydney ANZAC Memorial Club, a group which was founded in 1936, but was originally a Soldiers' Club dated to 1918. The memorial hall itself is dated to 1941, when its foundation stone was laid by Ald. J. Cramer, Mayor of North Sydney, and Major-General Fewtrell. It was opened in 1942, and was noted as being 'opposite the Cammeray Golf Course' (Cramer 1984). Some restructuring of the suburb streets occurred between the 1880s and before the construction of the hall in the early 1940s (the location then being occupied by a bowling green), which resulted in Walker Street becoming Bellevue Street to the north of Ernest Street, and Lytton Street to the south of this intersection (Figure A.12.16). Bellevue Street was bisected by the construction of the Warringah Expressway, resulting in Anzac Avenue to the south of the freeway. The club's lease was terminated in 2010, due its diminished popularity. The hall was approved for demolition in 2014 and replaced in mid-2016 by the ANZAC Park Public School.

The memorial comprising a whitewashed statue of an ANZAC soldier, which is currently located in ANZAC Park on Avenue, was originally housed at the North Sydney Tramway Depot (alternatively known as the Neutral Bay Tram Depot) on Military Road in 1918 (Figure A.12.11). Its plinth bears the names of tram workers who died during World War I. (Names were also added to commemorate those tram workers who fought in World War II.) The memorial was erected by the NSW Government Tramways. While the Tramway Depot was decommissioned in the 1950s, the statue and its memorial, known as the North Sydney Tramway Depot War Memorial, continued to be housed at the location until the 1980s. It was then relocated to the park directly opposite the North Sydney ANZAC Memorial Club, where it was rededicated in 1985. The nearby park

subsequently became known as ANZAC Park. Another small park immediately in front of the memorial hall, to the west of Anzac Avenue, was originally known as Bellevue Park, but in 1992 the Club requested it be renamed as ANZAC Park so the parks on both sides of the avenue could share the same name. The park was redesigned by the North Sydney Council for the 'Australia Remembers' commemorations in 1995, when the council had rows of turpentine trees planted with a lone olive tree set before them as a symbol of peace. These, and other trees within this memorial grove, all have associated plaques. As of September 2017, the North Sydney Council is currently considering the construction of a community garden within ANZAC Park.

A.12.2 Description

An expanse of gently sloping grassed land, with the North Sydney Tramway Depot War Memorial (Figure A.12.10) and associated tree plantings along the park's western boundary at Anzac Avenue. The memorial consists of a whitewashed statue of an ANZAC on a sandstone plinth upon three steps, a sandstone platform, featuring Navy, Army, Airforce, Merchant Navy and Australian Women's Services badges, set with three flagpoles. The related grove of trees (Figure A.12.3) behind the memorial with associated plaques (Figure A.12.4 to Figure A.12.7, Figure A.12.10) comprises an Edible Date Palm (*Phoenix dactylifera*), a Canary Island Date Palm (*Phoenix canariensis*), an Italian Cypress (*Cupressus sempervirens*) sapling, a plaque for a non-extant Japanese Maple (*Acer palmatum*), and rows of Turpentine trees (*Syncarpia glomulifera*). There are informal tree plantings to the south, north and east of the grassed parkland (Figure A.12.1 and Figure A.12.2). The park is bound by Ernest Street (Figure A.12.9) in the south and Anzac Avenue in the west, near the intersection of which is a drinking fountain set on sandstone steps (Figure A.12.8), part of Cammeray Avenue (which is next to the Warringah Expressway) in the east and north-east, and residential curtilage in the north.

A.12.3 Curtilage information

ANZAC Park is situated on Lots 607-612 DP 752067, Lot 7096 DP 1060619; and Crown reserve.

A.12.4 Significance assessment

Table A.12.2 : ANZAC Park significance assessment

Criterion	Local level
A – Historical significance	N/A
B – Historical association significance	N/A
C – Aesthetic significance	N/A
D – Social significance	The war memorial housed within ANZAC Park is related to both the North Sydney Tramway Depot (1909-1958) and the North Sydney ANZAC Memorial Club (hall dated 1941-2016). It an important memorial to the local community and former workers of NSW Tramways. This is demonstrated through the ongoing attention the park has received, including establishment in the 1990s of symbolic tree plantings.
E – Research potential	There is the potential for evidence of the WWII air raid trenches still to be present under the war memorial. Archaeological investigation of these may provide information about the nature and construction of such trenches during WWII.
F – Rarity	N/A
G – Representativeness	N/A

Figure A.12.1 : ANZC Park, facing south-east

Figure A.12.2 : ANZAC Park, facing west

Figure A.12.3 : Turpentine trees in memorial grove

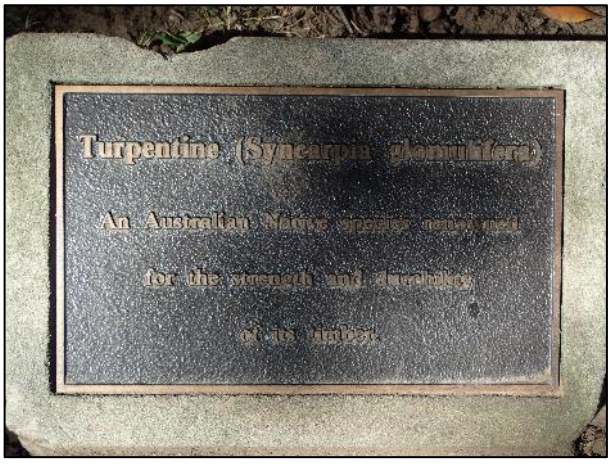


Figure A.12.4 : Turpentine trees plaque

Figure A.12.5 : Canary Island date palm in memorial grove

Figure A.12.6 : Canary Island date palm plaque

Figure A.12.7 : Japanese Maple tree plaque (tree not extant)

Figure A.12.8 : Water fountain in south-west corner of ANZAC Park

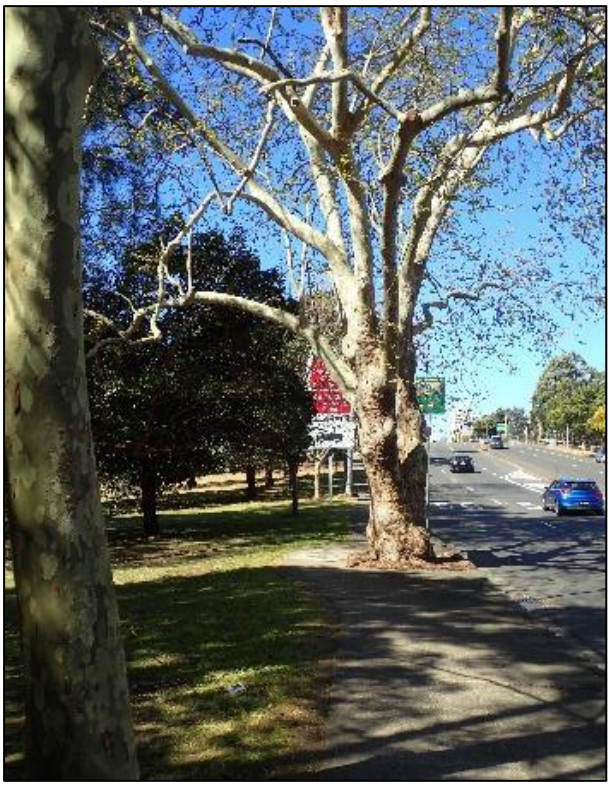


Figure A.12.9 : ANZAC Park, facing east along Ernest Street

Figure A.12.10 : North Sydney Tramway Depot War Memorial

Figure A.12.11 : North Sydney Tramway Depot War Memorial

Figure A.12.12 : War Memorial at North Sydney Tramway Depot (Source: The Australian War Memorial)

Figure A.12.13 : Slit air (zig zag) raid trench along the western boundary of the park in 1943 (Source: Spatial Services (2017))

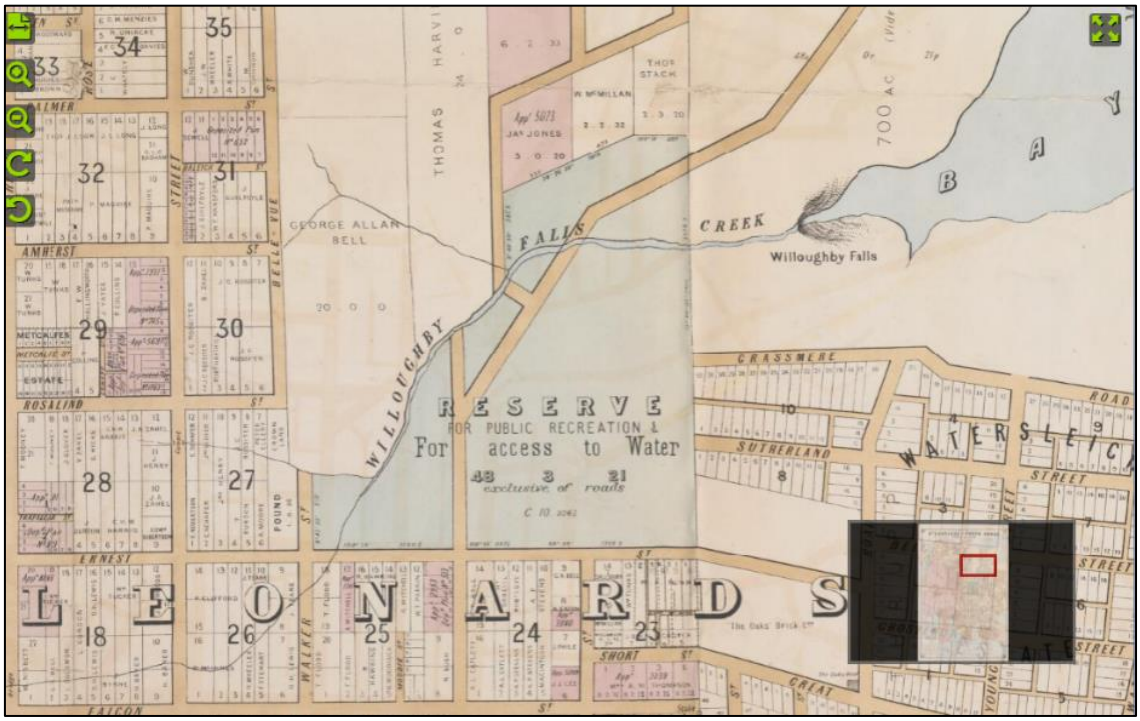


Figure A.12.14 : Location of the 'Reserve for public recreation and for access to water' (Source: Higinbotham and Robinson (1887))

Figure A.12.15 : Aerial imagery of Green and Cammeray parks in 1943 (Source: Spatial Services (2017))

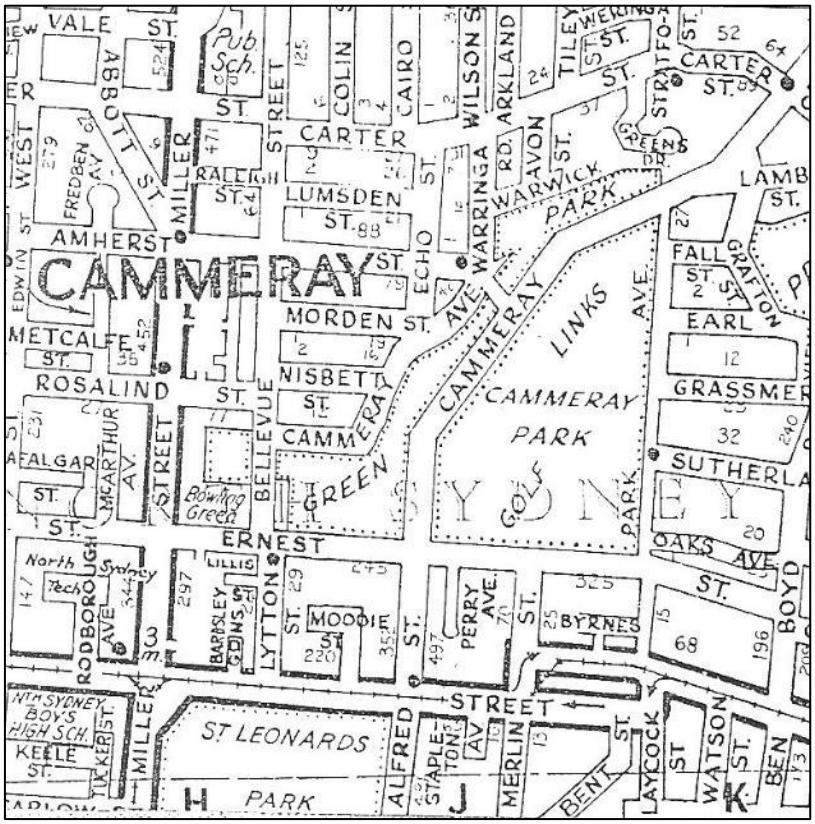


Figure A.12.16 : Pre-1968 street directory detailing Green and Cammeray parks (Source: Adrian Barnes)

A.12.5 Statement of significance

ANZAC Park is of social value due to the war memorial and its association with the former North Sydney Tramway Depot and its personnel who served during World Wars I and II, and with the North Sydney ANZAC Memorial Club and its members, and for the park's provision of open space to the local community. Although the parkland was originally part of an early reservation to protect water supply related to the nearby Willoughby Falls, no plantings or historic items dated to the mid- to late-1800s are extant at ANZAC Park.

A.13 Item 13: Northern Suburbs Ocean Outfall Sewer

Table A.13.1 : Northern Suburbs Ocean Outfall Sewer details

Alternative names	Location	Register	Register ID	Significance level
Northern Suburbs Ocean Outfall Sewer	Flushcombe Road, Blacktown, NSW 2148, to Ocean Outfall at North Head, NSW 2095	Sydney Water Section 170 Register	4570286	Local

The information provided below is replicated verbatim from the State Heritage Inventory, and the Sydney Water section 170 Heritage Register, with any amendments or further additions included in **bold**.

A.13.1 History

The history of Northern Suburbs Ocean Outfall Sewer is intricately linked to the earlier smaller council systems it replaced. The systems that were present **before** their replacement by the Northern Suburbs Ocean Outfall Sewer included North Sydney, Mosman, Manly, Chatswood-Willoughby and Parramatta. Later the Hornsby system, which had been transferred to the Board's control in 1911, was also diverted to the Northern Suburbs Ocean Outfall Sewer.

The supervising engineer for the scheme was W.G**.** Hudson**,** later to be Sir William Hudson, the first Commissioner of the Snowy Mountains Scheme. After the Northern Suburbs Ocean Outfall Sewer, he also worked at Nepean Dam, Woronora Dam and as Engineer-in-Chief at Warragamba Dam.

By 1912, it was obvious to the Board that the various North Shore Sewerage Works were approaching their limit due to the increasing number of services and limited land for plant expansion. A comprehensive scheme was proposed which would involve the closure of North Sydney (Willoughby Bay/Follys Point), Chatswood, Balmoral and Parramatta Sewerage Treatment Plants. It also involved an Ocean Outfall System for the suburbs along the Milson Point **–** Hornsby Railway line, plus capacity for the far western suburbs.

The proposed scheme was prepared by the **PWD** in 1914 and comprised a large main sewer with several branches, the upstream end being at Wentworthville Station. The **scheme** was submitted by the Joint Parliamentary Standing Committee on Public Works in September 1915**;** however, it was not until September 1916 that the scheme was approved by Parliament. The approved scheme now involved the replacement of all sewerage works on the North Shore, with the exception of Hornsby. In addition, a large pumping station at Camellia would replace the existing Parramatta Sewerage Works.

Construction of the sewer was carried out by PWD from 1916 until 1928. The work was then transferred to the Board for completion under the provisions of the 'Metropolitan Water, Sewerage and Drainage Act of 1924'. At the time of transfer**,** four sections of the main outfall had been completed, enabling the interception of sewerage previously discharged into the treatment works at North Sydney (Willoughby Bay) and Mosman (Balmoral).

Of the 13 sections in the Northern Suburbs Ocean Outfall Sewer, the first **seven** sections were initially built by PWD and then transferred to the Board for completion by 1930. The remaining sections including those reaching Blacktown in the 1970s were built solely by the Board.

A.13.2 Description

Northern Suburbs Ocean Outfall Sewer is a large main sewer servicing an area of 416 sq. km. The system has its upstream end near Wentworthville Station (Holroyd Municipality) and discharges into the **ocean** at Blue Fish Point, near North Head. It crosses beneath Middle Harbour and Lane Cove River, and passes through Manly,

Mosman, North Sydney, Lane Cove, Hunter's Hill, Ryde, Ermington, Rydalmere, Dundas, Parramatta, Baulkam Hills and Blacktown.

The following main branches extend from the Northern Suburbs Ocean Outfall Sewer:

a) West Middle Harbour Submain **–** This branch was constructed by the PWD and transferred to the Board in 1927. It extends from the main sewer at Cammeray Park to Rocky Creek, Gordon. Four aqueducts were constructed along the line of this sewer.

b) East Lane Cove Submain **–** Constructed by the PWD and transferred to the Board in 1928. It extends from Lane Cove River Syphon north to Stringy Bark Creek, Lane Cove.

c) West Lane Cove Submain **–** This branch sewer junctions with the main sewer near the western extremity of the Lane Cove River Syphon and from there extends to the intersection of Strand and Pittwater Road.

Five aqueducts were built to span gullies, while both Middle Harbour and Lane Cove River were crossed by inverted syphons. A total length of 26.5 **kilometres** was constructed in tunnel through ridges 60 **metres to** 90 **metres** high, the tunnel being lined with concrete averaging 0.20 **metres** thick. The size of the concrete sewer at the ocean outfall at Blue Fish Point is 4.1 **metres** x 2.6 **metres** and diminishes to 3.7 **metres** x 2.5 **metres** opposite the spit at Clontarf.

The syphon under Middle Harbour is 358 **metres** in length and consists of duplicate pipes, 1.8 **metres** in diameter, laid on the bed of the **harbour** from near the Spit to Clontarf, the depth of the water being 22 **metres** near the centre.

The Lane Cove syphon is 266 **metres** in length. A tunnel 4 **metres** x 2.1 **metres** was driven through sandstone from shaft to shaft. Duplicate 1.35 **metres** diameter reinforced concrete pipes were laid in the tunnel with a fall towards the downstream end, and the intervening spaces between the tunnel lining and the pipes were filled with concrete.

Five aqueducts were constructed to cross gullies. These were:

1) Quakers Hat Bay Aqueduct **–** Located **next** to Carrington Avenue at Quakers Hat Bay, Middle Harbour. The aqueduct consists of a 13.7**-metre**-long single span reinforced concrete rectangular section measuring 3.5 **metres** by 2.6 **metres** with a splayed concrete overflow weir located on both sides of the structure. It was completed in 1927.

2) Brightmore Reserve (Willoughby Bay) Aqueduct **–** Designed in 1925. This structure is located in Brightmore Reserve at the head of Willoughby Bay. It consists of reinforced concrete sections measuring 3.5 **metres** by 2.6 **metres** and supported on four concrete columns.

3) Tunks Park (Long Bay) Aqueduct **–** Built in 1927. The structure is predominantly located in Tunks Park **next** to Long, Middle Harbour. The aqueduct consists of an 85**-metre** long reinforced concrete haunched beam and column structure.

4) Scotts Creek (Sugarloaf Bay) Aqueduct **–** This aqueduct is associated with the West Middle Harbour Submain and is located in Harold Reid Reserve **next** to the North Arm of Sugarloaf Bay, Middle Harbour. The aqueduct is situated in dense bushland and is not easily visible to public view. The structure is **about** 46 **metres** long and is similar, except for span length and height, to the Tunks Park Aqueduct in appearance.

5) Buried Box Section (below Manly **Central Business District**) **–** Located in the first section of Northern Suburbs Ocean Outfall Sewer. This item consists of a concrete sewer built mostly in trench construction and is located under Darley Road, Manly.

Sewage from Parramatta and parts of Harris Park, Merrylands, Guildford, Auburn, Lidcombe and the whole of the Duck River drainage area either gravitates to, or is pumped to**,** Camellia pumping station (No. 67), and is lifted from there into the outfall sewer at a point near Dundas Railway Station.

The Northern Suburbs Ocean Outfall Sewer continued to develop as the population of the suburbs increased.

A.13.3 Curtilage information

The boundary and curtilage of Northern Suburbs Ocean Outfall Sewer is to include all original fabric from 1933 from Parramatta to North Head outfall with a **two-**metre buffer zone parallel to the existing structures. The curtilage is to include all overpasses, access points and settings along the existing alignment of the Northern Suburbs Ocean Outfall Sewer.

A.13.4 Significance assessment

Table A.13.2 : Northern Suburbs Ocean Outfall Sewer significance assessment

Criterion	Local level
A – Historical significance	**Sydney Water Section 170 Register –** The Northern Suburbs Ocean Outfall (Northern Suburbs Ocean Outfall Sewer) was the third major sewerage system to be built to service Sydney's rapidly growing wastewater needs. It has been a major historical event in the development of the North **Shore** and inner and north-western suburbs of Sydney.
B – Historical association significance	N/A
C – Aesthetic significance	**Sydney Water Section 170 Register –** The system is predominantly underground. However, the aesthetic significance is evident in the range of styles, design, details and materials used in its construction. The architectural styles and engineering qualities of the associated pumping stations, aqueducts, vent stacks, syphons and surface fittings make a contribution to Sydney suburban townscapes. In particular, the syphons at Middle Harbour and Lane Cove have aesthetic significance. The valve house structures attached to these items are of architectural interest, as early examples of the Art Deco style, displaying influence of Egyptian Architecture in civic industrial utility buildings. There are only a limited number of similar styled structures within the current Sydney Water system, for example those associated with the Avon, Nepean and Woronora Dams. In the case of the Middle Harbour, these valve house structures are prominent well known foreshore landmarks. In addition, the design and detailing of the five aqueduct structures make an effective contribution to the parks in which they are situated.
D – Social significance	**Sydney Water Section 170 Register –** Collectively**,** the different components which make up Northern Suburbs Ocean Outfall Sewer are culturally significant as evidence of the growth of Sydney's sewerage system, the rapid development of the northern suburbs, and the substantial improvement of sanitary conditions for Sydney's inhabitants for which it is likely to be held in high regard by the broad community.
E – Research potential	**Sydney Water Section 170 Register –** Sewerage systems demonstrate a variety of construction techniques ranging from sandstone blocks, solid rock and reinforced concrete. The construction of these systems contributed to our understanding of the development and use of these materials in Australia and reflects the technological change in construction to meet the increasing population of Sydney. The Lane Cove Syphon is a fine example of the engineering tunnelling methods of the time. The passage under the river required considerable judgement and understanding of the nature and behaviour of the rock strata. The Middle Harbour Syphon is possibly the best example in the state of an inverted syphon on such a scale. Both syphons also provide an excellent example of major engineering public works techniques of the 1920s. Innovative engineering techniques were required so that the sewer line was able to cross Middle Harbour. The five aqueducts are significant examples of the superior use of reinforced concrete construction in the 1920s. They provide good examples of major public works and bridge works of the time incorporating sophisticated construction detailing.
F – Rarity	**Sydney Water Section 170 Register –** The third major sewerage system built to service Sydney.
G – Representativeness	**Sydney Water Section 170 Register –** Representative of Sydney's sewerage system. Contains components which are excellent representations of public works engineering**,** including syphons, aqueducts, pumping stations and sewer vents.

Figure A.13.1 : Tunnelling showing timbered supports of roof 1929 (Source: Sydney Water Corporation)

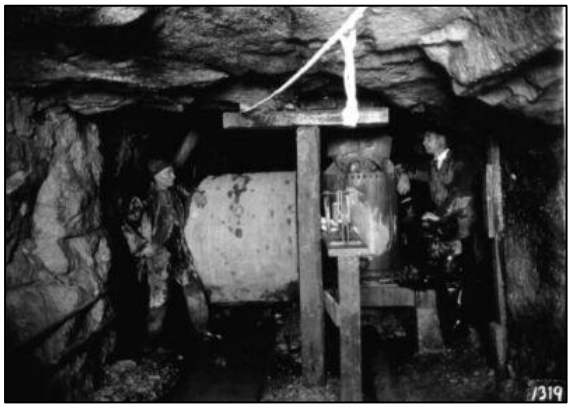


Figure A.13.2 : Underground Northern Suburbs Ocean Outfall Sewer construction (Source: Sydney Water Corporation)

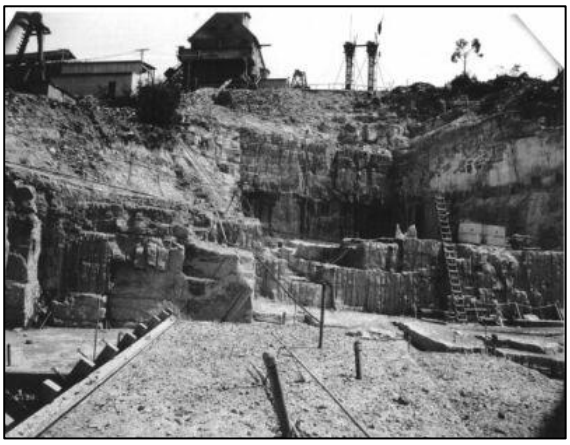


Figure A.13.3 : Northern Suburbs Ocean Outfall Sewer construction (Source: Sydney Water Corporation)

Figure A.13.4: Timbered tunnel 1929 (Source: Sydney Water Corporation)

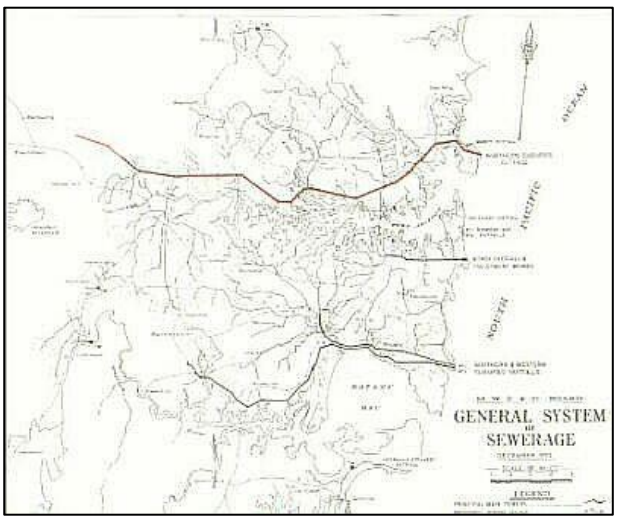


Figure A.13.5 : 1963 map showing the route of the Northern Suburbs Ocean Outfall Sewer system (Source: Sydney Water Board Journal)

A.13.5 Statement of significance

The Northern Suburbs Ocean Outfall Sewer (NSOOS) is of considerable significance being the third major sewerage system built to service Sydney's growing wastewater needs. The primary significance of the system is embodied in the function it serves to the community of the northern and western areas of Sydney by channelling and managing its effluent, and in the careful and precise methods of achieving this.

Northern Suburbs Ocean Outfall Sewer is culturally significant as evidence of the growth of Sydney's sewerage system, the rapid development of the northern suburbs, and the substantial improvement in sanitary conditions for Sydney's inhabitants.

Collectively**,** the different components which make up Northern Suburbs Ocean Outfall Sewer provide excellent examples of the major public works construction techniques of the early 1920s. The Northern Suburbs Ocean Outfall Sewer system contains components which are in themselves highly significant items. The two major syphons associated with the system are fine examples of engineering methods. The Middle Harbour Syphon, in particular, is individually possibly the best example in the State of an inverted syphon on such a scale. The Lane Cove Syphon is a good example of the engineering tunnelling methods of the time.

The architectural styles and engineering qualities of the associated pumping stations, aqueducts, vent stacks, syphons and surface fittings make a contribution to the city's streetscape. In particular, the valve house structures attached to the syphons have aesthetic significance. These structures are of architectural interest as early examples of the Art Deco style, displaying influence of Egyptian Architecture in civic industrial utility buildings. The various aqueducts located in the system display superior utilitarian design and detailing. The scale, colour, texture and detail of these structures make an effective contribution to the parks and tree covered slopes in which they are situated.

The boundary and curtilage of Northern Suburbs Ocean Outfall Sewer is to include all original fabric from 1933 from Parramatta to North Head outfall with a **two-**metre buffer zone parallel to the existing structures. The curtilage is to include all overpasses, access points and settings along the existing alignment of the Northern Suburbs Ocean Outfall Sewer.

A.14 Item 14: Cammeray Park (including golf course), Cammeray

Table A.14.1 : Cammeray Park (including golf course) details

Alternative names	Location	Register	Register ID	Significance level
Cammeray Park (including golf course)	Cammeray, NSW 2062	North Sydney Local Environmental Plan 2013	I0024	Local

The information provided below is replicated verbatim from the State Heritage Inventory and the North Sydney Local Environmental Plan 2013, with any amendments or further additions included in **bold**.

A.14.1 History

Dedicated 7 December 1886. This land was reserved from an earlier date, possibly the date of the Town Plan, with the notation 'Reserved for Access to Water' (1859). An 1868 plan shows the area marked 'St Leonards Rifle Range'. The Golf Course was created in the park in the mid**-20th** century. The western end was truncated by the construction of the Warringah Expressway in the 1960s.

A World War II slit air raid trench in a zig-zag pattern was located across the southern border of the park, along Ernest Street near the intersection of Merlin Street (Figure A.14.5). These were later in-filled, likely done at the same time as the St Leonards Park air raid trenches, which were in-filled in 1944. However, the location of the air raid trench is now underneath Ernest Street and its related footpath, after the widening of the street to accommodate the bridge across the Warringah Freeway.

A.14.2 Description

An expanse of gently sloping grassed land, with informal tree plantings, bound by Ernest Street, Park Avenue, Cammeray Road, Warringah Road and the Warringah Expressway. It has been landscaped as a golf course, with a clubhouse in the upper section and tennis courts and a croquet lawn in the south-east corner.

A.14.3 Curtilage information

Cammeray Park is situated on Lots 2–4 DP 244543; Closed road; Crown reserve.

A.14.4 Significance assessment

Table A.14.2 : Cammeray Park (including golf course) significance assessment

Criterion	Local level
A – Historical significance	N/A
B – Historical association significance	N/A
C – Aesthetic significance	N/A
D – Social significance	Of social value for its general recreational facilities and open space.
E – Research potential	N/A
F – Rarity	This item is assessed as historically rare locally.
G – Representativeness	This item is assessed as historically representative regionally. This item is assessed as socially representative regionally.

Figure A.14.1 : Cammeray Park including golf course (Source: North Sydney Council)

Figure A.14.2 : Cammeray Golf Course, facing south

Figure A.14.3 : Green Park, formerly part of Cammeray Park, facing north-east from corner of Cammeray and Warringah roads

Figure A.14.4 : View of Cammeray Golf Course from Ernest Street, facing north-west

Figure A.14.5 : Aerial imagery of the zig zag air raid trench along Ernest Street in 1943, now located underneath the present-day Ernest Street eastbound lane (Source: Spatial Services (2017))

A.14.5 Statement of significance

Of social value for its general recreational facilities and open space. Of historic interest as a relatively intact early reservation to protect water supply and associated with the nearby Willoughby Falls. An example of early **20th** century reclamation of watercourses in urban areas.

A.15 Item 15: Cammeray Conservation Area, Cammeray

Table A.15.1 : Cammeray Conservation Area details

Alternative names	Location	Register	Register ID	Significance level
Cammeray Conservation Area; Cammeray	Cammeray	*North Sydney Local Environmental Plan 2013*	CA01	Local

The information provided below is replicated verbatim from the State Heritage Inventory, the North Sydney Development Control Plan 2013 and the North Sydney Local Environmental Plan 2013, with any amendments or further additions included in **bold**.

A.15.1 History

Most of the Cammeray Conservation Area was subdivided in 1889 by Alexander Maxwell as the Cooliatta Estate on land granted to Alexander Macarthur in 1853. The south-western part of the area was called Bells Paddock.

The opening of the Suspension Bridge in 1892 and extension of the tramway along Miller Street in 1909 improved access to the area and provided a trigger for development. Most of the area was purchased as the Bell's Estate in 1909 after which time the area developed.

Very little redevelopment occurred in the area until the 1960s when uncharacteristic, three-storey flat developments were built in Morden Street.

A.15.2 Description

The subdivision pattern is a regular grid that overlays the topography.

The characteristic buildings of the area are typically later Federation and Edwardian Queen Anne, reflecting the predominant period of development. Buildings are typically single storey, freestanding and constructed on a sandstone base with face brick walls and terracotta tiled hipped **roofs** with asymmetrical street elevations with projecting gabled bays projection and a flanking verandah.

Street plantings and raised verges reinforce the cohesive character and regular pattern formed by the buildings and underlying lot pattern.

Several late Victorian residences are located in the north-west corner of the area, and timber houses are represented in Palmer, Bellevue and Raleigh **streets**. There is some modern development to the southern edge.

A.15.3 Curtilage information

The Cammeray Conservation Area is bounded by Carter Street, the Freeway to the south, Warringah Road to the east, and Miller Street properties to the west.

The landform slopes down from the north towards the south and east and there are escarpments at Morden Street and Echo Street that form dead end roads.

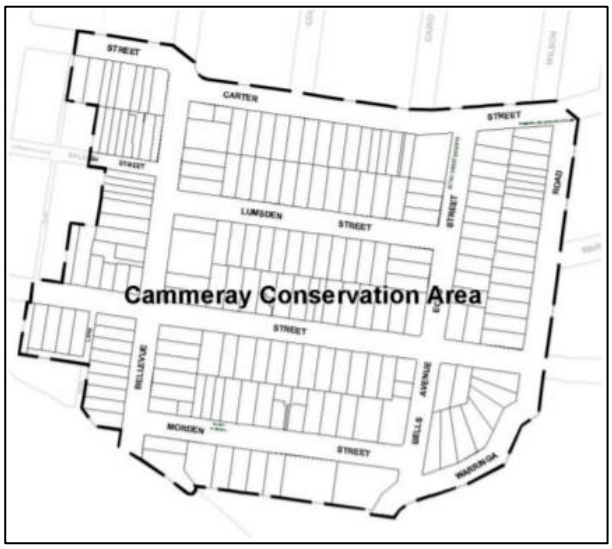


Figure A.15.1 : Cammeray Conservation Area map (Source: North Sydney Council)

A.15.4 Statement of significance

The Cammeray Conservation Area is significant:

a) For the unity of its subdivision history which is evident in the built form of the area and that overlays its sloping and stepped topography

b) As an area of modest Federation speculative builder housing set out in a geographically defined area that has survived without large-scale intrusion

c) For its landscape quality defined by street trees, stone boundary walls, rock escarpments, raised and front garden plantings that combine to give an impression of a landscaped garden suburb.

A.16 Item 16: Tarella, Cammeray

Table A.16.1 : Tarella details

Alternative names	Location	Register	Register ID	Significance level
Tarella; "Tarella"	3 Amherst Street, Cammeray, NSW 2062	State Heritage Register	00270	State
		North Sydney Local Environmental Plan 2013	I0001	
		National Trust of Australia (NSW)	R10089	
		Register of the National Estate	2919	

The information provided below is replicated verbatim from the State Heritage Inventory, and the North Sydney Local Environmental Plan 2013, with any amendments or further additions included in **bold**.

A.16.1 History

Amherst Street is named after Lord William Pitt Amherst who was Governor General of India 18231828. Some old directories and plans **misspell** this street as AMHURST (http://www.cammeray.info/wp/history).

Tarella was originally the house of Sir Joseph Palmer Abbott, K.C.M.G., a former speaker of the **NSW** Legislative Assembly from 1880 **to** 1900. Abbott built Tarella c. 1886 on land he had acquired in 1881 (LEP). His grounds were extensive and included a coach house, windmill and stables.

Abbott was a member of the Conventions formed to frame a Constitution for the Commonwealth of Australia that were held in 1891 **and** 1897-98. From 1891 **to** 1900 he was Chairman of the Board of Directors of the AMP Society. He died in 1901 (North Sydney City Council, plaque on site).

Nearby Palmer Street in Cammeray is named after Sir Joseph Palmer Abbott (http://www.cammeray.info/wp/history).

A file on Tarella held in the North Sydney Stanton Library Local History Unit has a photograph taken in 1899 that does not show the two Canary Island date palms. These appear to have been planted in the early 20th century (Turnbull Group, 1993). (NB: this species was popularised by Joseph Maiden, after he planted a triple avenue of these palms along Macquarie Street in the 1910s) (Stuart Read, 24/2/2016).

The house was saved from demolition in 1970. Tarella was fully restored by the early 1970s and restored with a new coach house constructed. It was furnished appropriately. It has two plaques donated by the owner and AMP Society. The house has good coloured glass and beautiful iron lace.

Front lawns and garden, with fountain and iron gates (relocated) from the historic St John's Anglican Church, Parramatta (AHC, date not given).

In 1982 the then owner John Hawkins sought North Sydney Council approval of a rezoning proposal to allow the house to be used as professional offices by architects Edwards, Madigan, Torzillo and Briggs. Mr. Hawkins**,** who had restored the property**,** was keen that it be retained, and if this use was the key was supportive. North Sydney Council opposed any rezoning, citing concerns at gradual loss of its residential areas**,** particularly sites such as this. Mr. Hawkins threatened to lodge a development application to demolish the house if rezoning **was** not approved.

The Heritage Council considered the rezoning proposal and the request for an order under the Heritage Act. It decided that**,** while it was aware of North Sydney Council's policy aimed at preventing further alienation of residential land in the municipality, it considered that the building is of such heritage significance that it would support proposals to rezone the site for uses compatible with the heritage significance of the building and which

would ensure its retention and maintenance. Further**,** it advised that in the event that it was advised of proposed demolition of the building, the Heritage Council would consider recommending its protection under the NSW Heritage Act (Branch Manager's Report, 5/10/1982).

The property, now empty, was bought in 2001 by Simply Technology and is leased to the childcare centre company, Brenham P/L. **In 2015,** Brenham P/L proposed a childcare centre for 80 children at Tarella, to operate five days a week. The company operates two childcare centres in Sydney. North Sydney City Council's Independent Planning Panel refused a development application for this use in April 2015 on several grounds. The Heritage Council also refused an integrated development application due to adverse impacts on heritage significance, fabric and setting. An appeal **was** lodged with the NSW Land and Environment Court (McCullagh, 2015).

Childcare **centre** use approved by NSW Land and Environment Court (McCullagh, 14/7/16, 8).

A.16.2 Description

Grounds

The house is set well-back from the street frontage on a large site, with a serpentine drive through extensive lawn area, framed by trees and shrub plantings (Stuart Read, 24/2/2016).

There is a large semi-formal garden between the painted iron palisade fence on the Amherst Street boundary and the house. The garden features two mature Canary Island **dates** (*Phoenix canariensis*) and Alexandra (*Archontophoenix alexandrae*) palms, Himalayan cedar (*Cedrus deodara*), lavender hedges, roses, pomegranate (*Punica granatum*) and frangipani (*Plumeria rubra* cv.) trees with a fountain and pond in the lawn (LEP, NTA; added to by Stuart Read, 16/6/2014). An ornamental cast iron fence marks the street front (ibid, 2016).

The date of much of the garden fabric may be early 20th century. **An** 1899 photograph held in the North Sydney Stanton Library shows no Canary Island date palms, suggesting they date to the early 20th century (NB: this species was popularised by Joseph Maiden after he planted a triple avenue of it along Macquarie Street (Stuart Read, 24/2/2016). The garden contains species not authentic to the Victorian era. The concrete path is not part of the original landscape (Turnbull Group, 1993, 4). The pond, fountain and relocated iron gates appear to date from later in the **20th** century, possibly during the Hawkins ownership era (ibid).

Fine garden and entry to house (LEP).

House

Residence of an important public figure of the **19th** century. One of the earliest buildings established in the vicinity and one of the earliest still in existence (LEP).

A two-storey Victorian Italianate style residence of brick construction (tuck-pointed, now painted) with corbelled brick eaves and hipped slate roof. The house has a two-storey verandah on the main (north) elevation; the lower level verandah is paved with **tessellated** tiles in a mosaic pattern with a slate border; slender cast-iron columns support the timber structures of the upper level. Panelled front door has sidelights, a leadlight panel over and brass door knob, knocker and bell pull (LEP).

Remarkably fine imposing Victorian mansion on southern side of Amherst Street, backing on to the Warringah, located roughly half way between Miller and West **streets**. Fine iron work to two**-**storey returned verandah (Branch Manager's report, 5/10/1982).

AHC RNI entry said built between 1872 **and** 1893 (c.1874), in contrast to NSHR date of 1886.

Interior features are substantially intact, including a grand timber staircase and main entry lobby with a large stained-glass window about the stair landing, 13 marble fireplaces and fine door/window joinery. Plaster ceilings are generally intact (Branch Manager's report, 5/10/1982).

Outbuildings

A two-storey stable building, modern-built during the Hawkins ownership in sympathetic quasi-Gothic style**,** is behind the house, facing a laneway. This has double pointed arch doorways.

A.16.3 Curtilage information

Tarella is situated on Lot 101 DP 618220.

A.16.4 Significance assessment

Table A.16.2 : Tarella significance assessment

Criterion	Local level
A – Historical significance	N/A
B – Historical association significance	N/A
C – Aesthetic significance	N/A
D – Social significance	N/A
E – Research potential	N/A
F – Rarity	This item is assessed as historically rare locally.
G – Representativeness	This item is assessed as aesthetically representative regionally. This item is assessed as socially representative regionally.

Figure A.16.1 : View of Tarella from the street (Source: Heritage Council of NSW)

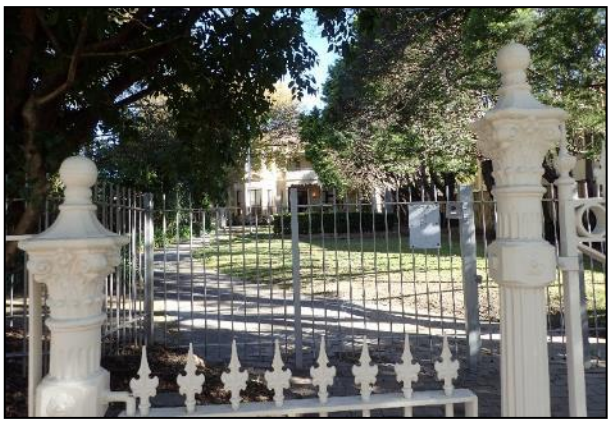


Figure A.16.2 : View of Tarella from the front gate, facing south

Figure A.16.3 : View of Tarella's two storey bay windows and side of house from Tarella Place, facing west

Figure A.16.4 : View of Tarella's sympathetic modern outbuilding from Tarella Place, facing west

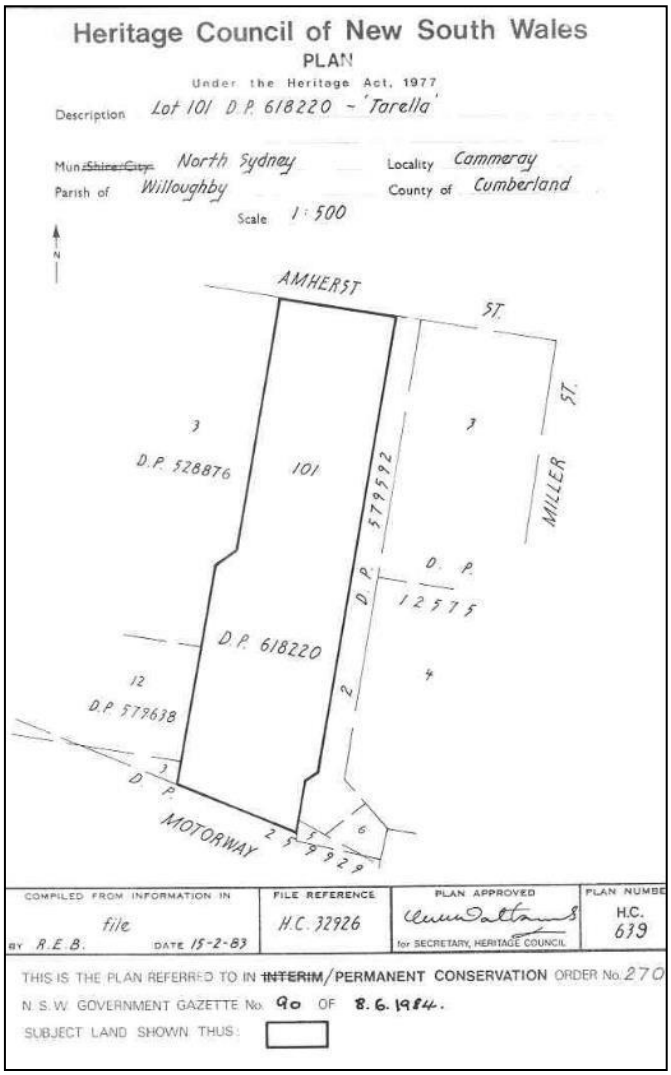


Figure A.16.5 : PCO Plan Number 270 (Source: Heritage Council of NSW)

A.16.5 Statement of significance

Fine example of a grand Victorian **mansion**. Residence of important public figure of the **19th** century. One of the earliest buildings established in the vicinity and one of the earliest still in existence. Fine garden and entry to house. The exterior, landscape setting and interior **of** this property are of significance.

A.17 Item 17: St Thomas Rest Park, North Sydney

Table A.17.1 : St Thomas Rest Park details

Alternative names	Location	Register	Register ID	Significance level
St Thomas Rest Park (including Sexton's Cottage and cemetery fence)	250 West Street, Crows Nest, NSW 2065	*North Sydney Local Environmental Plan 2013*	I0180	Local
		National Trust of Australia (NSW)	9981	

The information provided below is replicated verbatim from the State Heritage Inventory, and the *North Sydney Local Environmental Plan 2013*, with any amendments or further additions included in **bold**.

A.17.1 History

St Thomas' cemetery was donated to the church by Alexander Berry after the death of his wife Elizabeth in 1845. It remained under the control of the Church of England until 1967 when an Act was passed transferring the cemetery to North Sydney Council. The Rest Park was designed by Ashton, Powell and Taylor and it was officially opened in 1974. In the conversion, broken monuments and headstones were cleared away and others were moved to 'historic' sections. A few were left in place. Most grave surrounds were removed and used to form low walls. Sandstone fill was used to create mounds. Large numbers of native trees were planted and the area grassed to create a park.

A.17.2 Description

Interesting and historic monuments still remain: Elizabeth Berry 1845**,** Edward Wollstonecraft 1832 and Alexander Berry 1873 are together in **an** imposing pyramidal stone vault. Judge Ellis Bent 1815 and Br Major John Ovens 1825 share a combined monument which was moved from the George Street cemetery and later from Garden Island. Others include: Lieut. Col. George Barney 1878, Capt. Owen Stanley 1850, Rev. W.B. Clarke 1878, Capt. John Vine Hall 1932 and his wife Alice 1934 (daughter of E.T. Blacket) **and** William Pymble 1849.

The original cemetery fence to West **Street** remains. It is a fine Gothic design in wrought iron on a stone base. Unsympathetic 1970s trees plantings are causing some damage to the graves and have significantly altered the character of the landscape setting.

The Sexton's cottage is a simple **vernacular** style, one-storey house of rendered brick with a verandah and an iron roof over timber shingles. It was possibly built **c.** 1850. Its interior and landscape setting are also of significance. It is used by North Sydney Council as a house museum.

A.17.3 Curtilage information

St Thomas Rest Park is situated on Lot 100 DP 79095 and Lot 104 DP 790981.

A.17.4 Significance assessment

Table A.17.2 : St Thomas Rest Park significance assessment

Criterion	Local level
A – Historical significance	N/A
B – Historical association significance	**North Sydney Local Environmental Plan 2013 –** This item is assessed as significant for its association with significant early residents of Sydney.
C – Aesthetic significance	N/A
D – Social significance	N/A

Criterion	Local level
E – Research potential	N/A
F – Rarity	N/A
G – Representativeness	**North Sydney Local Environmental Plan 2013 –** This item is assessed as historically representative regionally. This item is assessed as aesthetically representative locally. This item is assessed as socially representative locally.

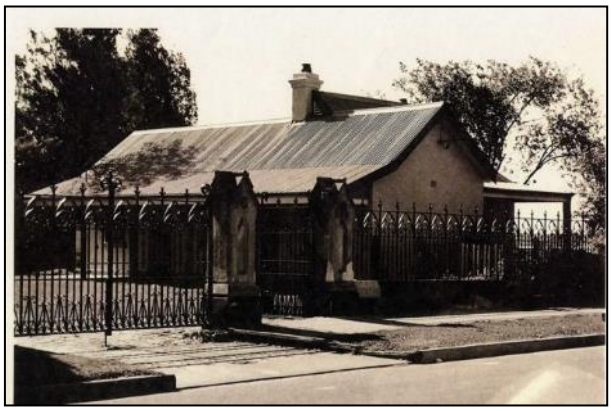


Figure A.17.1 : Sexton's Cottage (Source: Stanton Library)

Figure A.17.2 : St Thomas Rest Park 1987 – Moriarty family tomb in foreground (Source: Stanton Library)

Figure A.17.3 : Wollstonecraft and Berry Monument c. 1980s. Image donated to Council by Eric Russell after acquiring it in the preparation of his book 'The Opposite Shore' (source: Stanton Library)

Figure A.17.4 : St Thomas Rest Park (Source: North Sydney Council)

Figure A.17.5 : Frontage of Sexton's Cottage

Figure A.17.6 : Tomb of Alexander and Elizabeth Berry

Figure A.17.7 : Gateway to St Thomas Rest Park

Figure A.17.8 : Fence line along Warringah Freeway

A.17.5 Statement of significance

Important local cemetery and repository of the remains of many famous colonial identities, among which are several pioneers of the North Shore. Remaining graves and monuments, the gates and fence to West Street and to Sexton's cottage are important historic remnants of the original cemetery (now a Rest Park). The interior of the cottage is in original condition and is of significance.

A.18 Item 18: Holtermann Estate A Conservation Area, Crows Nest

Table A.18.1 : Holtermann Estate A Conservation Area details

Alternative names	Location	Register	Register ID	Significance level
Holtermann Estate A Conservation Area; Holtermann Estate A; Holtermann Estate Conservation Area (A)	Crows Nest, NSW 2065	*North Sydney Local Environmental Plan 2013*	CA07	Local
		Register of the National Estate	100845	

The information provided below is replicated verbatim from the State Heritage Inventory, the *North Sydney Local Environmental Plan 2013*, the *North Sydney Development Control Plan 2013*, and the Register of the National Estate.

A.18.1 History

The Holtermann Estate Conservation Areas are part of original land grants to Alexander Berry, **J.R.** Hatfield and **A.** Mosman. Extensive land purchases by **B.O.** Holtermann in the 1880s led to consolidated subdivision of large areas.

Holtermann's Estate sought to provide "comfortable working men's houses". The Holtermann Estate A Conservation Area was subdivided and offered for sale during the 1880s and 1890s.

The main period of construction **was from** 1884 to 1915.

A.18.2 Description

This residential area is characterised by its highly mixed, low-scale, modest-sized buildings, showing a fair degree of uniformity of age, with a strong rectilinear urban pattern of wide streets and narrow rear lanes. The dwellings, detached and semi-detached, interspersed with some terrace developments, are mainly one storey and occasionally two storeys situated in groups consisting of Victorian Italianate, Victorian Georgian, occasionally Victorian Filigree and Federation Queen Anne styles. The buildings have varying setbacks and**,** generally**,** timber picket fencing. The buildings are commonly constructed of brickwork (rendered or facework) and sandstone ashlar, but also include a number of timber, weatherboard clad buildings (with stone bases)**. Roofs** are of slate, Marseilles pattern terracotta tiles or corrugated metal. Garages are located off rear lanes. The urban form is determined by the consistent street/rear lane grid pattern, which is suited to the flatter terrain and a maximised number of lots. The streets oriented east-west are wide (similar to other areas of the Holtermann Estate) as are the cross streets which perceptually help link the area together. Street trees are not a prominent feature, although there are some mid to late **20th** century street tree plantings. The streets are also defined by the often deep sandstone kerbs. There is no physical evidence of corner shops, but interestingly there is a mid-block (former butcher's) shop.

The Holtermann Estate A Conservation Area is the northern most section of the larger Holtermann Estate and is bounded by St Thomas Rest Park, the Warringah Expressway and commercial development to the west.

The landform falls slightly to the north and west. Subdivision is determined by a grid pattern of wide streets, rear lanes and narrow cross lanes. Lot sizes are slightly larger than other parts of the Holtermann Estate**,** though many lots have been developed for attached dwelling houses.

The area is characterised by its low scale of single-storey, hipped-roof, detached and attached dwelling houses that includes a mix of late 19th and early 20th century building styles, and restrained examples of Victorian Georgian, Filigree and Italianate, Federation Queen Anne and Federation Bungalow. There are also some Inter-War Californian Bungalow and Art Deco styles with post-war residential flat buildings and modern infill housing.

Street verges are typically 3.5 **metres** wide and include grass with concrete or bitumen footpaths and crossings to off-street parking. Deep set sandstone kerbs remain in some locations. Houses to the high side of the street are often set on sandstone plinths with retaining walls to the street. Rear lanes are lined with fences, carports and garages with some development fronting the lanes.

There are long views along the main streets and cross views along the lanes.

Front gardens contribute to the landscaping of the streets. Gardens follow the natural fall of the land with steps to the street on the high side. High and low scale street trees.

A.18.3 Curtilage information

About 9 **hectares** in Crows Nest, bounded by the southern side of Jenkins Lane, the southern side of the Warringah Freeway, the eastern boundary of 217 Chandos Street, the western boundary of St Thomas Rest Park, the western side of Devonshire Street, the northern side of **Huntington** Street, the eastern side of Alexander Lane, the southern side of Devonshire Street, the northern side of Albany Street, the eastern sides of Zig Zag and Ingram Lanes, the southern side of Chandos Street, the eastern side of Wheatleigh Street and the rear of properties on the northern side of Chandos Street.

- 1A Wheatleigh Street, Crows Nest
- 110-174 (even numbers only) Chandos Street, Crows Nest
- 117-215 (odd numbers only) Chandos Street, Crows Nest
- 1-3 (odd numbers only) Matthew Lane, Crows Nest
- 63-127 (odd numbers only) Atchison Street, Crows Nest
- 92-162 (even numbers only) Atchison Street, Crows Nest
- 120-144 (even numbers only) Alexander Street, Crows Nest
- 141-173 (odd numbers only) Alexander Street, Crows Nest
- 78-98 (even numbers only) Albany Street, Crows Nest
- 1-49 Devonshire Street, Crows Nest.

Figure A.18.1 : Holtermann Estate A Conservation Area map (Source: North Sydney Council)

A.18.4 Statement of significance

The nominator's statement of significance:

1) This residential area consists of highly mixed California Bungalow, Federation and Victorian era, modest sized, dwellings
2) Dwellings are predominantly single storey, with nothing over three storeys
3) The building stock is predominantly intact, with a cohesive set of late Victorian, early Federation, single storey dwellings
4) The block sizes are significantly smaller, with cross streets being similar widths to the main east–west streets
5) The area is strongly defined to the west by the commercial areas facing onto Willoughby Road, Albany Street and Alexander Street, to the south by the perceptible change in size of allotments from the **nearby** Holtermann Estate areas to the east by St Thomas Rest Park and the change in dwelling type, architectural style and completeness of the buildings to the north.

The Holtermann Estate A Conservation Area is significant:

a) **As** a late 19th century subdivision for speculative housing
b) **For** its regular grid of streets, rear lanes and cross lanes
c) **For** its consistent late 19th and early 20th century residential character and the unity of its low scale built form that derives from its regular grid subdivision pattern and its single storey, detached and attached dwelling houses in a mixture of late Victorian and early Federation styles.

A.19 Other Heritage Items

Table A.19.1 : Other Heritage Items details

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
Whites Creek Stormwater Channel No 95; Whites Creek SWC No 95	Sydney Water Section 170 Heritage and Conservation Registers	4570343	A (historical) C (aesthetic) D (social) E (research potential) F (rarity) G (representativeness)	Local	Railway Parade to Parramatta Road	Annandale
Avenue of *Phoenix canariensis*	*Leichhardt Local Environmental Plan 2013*	I79	A (historical) B (historical association) C (aesthetic)	Local	Railway Parade	Annandale
Former Unilever copra store, including interiors	*Leichhardt Local Environmental Plan 2013*	I306	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	9 Rosebery Place	Balmain
St Paul's Church and neighbourhood centre, including interiors; St Paul's Church— Neighbour-hood Centre; St Paul's Presbyterian Church (former)	*Leichhardt Local Environmental Plan 2013*	I744	A (historical) C (aesthetic) D (social) G (representativeness)	Local	665A Darling Street	Rozelle
	Register of the National Estate - Registered, Historic	1692				
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I117	A (historical) C (aesthetic) G (representativeness)	Local	91 Beattie Street	Balmain
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I118	A (historical) C (aesthetic) G (representativeness)	Local	93 Beattie Street	Balmain
Exchange Hotel, including interiors; Exchange Hotel	Leichhardt Local Environmental Plan 2013	I116	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	94 Beattie Street	Balmain
	Register of the National Estate	1684				

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I119	A (historical) C (aesthetic) G (representativeness)	Local	95 Beattie Street	Balmain
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I120	A (historical) C (aesthetic) G (representativeness)	Local	97 Beattie Street	Balmain
Commercial terrace, including interiors	Leichhardt Local Environmental Plan 2013	I121	A (historical) C (aesthetic) G (representativeness)	Local	99 Beattie Street	Balmain
Street trees – various species	Leichhardt Local Environmental Plan 2013	I160	A (historical) C (aesthetic)	Local	Carrington Street	Balmain
Balmain Courthouse and Post Office; Balmain Police Station; Balmain Post Office, including interiors; Balmain Courthouse and Police Station, including interiors; Balmain Town Hall, including interiors; Balmain Courthouse, Police Station and Post Office; Balmain Civic Group; Post box; Former post office mail box; Town Hall	Attorney General's Department Section 170 Heritage and Conservation Registers	3080138	A (historical) B (historical association) C (aesthetic) D (social) F (rarity) G (representativeness)	Local	366B, 368–370, 386 and 391–393 Darling Street	Balmain
	NSW Police Service Section 170 Heritage and Conservation Registers	4180266				
	Leichhardt Local Environmental Plan 2013	I197				
	Leichhardt Local Environmental Plan 2013	I198				
	Leichhardt Local Environmental Plan 2013	I200				
	National Trust of Australia (NSW)	6669				
	Register of the National Estate	1693				
	Register of the National Estate	1707				
Commercial building, including interiors	Leichhardt Local Environmental Plan 2013	I199	A (historical) C (aesthetic) G (representativeness)	Local	363–377 Darling Street	Balmain
Terrace, including interiors	Leichhardt Local Environmental Plan 2013	I214	A (historical) C (aesthetic) G (representativeness)	Local	8 Evans Street	Balmain
Terrace, including interiors	Leichhardt Local Environmental Plan 2013	I215	A (historical) C (aesthetic) G (representativeness)	Local	10 Evans Street	Balmain
Former Masonic Hall, including interiors	Leichhardt Local Environmental Plan 2013	I253	A (historical)	Local	27A Llewellyn Street	Balmain

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
			B (historical association) C (aesthetic) D (social) G (representativeness)			
Street trees – Brush Box and *Ficus hillii* sp.	Leichhardt Local Environmental Plan 2013	I254	A (historical) C (aesthetic) G (representativeness)	Local	Llewellyn Street	Balmain
Street trees – Brush Box and palms	Leichhardt Local Environmental Plan 2013	I256	A (historical) C (aesthetic) G (representativeness)	Local	Macquarie Terrace	Balmain
Rowntree Memorial	Leichhardt Local Environmental Plan 2013	I257	A (historical) B (historical association) C (aesthetic) F (rarity)	Local	Macquarie Terrace	Balmain
Former Masonic Hall, including interiors	Leichhardt Local Environmental Plan 2013	I258	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	6 Montague Street	Balmain
Former Masonic Hall, including interiors	Leichhardt Local Environmental Plan 2013	I259	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	8 Montague Street	Balmain
Former Central Methodist Mission, including interiors	Leichhardt Local Environmental Plan 2013	I260	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	19 Montague Street	Balmain
Balmain Co-op Society Limited, including interiors; Balmain Cooperative Society Building (former)	Leichhardt Local Environmental Plan 2013	I261	A (historical) B (historical association) C (aesthetic) F (rarity) G (representativeness)	Local	28–30A Montague Street	Balmain
	Register of the National Estate	14049				

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House, including interiors	Leichhardt Local Environmental Plan 2013	I307	A (historical) C (aesthetic) F (rarity)	Local	40 Rowntree Street	Balmain
Former corner shop and residence, including interiors	Leichhardt Local Environmental Plan 2013	I308	A (historical) C (aesthetic) D (social) G (representativeness)	Local	45 Rowntree Street	Balmain
St John the Evangelist Anglican Church, including interiors	Leichhardt Local Environmental Plan 2013	I522	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	125 Birchgrove Road	Birchgrove
	National Trust of Australia (NSW)	S9845				
Terrace house, including interiors	Leichhardt Local Environmental Plan 2013	I531	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	9 Cove Street	Birchgrove
Terrace house, including interiors	Leichhardt Local Environmental Plan 2013	I532	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	11 Cove Street	Birchgrove
Terrace house, including interiors	Leichhardt Local Environmental Plan 2013	I533	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	13 Cove Street	Birchgrove
Terrace house, including interiors	Leichhardt Local Environmental Plan 2013	I534	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	15 Cove Street	Birchgrove
Birchgrove Park	Leichhardt Local Environmental Plan 2013	I535	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	Grove Street	Birchgrove
House, 'Leopoldville', including interiors	Leichhardt Local Environmental Plan 2013	I547	A (historical) C (aesthetic)	Local	14 Louisa Road	Birchgrove

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
			G (representativeness)			
Remnants of Birchgrove House	Leichhardt Local Environmental Plan 2013	I550 I551	A (historical) E (research potential)	Local	65 and 67 Louisa Road	Birchgrove
House, 'Douglas', including interiors	*Leichhardt Local Environmental Plan 2013*	I552	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	76 Louisa Road	Birchgrove
House, 'Geierstein', including interiors	Leichhardt Local Environmental Plan 2013 National Trust of Australia (NSW)	I553 S8078	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	85 Louisa Road	Birchgrove
House, 'Carlowrie', including interiors	Leichhardt Local Environmental Plan 2013 National Trust of Australia (NSW)	I554 S9456	A (historical) C (aesthetic) G (representativeness)	Local	115 Louisa Road	Birchgrove
Raywell House, 'Raywell', including interiors	State Heritage Register Leichhardt Local Environmental Plan 2013 National Trust of Australia (NSW)	00093 I830 9456	A (historical) B (historical association) C (aesthetic) F (rarity)	State	144 Louisa Road	Birchgrove
House, 'Glenarvon', including interiors	Leichhardt Local Environmental Plan 2013	I591	A (historical) B (historical association) C (aesthetic) F (rarity)	Local	1 Thomas Street	Birchgrove
(Balmain) Birchgrove Colliery, including interiors	Leichhardt Local Environmental Plan 2013	A9	A (historical) E (research potential)	Local	2–8 Water Street	Birchgrove
Birchgrove and Ballast Point Road Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C8	-	Local	Birchgrove	Birchgrove
Town of Waterview Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C4	-	Local	Birchgrove/Balmain	Birchgrove/Balmain
Electricity Substation No 217; Electricity Substation No. 217	*North Sydney Local Environmental Plan 2013* Ausgrid Section 170 Heritage and Conservation Registers	I0183 3430354	-	Local	Bligh Street	Kirribilli

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
St John the Baptist Anglican Church	*North Sydney Local Environmental Plan 2013*	I0185	F (rarity) G (representativeness)	Local	7-9 Broughton Street	Kirribilli
The Fantasia Preschool; Former St. Johns Anglican Church Hall	*North Sydney Local Environmental Plan 2013*	I0186	A (historical) B (historical association) C (aesthetic) D (social) E (research potential) G (representativeness)	Local	5 Broughton Street	Kirribilli
Greenway Flats	North Sydney Local Environmental Plan 2013	I0187	G (representativeness)	Local	Corner of Broughton and McDougall streets	Kirribilli
Illingullin; 'Illingullin'	*North Sydney Local Environmental Plan 2013*	I0217	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	14 Fitzroy Street	Kirribilli
House	*North Sydney Local Environmental Plan 2013*	I0252	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	44 Jeffreys Street	Kirribilli
House	*North Sydney Local Environmental Plan 2013*	I0253	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	46 Jeffreys Street	Kirribilli
House	*North Sydney Local Environmental Plan 2013*	I0254	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	48 Jeffreys Street	Kirribilli
House	*North Sydney Local Environmental Plan 2013*	I0255	A (historical) B (historical association) C (aesthetic)	Local	50 Jeffreys Street	Kirribilli

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
			E (research potential) G (representativeness)			
Bratton; 'Bratton'	*North Sydney Local Environmental Plan 2013*	I0283	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	38 Pitt Street	Kirribilli
Careening Cove; Careening Cove Conservation Area	*North Sydney Local Environmental Plan 2013*	CA10	-	Local	1-15 (odd numbers only) Winslow Street; 2-26 (even numbers only) Winslow Street; 4 Winslow Lane; 64-110 (even numbers only) Carabella Street; 111-149 (odd numbers only) Carabella Street, 31 Burton Street; 17-55 (odd numbers only) Willoughby Street; 26-62 (even numbers only) Willoughby Street; 15-57 (odd numbers only) McDougall Street; 44-80 (even numbers only) McDougall Street; 22-34 (even numbers only) Elamang Avenue; 41-47 (odd numbers only) Elamang Avenue; 2-18A (odd numbers only) Hipwood Street, 1-5 (odd numbers only); Hipwood Street, 4-14 (even numbers only) Bradly	Kirribilli
	Register of the National Estate - Indicative Place, Historic	100859				

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
					Avenue; 1 Bradly Avenue; 2-8 (even numbers only) Stannards Place; 85-183 (odd numbers only) High Street; 110-116 (even numbers only) High Street	
House	*North Sydney Local Environmental Plan 2013*	I0302	A (historical) C (aesthetic) D (social) F (rarity) G (representativeness)	Local	23 Arthur Street	Lavender Bay
House	*North Sydney Local Environmental Plan 2013*	I0305	A (historical) C (aesthetic) D (social) F (rarity) G (representativeness)	Local	27 Arthur Street	Lavender Bay
House	*North Sydney Local Environmental Plan 2013*	I0306	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	28 Arthur Street	Lavender Bay
House	*North Sydney Local Environmental Plan 2013*	I0307	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	29 Arthur Street	Lavender Bay
House	*North Sydney Local Environmental Plan 2013*	I0308	A (historical) C (aesthetic) D (social) F (rarity) G (representativeness)	Local	30 Arthur Street	Lavender Bay
House	*North Sydney Local Environmental Plan 2013*	I0309	A (historical) C (aesthetic) D (social) F (rarity)	Local	31 Arthur Street	Lavender Bay

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
			G (representativeness)			
House	*North Sydney Local Environmental Plan 2013*	I0310	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	32 Arthur Street	Lavender Bay
House	*North Sydney Local Environmental Plan 2013*	I0311	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	33 Arthur Street	Lavender Bay
House	*North Sydney Local Environmental Plan 2013*	I0312	A (historical) C (aesthetic) D (social) F (rarity) G (representativeness)	Local	34 Arthur Street	Lavender Bay
House; Houses and Terraces	*North Sydney Local Environmental Plan 2013*	I0383	G (representativeness)	Local	37 Walker Street	Lavender Bay
	Register of the National Estate – Registered, Historic	2881			9-37 Walker Street	
Walker Street Group	Register of the National Estate – Registered, Historic	2880	-	Local	Walker Street	Lavender Bay
Lavender Bay; Lavender Bay Conservation Area	*North Sydney Local Environmental Plan 2013*	CA12	-	Local	1-14 Wilona Avenue; 16-22 (even numbers only) Mackenzie Street; 19 Mackenzie Street; 1-37 (odd numbers only) Walker Street, 2-30 (even numbers only) Walker Street; 1-45 Lavender Street; 1-1A Lavender Crescent; 32-46 (even numbers only) Waiwera Street; 21-23 (odd numbers only) Waiwera Street; 2-8 (even numbers only) King	Lavender Bay
	Register of the National Estate - Indicative Place, Historic	100855				

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
					George Street; 10-60 (even numbers only) Lavender Street; 2-34 (even numbers only) Arthur Street; 23-33 (odd numbers only) Arthur Street	
Jeffreys Street	North Sydney Local Environmental Plan 2013	CA26	-	Local	Kirribilli	Kirribilli
Brennan's Estate Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C16	-	Local	Lilyfield	Lilyfield
Union, Bank and Thomas Street Conservation Area	North Sydney Local Environmental Plan 2013	CA15	-	Local	McMahons Point/ North Sydney/ Waverton	McMahons Point/ North Sydney/ Waverton
Milsons Point Railway Station group; Milsons Point Railway Station; Kirribilli Railway Station; Sydney Harbour Bridge Approaches	State Heritage Register	01194	A (historical) B (historical association) C (aesthetic) D (social) F (rarity) G (representativeness)	State	Alfred Street	Milsons Point
	North Sydney Local Environmental Plan 2013	I0539			-	
	RailCorp Section 170 Heritage and Conservation Registers	4801026			Alfred Street	
Bradfield Park (including northern section)	North Sydney Local Environmental Plan 2013	I0538	F (rarity) G (representativeness)	Local	Alfred Street South	Milsons Point
Milsons Point (Fitzroy Street) Underbridge	RailCorp Section 170 Heritage and Conservation Registers	4801822	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	Concrete arch over Fitzroy Street	Milsons Point
Milsons Point (Lavender Street) Railway Underbridge	RailCorp Section 170 Heritage and Conservation Registers	4801823	A (historical) B (historical association) C (aesthetic) F (rarity) G (representativeness)	State	Concrete arch over Lavender Street	Milsons Point
Chinese Christian Church	*North Sydney Local Environmental Plan 2013*	I0528	F (rarity) G (representativeness)	Local	100 Alfred Street South	Milsons Point
	Register of the National Estate - Registered, Historic	2911				

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
Flat building	North Sydney Local Environmental Plan 2013	I0542	B (historical association) C (aesthetic)	State	439 Alfred Street North	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0582	F (rarity) G (representativeness)	Local	1 Byrnes Avenue	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0583	F (rarity) G (representativeness)	Local	2 Byrnes Avenue	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0584	F (rarity) G (representativeness)	Local	3 Byrnes Avenue	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0585	F (rarity) G (representativeness)	Local	4 Byrnes Avenue	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0586	F (rarity) G (representativeness)	Local	5 Byrnes Avenue	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0587	F (rarity) G (representativeness)	Local	6 Byrnes Avenue	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0588	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	7 Byrnes Avenue	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0589	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	8 Byrnes Avenue	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0590	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	9 Byrnes Avenue	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0591	A (historical) B (historical association)	Local	10 Byrnes Avenue	Neutral Bay

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
			C (aesthetic) E (research potential) F (rarity) G (representativeness)			
House	*North Sydney Local Environmental Plan 2013*	I0592	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	12 Byrnes Avenue	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0593	F (rarity) G (representativeness)	Local	14 Byrnes Avenue	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0594	F (rarity) G (representativeness)	Local	16 Byrnes Avenue	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0595	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	5 Darley Street	Neutral Bay
House	*North Sydney Local Environmental Plan 2013*	I0596	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	6 Darley Street	Neutral Bay
House	North Sydney Local Environmental Plan 2013	I0619	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	317 Ernest Street	Neutral Bay
House	North Sydney Local Environmental Plan 2013	I0620	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	319 Ernest Street	Neutral Bay

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House	North Sydney Local Environmental Plan 2013	I0621	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	321 Ernest Street	Neutral Bay
House	North Sydney Local Environmental Plan 2013	I0622	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	323 Ernest Street	Neutral Bay
House	North Sydney Local Environmental Plan 2013	I0623	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	325 Ernest Street	Neutral Bay
House	North Sydney Local Environmental Plan 2013	I0633	A (historical) C (aesthetic) D (social) G (representativeness)	Local	2 Kurraba Road	Neutral Bay
House	North Sydney Local Environmental Plan 2013	I0634	G (representativeness)	Local	4 Kurraba Road	Neutral Bay
Former Neutral Bay tram depot and water tower; Big Bear Markets	North Sydney Local Environmental Plan 2013	I0674	F (rarity)	Local	116 Military Road	Neutral Bay
	National Trust of Australia (NSW)	S11154				
House, sandstone rock wall and cliff face	North Sydney Local Environmental Plan 2013	I0735	A (historical) C (aesthetic) F (rarity)	Local	2 Winter Ave	Neutral Bay
Oaks Avenue; Park and Oaks Avenues Conservation Area	North Sydney Local Environmental Plan 2013	CA05	-	Local	North Cremorne/ Cremorne	North Cremorne/ Cremorne
North Sydney (Arthur Street) Railway Underbridge	RailCorp Section 170 Heritage and Conservation Registers	4801824	A (historical) B (historical association) C (aesthetic) G (representativeness)	Local	Concrete arch over Arthur Street	North Sydney

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House	North Sydney Local Environmental Plan 2013	I0794	A (historical) C (aesthetic) D (social) G (representativeness)	State	2 Bray Street	North Sydney
North Sydney Technical High School (former) Greenwood (former North Sydney Technical High School); Greenwood/former North Sydney Technical High School	State Heritage Register	00517	F (rarity) G (representativeness)	State	36 Blue Street 101–103 Miller Street (36 Blue Street)	North Sydney
	North Sydney Local Environmental Plan 2013	I0892				
	National Trust of Australia (NSW)	7619				
	Register of the National Estate	2896				
North Sydney Boys High School	North Sydney Local Environmental Plan 2013	I0830	G (representativeness)	Local	127 Falcon Street	North Sydney
'Winstone'	North Sydney Local Environmental Plan 2013	I0831	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	182 Falcon Street	North Sydney
Flat building	North Sydney Local Environmental Plan 2013	I0832	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	184 Falcon Street	North Sydney
Flat building	North Sydney Local Environmental Plan 2013	I0833	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	186 Falcon Street	North Sydney
Flat building	North Sydney Local Environmental Plan 2013	I0834	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	188 Falcon Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0835	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	210 Falcon Street	North Sydney

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House	North Sydney Local Environmental Plan 2013	I0836	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	212 Falcon Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0837	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	214 Falcon Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0838	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	216 Falcon Street	North Sydney
'Torwood'	North Sydney Local Environmental Plan 2013	I0876	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	3 McLaren Street	North Sydney
'Grahwey'	North Sydney Local Environmental Plan 2013	I0877	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	9 McLaren Street	North Sydney
'Kelvin'	North Sydney Local Environmental Plan 2013	I0878	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	11 McLaren Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0879	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	12 McLaren Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0880	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	21–23 McLaren Street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0023	A (historical) B (historical association)	Local	280 West Street	Cammeray

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
			C (aesthetic) G (representativeness)			
House	*North Sydney Local Environmental Plan 2013*	I0007	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	1 Lytton Street	Cammeray
House	*North Sydney Local Environmental Plan 2013*	I0008	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	3 Lytton Street	Cammeray
'Wieewa'	*North Sydney Local Environmental Plan 2013*	I0016	G (representativeness)	Local	336-338 Miller Street	Cammeray
'Franklea'	*North Sydney Local Environmental Plan 2013*	I0017	G (representativeness)	Local	336–338 Miller Street	Cammeray
MLC Building	North Sydney Local Environmental Plan 2013	I0893	F (rarity) G (representativeness)	Local	105–153 Miller Street	North Sydney
Monte Sant Angelo Group	North Sydney Local Environmental Plan 2013	I0894	F (rarity) G (representativeness)	Local	128 Miller Street	North Sydney
	National Trust of Australia (NSW)	S9032				
The Rag and Famish Hotel	North Sydney Local Environmental Plan 2013	I0901	A (historical) B (historical association) C (aesthetic) F (rarity) G (representativeness)	Local	199 Miller Street	North Sydney
Shop	North Sydney Local Environmental Plan 2013	I0908	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	243 Miller Street	North Sydney

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
North Sydney Hotel	North Sydney Local Environmental Plan 2013	I0915	A (historical) B (historical association) C (aesthetic) F (rarity) G (representativeness)	Local	292 Miller Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0912	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	255–257 Miller Street	North Sydney
North Sydney Council Chambers (including fountain in park adjacent to Council Chambers); North Sydney Council Chambers, Wyllie Wing	North Sydney Local Environmental Plan 2013	I0902	F (rarity) G (representativeness)	Local	200 Miller Street	North Sydney
	North Sydney Local Environmental Plan 2013	I0903	G (representativeness)			
	National Trust of Australia (NSW)	S11240				
Shop	North Sydney Local Environmental Plan 2013	I0905	G (representativeness)	Local	232–232A Miller Street	North Sydney
Independent Theatre; The Independent Theatre	National Heritage List	105905	F (rarity)	National	269 Miller Street	North Sydney
	North Sydney Local Environmental Plan 2013	I0914		Local		
	National Trust of Australia (NSW)	7471				
Former Bank of NSW	North Sydney Local Environmental Plan 2013	I0919	F (rarity) G (representativeness)	Local	51 Mount Street	North Sydney
Facade of S. Thompson Building (No 67A)	North Sydney Local Environmental Plan 2013	I0920	G (representativeness)	Local	67–69 Mount Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0921	G (representativeness)	Local	67–69 Mount Street	North Sydney
North Sydney Post Office; North Sydney Post Office and court house (former police station); North Sydney Post Office Group; North Sydney Courthouse	State Heritage Register	01417	A (historical) C (aesthetic) D (social) E (research potential) F (rarity) G (representativeness)	State	92–94 Pacific Highway 94 Pacific Highway	North Sydney
	North Sydney Local Environmental Plan 2013	I0953				
	Commonwealth Heritage List	106144				
	National Trust of Australia (NSW)	9331				
	Register of the National Estate	2897				
	Register of the National Estate	2898				

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
Gates and fence of former Crows Nest House; Gates and Fence of North Sydney Demonstration School	North Sydney Local Environmental Plan 2013	I0957	F (rarity) G (representativeness)	Local	182 and 176–186 Pacific Highway	North Sydney
	Register of the National Estate	2920				
Shop	North Sydney Local Environmental Plan 2013	I0959	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	265 Pacific Highway	North Sydney
House	North Sydney Local Environmental Plan 2013	I0977	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	63 Ridge Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0978	A (historical) C (aesthetic) G (representativeness)	Local	81 Ridge Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0979	A (historical) C (aesthetic) G (representativeness)	Local	85 Ridge Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0980	A (historical) C (aesthetic) G (representativeness)	Local	87 Ridge Street	North Sydney
'St Helen's'	North Sydney Local Environmental Plan 2013	I0981	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	91 Ridge Street	North Sydney
'St Malo'	North Sydney Local Environmental Plan 2013	I0982	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	95 Ridge Street	North Sydney
Stone wall	*North Sydney Local Environmental Plan 2013*	I0996	-	Local	Walker Street (near Hampden Street)	North Sydney
House	North Sydney Local Environmental Plan 2013	I0994	A (historical) C (aesthetic)	Local	207 Walker Street	North Sydney

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
			G (representativeness)			
House	North Sydney Local Environmental Plan 2013	I0995	A (historical) C (aesthetic) G (representativeness)	Local	209 Walker Street	North Sydney
Wenona Girls School Group, Wenona; Wenona Girls School Group, Ralston House; Wenona Girls School Group, 79 Ridge Street; Wenona Girls School Group, 83 Ridge Street; Wenona Girls School Group, Karakatta	North Sydney Local Environmental Plan 2013	I0989	G (representativeness)	Local	182 Walker Street 184 Walker Street 79 Ridge Street 83 Ridge Street 186 Walker Street	North Sydney
	North Sydney Local Environmental Plan 2013	I0990				
	North Sydney Local Environmental Plan 2013	I0991				
	North Sydney Local Environmental Plan 2013	I0992				
	North Sydney Local Environmental Plan 2013	I0993				
House	North Sydney Local Environmental Plan 2013	I1007	A (historical) C (aesthetic) D (social) G (representativeness)	Local	1 Whaling Road	North Sydney
House	North Sydney Local Environmental Plan 2013	I1008	A (historical) C (aesthetic) G (representativeness)	Local	3 Whaling Road	North Sydney
House	North Sydney Local Environmental Plan 2013	I1009	A (historical) C (aesthetic) D (social) G (representativeness)	Local	5 Whaling Road	North Sydney
House	North Sydney Local Environmental Plan 2013	I1010	A (historical) C (aesthetic) G (representativeness)	Local	7 Whaling Road	North Sydney
House	North Sydney Local Environmental Plan 2013	I1011	A (historical) C (aesthetic) D (social) G (representativeness)	Local	9 Whaling Road	North Sydney
House	North Sydney Local Environmental Plan 2013	I1012	A (historical) C (aesthetic) G (representativeness)	Local	11 Whaling Road	North Sydney
House	North Sydney Local Environmental Plan 2013	I1013	A (historical)	Local	15 Whaling Road	North Sydney

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
			C (aesthetic) D (social) G (representativeness)			
House	*North Sydney Local Environmental Plan 2013*	I0842	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	6 Hampden Street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0843	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	8 Hampden Street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0844	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	10 Hampden Street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0845	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	12 Hampden Street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0846	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	14 Hampden Street	North Sydney
Shop	*North Sydney Local Environmental Plan 2013*	I0898	G (representativeness)	Local	187 Miller Street	North Sydney
Commercial building	*North Sydney Local Environmental Plan 2013*	I0904	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	201 Miller Street	North Sydney

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
Trewyn Terraces	*North Sydney Local Environmental Plan 2013*	I0906	G (representativeness)	Local	240 Miller Street	North Sydney
Trewyn Terraces	*North Sydney Local Environmental Plan 2013*	I0907	G (representativeness)	Local	242 Miller Street	North Sydney
Trewyn Terraces	*North Sydney Local Environmental Plan 2013*	I0909	G (representativeness)	Local	244 Miller Street	North Sydney
Trewyn Terraces	*North Sydney Local Environmental Plan 2013*	I0910	G (representativeness)	Local	246 Miller Street	North Sydney
Trewyn Terraces	*North Sydney Local Environmental Plan 2013*	I0911	G (representativeness)	Local	248 Miller Street	North Sydney
Old GPO column	*North Sydney Local Environmental Plan 2013*	I0922	-	Local	Mount Street Plaza	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0923	F (rarity) G (representativeness)	Local	1 Napier Street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0798	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	1 Doohat Avenue	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0925	F (rarity) G (representativeness)	Local	5 Napier street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0927	F (rarity) G (representativeness)	Local	7 Napier street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0924	F (rarity) G (representativeness)	Local	3 Napier street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0929	A (historical) C (aesthetic) D (social) G (representativeness)	Local	18 Neutral Street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0931	A (historical) C (aesthetic) G (representativeness)	Local	20 Neutral Street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0975	G (representativeness)	Local	49 Ridge Street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0976	G (representativeness)	Local	51 Ridge Street	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I0988	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity)	Local	185 Walker Street	North Sydney

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
			G (representativeness)			
House	*North Sydney Local Environmental Plan 2013*	I1014	A (historical) C (aesthetic) G (representativeness)	Local	17 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1015	A (historical) C (aesthetic) G (representativeness)	Local	19 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1016	A (historical) C (aesthetic) D (social) G (representativeness)	Local	21 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1017	A (historical) C (aesthetic) G (representativeness)	Local	23 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1018	A (historical) C (aesthetic) D (social) G (representativeness)	Local	25 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1019	A (historical) C (aesthetic) G (representativeness)	Local	27 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1020	A (historical) C (aesthetic) D (social) G (representativeness)	Local	29 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1022	A (historical) C (aesthetic) D (social) G (representativeness)	Local	41 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1023	A (historical) C (aesthetic) D (social) E (research potential) G (representativeness)	Local	45 Whaling Road	North Sydney

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House	*North Sydney Local Environmental Plan 2013*	I1024	A (historical) C (aesthetic) E (research potential) G (representativeness)	Local	47 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1025	A (historical) C (aesthetic) D (social) F (rarity) G (representativeness)	Local	49 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1026	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	51 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1027	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	53 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1028	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	55 Whaling Road	North Sydney
House	*North Sydney Local Environmental Plan 2013*	I1029	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	57 Whaling Road	North Sydney
North Sydney Telephone Exchange; Telephone exchange	North Sydney Local Environmental Plan 2013	I1030	F (rarity) G (representativeness)	Local	1 Wheeler Lane	North Sydney
	Register of the National Estate - Registered, Historic	103758				
Edward Street; Edward Street Conservation Area	North Sydney Local Environmental Plan 2013	CA17	-	Local	12–20 (even numbers only) Bay Road, 11–67 Edward Street, 2–15 Oak Street,	North Sydney
	Register of the National Estate	100853				

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
					6 Napier Street, Oak Lane, 3–5 (odd numbers only) Berry Street, 7–27 Riley Street	
McLaren Street Conservation Area; McLaren Street	North Sydney Local Environmental Plan 2013	CA19	-	Local	North Sydney	North Sydney
	Register of the National Estate	100851				
Whaling Road; Whaling Road Conservation Area	North Sydney Local Environmental Plan 2013	CA21	-	Local	North Sydney/ Neutral Bay	North Sydney/ Neutral Bay
	Register of the National Estate	100858				
St Thomas Anglican Church Group; St Thomas Anglican Church; St Thomas Church; St Thomas Anglican Church Memorial Hall; Memorial Hall of St Thomas; St Thomas Kindergarten Hall; St Thomas' Kindergarten Hall; St Thomas Anglican Church Rectory; St Thomas' Church Rectory	North Sydney Local Environmental Plan 2013	I0885	F (rarity) G (representativeness)	Local	Church Street McLaren Street 34 McLaren Street	North Sydney
	North Sydney Local Environmental Plan 2013	I0886				
	North Sydney Local Environmental Plan 2013	I0887				
	North Sydney Local Environmental Plan 2013	I0888				
	National Trust of Australia (NSW)	9969				
	Register of the National Estate	2891				
	Register of the National Estate	2893				
	Register of the National Estate	2894				
	Register of the National Estate	2895				
	Register of the National Estate	102412				
Walker and Ridge streets; Walker / Ridge Streets Conservation Area	North Sydney Local Environmental Plan 2013	CA20	-	Local	North Sydney	North Sydney
	Register of the National Estate	100852				
Former police station, including interiors	Leichhardt Local Environmental Plan 2013	I747	A (historical) B (historical association) C (aesthetic) D (social) G (representativeness)	Local	707 Darling Street	Rozelle
	National Trust of Australia (NSW)	S7689				
Beattie St Street Stormwater Channel No. 15	Sydney Water Section 170 Register	4570329	A (historical) C (aesthetic) D (social)	Local	Robert Street to Beattie Street	Rozelle/Balmain

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
			E (research potential) F (rarity) G (representativeness)			
Rozelle Public School, including interiors; Rozelle Public School	Leichhardt Local Environmental Plan 2013	I743	A (historical) B (historical association) C (aesthetic) D (social) F (rarity) G (representativeness)	Local	Rozelle	Rozelle
	National Trust of Australia (NSW)	S9583				
	Register of the National Estate - Registered, Historic	1695				
Easton Park Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C18	-	Local	Rozelle	Rozelle
Iron Cove Heritage Conservation Area	Leichhardt Local Environmental Plan 2013	C6	-	Local	Rozelle/Balmain/ Birchgrove	Rozelle/Balmain/ Birchgrove
Balls Head Foreshore Relics Group, ring bolt; Balls Head Foreshore Relics Group, ring bolt and iron screen; Balls Head Foreshore Relics Group, remains of windlass spindle; Balls Head Foreshore Relics Group, steps to former harbour pool; Balls Head Foreshore Relics Group, Uncle Tom's Cabin	North Sydney Local Environmental Plan 2013	I1044	F (rarity) G (representativeness)	Local	Balls Head Drive	Waverton
	North Sydney Local Environmental Plan 2013	I1045				
	North Sydney Local Environmental Plan 2013	I1046				
	North Sydney Local Environmental Plan 2013	I1047				
	North Sydney Local Environmental Plan 2013	I1048				
Former Quarantine Boat Depot	*North Sydney Local Environmental Plan 2013*	I1039	F (rarity)	Local	Balls Head Drive	Waverton
Balls Head Reserve	North Sydney Local Environmental Plan 2013	I1041	F (rarity)	Local	Balls Head Drive	Waverton
Waverton Railway Station group (including booking office, hut and tunnel)	North Sydney Local Environmental Plan 2013	I1051	A (historical) C (aesthetic) D (social) F (rarity) G (representativeness)	State	Bay Road	Waverton
	National Trust of Australia (NSW)	9423				
House	North Sydney Local Environmental Plan 2013	I1053	-	Local	22 Carr Street	Waverton
House	North Sydney Local Environmental Plan 2013	I1054	-	Local	24 Carr Street	Waverton

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House	North Sydney Local Environmental Plan 2013	I1056	A (historical) C (aesthetic) G (representativeness)	Local	47 Carr Street	Waverton
Oakhill; 'Oakhill'	*North Sydney Local Environmental Plan 2013*	I1075	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	40 Larkin Street	Waverton
Flat building	North Sydney Local Environmental Plan 2013	I1080	-	Local	26 Toongarah Road	Waverton
Priory Road Conservation Area	North Sydney Local Environmental Plan 2013	CA24	-	Local	Waverton	Waverton
Crows Nest Road Conservation Area; Crows Nest Road	North Sydney Local Environmental Plan 2013	CA23	-	Local	Crows Nest Street	Wollstonecraft/ Waverton/North Sydney
	Register of the National Estate	100850				
Sydney Opera House – Buffer Zone	World Heritage List – Declared Property, Cultural	105914			2 Circular Quay East	Sydney
Naremburn Central Township	*Willoughby Local Environmental Plan 2012*	C9	-	Local	-	Naremburn
House (including original interiors)	*Willoughby Local Environmental Plan 2012*	I169	-	Local	40 Slade Street, Naremburn	Naremburn
House (including original interiors)	*Willoughby Local Environmental Plan 2012*	I170	-	Local	42 Slade Street, Naremburn	Naremburn
St Cuthbert's Anglican Church (including original interiors)	*Willoughby Local Environmental Plan 2012*	I172	A (historical) B (historical association) C (aesthetic) D (social)	Local	205 Willoughby Road	Naremburn
Group of shops	*Willoughby Local Environmental Plan 2012*	I174	A (historical) C (aesthetic) D (social) F (rarity) G (representativeness)	Local	272–276 Willoughby Road	Naremburn
Shops	*Willoughby Local Environmental Plan 2012*	I175	A (historical) C (aesthetic) D (social)	Local	284 and 284A Willoughby Road	Naremburn

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
			F (rarity) G (representativeness)			
Conservation Area – General	*Willoughby Local Environmental Plan 2012*	C1	-	Local	-	Artarmon

A.20 Seating area (with sandstone walls), North Sydney

Table A.20.1 : Seating area (with sandstone walls) details

Alternative names	Location	Register	Register ID	Significance level
Seating area (with sandstone walls)	Eastern end of Ridge Street, NSW 2060	-	-	-

The information provided below is sourced from Department of Main Roads (1968); Gregory's Street Directory (1939); Spatial Services (2017); Sydney Morning Herald (1968).

A.20.1 History

Seating area (with sandstone walls), located at the eastern end of Ridge Street, North Sydney, is a 'special observation area' (Department of Main Roads 1968, p. 11) overlooking the Warringah Freeway and the Sydney skyline. Before the construction of the expressway, there is no sign of the lookout area next to the former Alfred Street in historical street directories or historical aerial photographs, so it was likely built in 1968 along with the Warringah Expressway. A plaque was unveiled there by Roden Cutler, governor of NSW, to commemorate the prior opening of the Warringah Expressway on 18 June 1968. According to Mr P.H. Morton, Minister for Local Government, there was no formal opening of the expressway. Instead, a 'small function', which included the unveiling of the plaque, was to be held on a 'date to be fixed' in the observation area (Sydney Morning Herald 1968).

A.20.2 Description

A sandstone-walled enclosure off of Ridge Street, North Sydney, to the south-west of the Ridge Street pedestrian bridge, overlooking the Warringah Freeway. It is an open area, about 140 square metres in size. The lookout is surrounded by low sandstone walls. There is an entry at the north-eastern corner near the pedestrian bridge, and the Warringah Expressway commemoration plaque is inset into the eastern wall. There are two seats along the western wall, facing east. There is also an area set aside for plants across the north-eastern corner of the lookout, including a date palm.

A.20.3 Curtilage information

Seating area (with sandstone walls) is situated on land reserved for infrastructure (SP2) on the North Sydney LEP 2013. Formerly on land at 97 Ridge Street, North Sydney, before its demolition for the Warringah Expressway.

A.20.4 Significance assessment

Table A.20.2 : Seating area (with sandstone walls) significance assessment

Criterion	Local level
A – Historical significance	The seating area is of recent construction dating to some time on or after 1968.
B – Historical association significance	While it appears that the seating area and commemorative plaque were officially unveiled by the governor of NSW, this is not sufficient for it to meet the significance criteria threshold for local or **State** significance.
C – Aesthetic significance	While the area affords views of the Sydney skyline, it is not aesthetically significant.
D – Social significance	There is no information to support that the seating area is of particular importance to any community group.
E – Research potential	The seating area does not demonstrate any research potential.

Criterion	Local level
F – Rarity	N/A
G – Representativeness	While the presence of a commemorative plaque in public seating areas or lookout areas is a key characteristic of such places, this area is not of particular significance.

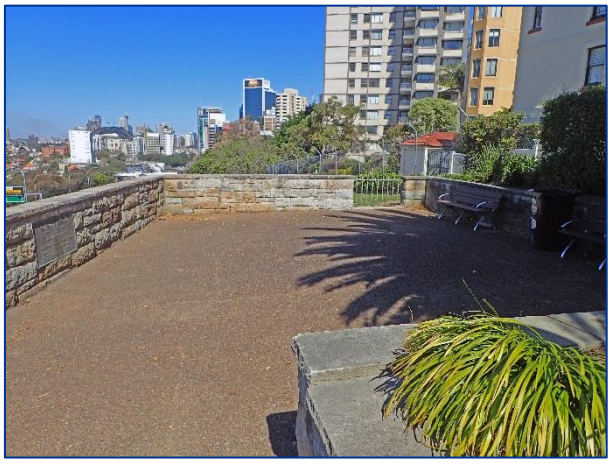


Figure A.20.1 : View of seating area (with sandstone walls), facing south

Figure A.20.2 : Warringah Expressway plaque, dated 19 June 1968, on eastern wall of seating area

A.20.5 Statement of significance

This observation area (c.1968) was used for a 'small function' which involved the unveiling of a plaque commemorating the opening of the Warringah Expressway. However, this was not a formal opening of the expressway. While the area affords views of the Sydney skyline, it is not aesthetically significant. As such, this item **does not meet the significance criteria thresholds** for local or state listing.

Appendix B. Archaeological research design and methodology for BP Site

B.1 Research design

B.1.1 Introduction

The research design details how the archaeological and research potential of the site will be realised. It provides the framework of questions which will be addressed as a result of the archaeological investigations of the site. The excavation methodology, artefact recovery process, and management of artefacts is developed in order to answer the questions identified in the research design.

B.1.2 Research questions – Area A and B

The main focus of research will be on identifying the range of activities carried out during the earliest phases of the site during the 19th century (Area A) as well as later use during the 20th century as a bulk fuel storage site (Area B). In Area A it will focus on the 19th century occupation of the site, which included a range of commercial and industrial activities such as general merchant operations and other storage, a distillery, military operations and blacksmithing. The research will also address domestic activities related to occupation of the site as the residence of Berry's general manager. In Area B, the focus will be on the 20th century bulk fuel use of the site, including its activities related to storage of fuel, operations and transport around the site. The site has the potential to provide information about the history of this site, 19th and 20th century industrial activities carried out, and the role of Sydney Harbour in Sydney's maritime and wider economic history, which are unavailable through traditional documentary research. It also has the potential to provide an insight into the domestic life on an industrial 19th century site.

B.1.2.1 Descriptive questions

- What is the nature of the archaeological fabric of the site? Describe results of archaeological work relating to wall footings, wells, or evidence of the funicular tramway, and what these reveal about the construction of the buildings/structures, including the stone warehouse/store, stone cottage, stables and wells.
- What evidence is there for rubbish and sewage disposal on the site? Are there preserved cesspits or rubbish pits in the vicinity of the stone cottage? Were the wells used for later rubbish disposal? Is there evidence of 20th century rubbish disposal on site?
- What is the nature of the archaeological deposits at the site? Describe results of archaeological work relating to any underfloor or open area deposits.
- What natural and cultural taphonomic processes have contributed to the archaeological site and its associated deposits?
- What stratigraphic sequences are represented at the site?

B.1.2.2 Analytical questions

- How many artefact fragments were recovered from the excavation of the site?
- How were these items distributed spatially within Area A and Area B, and are there particular concentrations of artefacts within these areas?
- What types and quantities of major artefact groups were recovered? These are likely to include architectural items, domestic tablewares and glass bottles, munitions, clay tobacco pipes, and tools.
- What are the Minimum Number of Vessel counts for household ceramic and glass objects, and other relevant artefact types?
- How much diversity of form is there within each of these artefact groups?
- What similar industrial maritime sites have been investigated within the local or broader context?

B.1.2.3 Interpretive questions

- What do the artefacts reveal about the operations at the site over time, specifically relating to:

- Type of good being stored
- Hygiene, sanitation and rubbish disposal
- Work practices and operations
- Domestic life on an industrial site?

- What evidence is there for the storage (destined for consumption) of mass-produced commodities in 19th century Sydney?
- What evidence is there for work and operations in the distilling of alcohol?
- What evidence is there for the military operations of the Torpedo Corps?
- What evidence is there for blacksmithing?
- What evidence is there for bulk fuel storage and operations including the transport of goods around the site?
- How does the site and its multiple phases of activity differ from other maritime industrial sites around Sydney Harbour?

B.1.3 Research questions – Area C

The main focus of research will be on identifying the range of materials present in the foreshore and whether this indicates reclamation activities or original land surfaces. The site has the potential to provide information about the history of this site, including the practice of land reclamation and straightening the harbour foreshore to provide more work space.

B.1.3.1 Descriptive questions

- What is the nature of the archaeological fabric of the site? Describe results of archaeological work relating to evidence of episodes of fill for reclamation, and structure related to the reclamation process.
- What natural and cultural taphonomic processes have contributed to the archaeological site and its associated deposits?
- What stratigraphic sequences are represented at the site?

B.1.3.2 Analytical questions

- How many artefact fragments were recovered from the excavation of the site?
- How were these items distributed spatially (including vertically), and are there particular concentrations of artefacts?
- What types and quantities of major artefact groups were recovered?
- What similar sites related to harbour or foreshore reclamation have been investigated within the local or broader context?

B.1.3.3 Interpretive questions

- What do the artefacts, stratigraphy and any features reveal about activity and techniques for reclamation of the harbour foreshore?
- How does the site differ from other harbour and foreshore reclamation sites that have been investigated?

B.2 Excavation methodology

The following methodology is based upon the current project description and the proposed site layouts for the construction site WHT7. Should the proposed layout and ground disturbance activities change, then the below methodology will require review and update.

Personal protective equipment including gloves and safety glasses will be worn at all times during the excavation. There is a moderate potential of in situ petrochemical contamination of the subsurface. A full health and safety plan will be prepared before the fieldwork to assess and mitigate against safety risks for this fieldwork. The archaeological excavation methodology may have to be reviewed during this health and safety plan development process.

B.2.1 Area A

Area A in total is about 67 metres (north-south) x 60 metres (east-west). The proposed works in this area comprise the construction of three buildings (wastewater treatment plant, sediment pond, substation) which are workshops/sheds along the eastern edge of Area A, and the construction of site access road along the southern edge of Area A. The excavation methodologies for each of these areas will differ and are described as follows.

B.2.1.1 Three buildings area

The approximate footprint of the three buildings is 40 metres (north-south) x 10 metres (east-west). The buildings are situated at the eastern perimeter of Area A on top of the bund wall area. The archaeological investigation will focus only upon the area of proposed disturbance comprising the footprint of the buildings and a buffer of two metres surrounding the footprint, or an area of disturbance otherwise indicated by the construction design.

The excavation area will be gridded in 5-metre x 5-metre squares which will be further divided where necessary. A physical grid will only be established once features or deposits are identified to guide further excavation and recording.

The total footprint of the buildings will be mechanically stripped, firstly removing the grass and topsoil to expose footings, rubbish deposits or other features. This will be done using a smooth-bucket mechanical excavator systematically ‘in strips’ along a north-south axis.

The excavator will stop at the top of any potential archaeological features or deposits or, if none are identified, continue until a culturally sterile layer is identified. The depth of the excavation will be determined based on the results of excavations.

If archaeological features or deposits are identified, then mechanical excavation will cease and manual hand excavation would be carried out in order to clarify, investigate and record the feature/deposit. Deposits will be manually excavated with trowels in 5-centimetre units, following cultural horizons where possible. The grid should be reduced to 1 metre x 1 metre for the excavation of artefact deposits. Excavation units (contexts) will be recorded in a single running sequence for Area A. All features will be planned to scale and photographed in situ using standard photography and 3D photogrammetry.

All deposits will be sieved through a set of nested 10-millimetre, six-millimetre and three-millimetre sieves (or similar arrangement). Artefacts will not be point-provenienced but will be bulk bagged according to type within each feature, context or grid square.

In the event of finding Aboriginal cultural material, all works will cease immediately and the project archaeologist will carry out the process provided in Technical working paper: Cultural heritage assessment report (Jacobs, 2020) to manage the discovery of Aboriginal heritage.

B.2.1.2 Site access road area

The site access road follows an existing access way at the base of the bund wall, between the 1936 bund wall (12) and the sandstone block wall (11). Given the proposed works are not likely to require deep ground disturbance, and the distance of the area both vertically and horizontally from the location of the key 19th century structures (warehouse/store, cottage etc), monitoring of construction works by an appropriately qualified historical archaeologist will be carried out.

Should artefact deposits or archaeological features be identified during ground disturbance works, the archaeologist would cause the excavation to cease in the vicinity of the deposits/features while the archaeologist/s would further investigate the deposit/feature including detailed recording.

In the event of finding Aboriginal cultural material, all works will cease immediately and the project archaeologist will carry out the process provided in Jacobs (2020) to manage the discovery of Aboriginal heritage.

B.2.2 Area B

Area B in total is about 60 metres (north-south) x 40 metres (east-west). The proposed works in this area comprise the construction of a workshop on the western edge of Area B, construction of a site access road along the southern edge of Area B, and the construction of a large acoustic shed across the majority of the remainder of Area B.

B.2.2.1 Workshop area and acoustics shed area

The excavation area will be gridded in 5-metre x 5-metre squares which will be further divided where necessary. A physical grid will only be established once features or deposits are identified to guide further excavation and recording.

The total footprint of the buildings will be mechanically stripped, firstly removing the grass and topsoil to expose footings, rubbish deposits or other features. This will be done using a smooth-bucket mechanical excavator systematically 'in strips' along a north-south axis.

The excavator will stop at the top of any potential archaeological features or deposits or, if none are identified, continue until a culturally sterile layer is identified. The depth of the excavation will be determined based on the results of excavations.

If archaeological features or deposits are identified, then mechanical excavation will cease and manual hand excavation would be carried out in order to clarify, investigate and record the feature/deposit. Deposits will be manually excavated with trowels in 5-centimetre units, following cultural horizons where possible. The grid should be reduced to 1 metre x 1 metre for the excavation of artefact deposits. Excavation units (contexts) will be recorded in a single running sequence for Area B. All features will be planned to scale and photographed in situ using standard photography and 3D photogrammetry.

All deposits will be sieved through a set of nested 10-millimetre, six-millimetre and three-millimetre sieves (or similar arrangement). Artefacts will not be point-provenienced but will be bulk bagged according to type within each feature, context or grid square.

In the event of finding Aboriginal cultural material, all works will cease immediately and the project archaeologist will carry out the process provided in Jacobs (2020) to manage the discovery of Aboriginal heritage.

B.2.2.2 Site access road area

The site access road follows an existing access way at the base of the bund wall. Given the proposed works are not likely to require deep ground disturbance, and the distance of the area both vertically and horizontally from the location of the key 19th century structures (warehouse/store, cottage etc), monitoring of construction works by an appropriately qualified historical archaeologist will be carried out.

Should artefact deposits or archaeological features be identified during ground disturbance works, the archaeologist would cause the excavation to cease in the vicinity of the deposits/features while the archaeologist/s would further investigate the deposit/feature including detailed recording.

In the event of finding Aboriginal cultural material, all works will cease immediately and the project archaeologist will carry out the process provided in *Appendix L - Technical working paper: Aboriginal cultural heritage assessment report* (Jacobs 2020) to manage the discovery of Aboriginal heritage.

B.3 Artefact retention and management

All artefacts relating to the occupation of the site will be retained, including surface material. The only artefacts to be sampled will be building debris such as bricks and stone. Material which is clearly related to the period after closure of the site by BP will not be retained but will be noted on context sheets and in the project report. Artefacts will be bulk bagged in the field according to material type within each feature, context or grid square. NSW Heritage Division, Office of Environment and Heritage will be contacted immediately if any artefacts with urgent conservation requirements are identified. An artefact conservator would be engaged at the beginning of the excavation to provide advice and to inform the detailed approach to artefact retention and management.

All artefacts recovered in the field will be processed and catalogued. A simple computerised archaeological database or spreadsheet will be used to catalogue the artefacts. Primary artefact processing (sort into material type, preliminary cleaning and bagging) would be carried out in the field.

The significance of the artefact collection as a whole would be assessed in connection with the other results of the excavation and the research design to develop a plan for further artefact processing and analysis. Different approaches to retention and processing will depend on the information that the artefacts have the potential to provide.

Different methods of processing and cataloguing will be carried out for each type of artefact. For example, glass artefacts would be sorted by colour and component (eg base, rim) to enable minimum number of individual counts for specific contexts or groups of contexts. Specialist analysis including fabric, form and function would be carried out following the initial cataloguing by type and number. These data would also be added to the database.

The artefact collection would be lodged with a local historical society or museum, depending on the significance and conservation requirements of the artefacts recovered.

Any decision to discard excavated material on site will be thoroughly documented and will be subject to consultation with Heritage Division, OEH.

B.4 Field program management

B.4.1 Excavation

For the archaeological excavations proposed in Areas A and B, the field program would employ experienced trench supervisors who would supervise a small team of archaeologists with varying levels of experience. An artefact manager would also be employed on site and would be responsible for the collection as it is removed from the site.

For Area A, at least two trench supervisors would be employed across the excavation. For Area B, at least four trench supervisors would be employed. Each trench supervisor would have two team members to carry out excavation, sieving and recording.

B.4.2 Monitoring

For the archaeological monitoring of construction excavations in Areas A and B, the field program would employ at least two appropriately qualified historical archaeologists to monitor, investigate and record.

B.5 Excavation report

An excavation report will be prepared detailing methods, results, artefact analysis and responses to the research questions.

Appendix C. Archaeological research design and methodology for Yurulbin Park

C.1 Research design

C.1.1 Introduction

The research design details how the archaeological and research potential of the site will be realised. It provides the framework of questions which will be addressed as a result of the archaeological investigations of the site. The excavation methodology, artefact recovery process and management of artefacts is developed in order to answer the questions identified in the research design.

C.1.2 Research questions

The main focus of research will be on identifying the range of activities carried out during the shipyard phase of the site from the 1920s to the 1970s. The site has the potential to provide information about the history of this site, 20th century shipbuilding and industrial activities carried out, and the role of Sydney Harbour in Sydney's maritime and wider economic history, which are unavailable through traditional documentary research.

C.1.2.1 Descriptive questions

- What is the nature of the archaeological fabric of the site? Describe results of archaeological work relating to wall footings or posts, rubbish pits, or evidence of other activities, and what these reveal about the construction of the shipyard buildings/structures.
- What evidence is there for rubbish and sewage disposal on the site? Is there evidence of rubbish pits on the site?
- What is the nature of the archaeological deposits at the site? Describe results of archaeological work relating to any underfloor or open area deposits.
- What natural and cultural taphonomic processes have contributed to the archaeological site and its associated deposits?
- What stratigraphic sequences are represented at the site?

C.1.2.2 Analytical questions

- How many artefact fragments were recovered from the excavation of the site?
- How were these items distributed spatially and are there particular concentrations of artefacts?
- What types and quantities of major artefact groups were recovered? These are likely to include architectural items, glass bottles, industrial materials, and tools.
- What are the Minimum Number of Vessel counts for glass objects, and other relevant artefact types?
- How much diversity of form is there within each of these artefact groups?
- What similar industrial maritime sites have been investigated within the local or broader context?

C.1.2.3 Interpretive questions

- What do the artefacts reveal about the operations at the site over time, specifically relating to:
  - Type of good being stored at the site
  - Hygiene, sanitation and rubbish disposal
  - Work practices and operations?
- How does the site and its shipyard activity differ from other maritime industrial sites around Sydney Harbour?

C.2 Excavation methodology

The following methodology is based upon the current project description and the proposed site layouts for the construction compound WHT4. Should the proposed layout and ground disturbance activities change, then the below methodology will require review and update.

The proposed construction compound works are situated in the eastern half of the park, and comprise a water treatment plant, substation, a spoil shed, site office and an enclosed spoil conveyor. There are no works proposed in the southern section of the area of archaeological potential.

The water treatment plant and substation buildings are about 20 metres (south-west–north-east) x 10 metres (north-west–south-east), the spoil shed 26 metres (south-west–north-east) x 46 metres (north-west–south-east), and the site office 6 metres (south-west–north-east) x 12 metres (north-west–south-east). The archaeological investigation will focus only upon the area of proposed disturbance comprising the footprint of the buildings and a buffer of 2 metres surrounding the footprint, or an area of disturbance otherwise indicated by the construction design.

The excavation area will be gridded in 5-metre x 5-metre squares which will be further divided where necessary. A physical grid will only be established once features or deposits are identified to guide further excavation and recording.

The total footprint of the buildings will be mechanically stripped, firstly removing the grass and topsoil to expose footings, rubbish deposits or other features. This will be done using a smooth-bucket mechanical excavator systematically ‘in strips’ along a general north-west–south-east axis following the alignment of the buildings.

The excavator will stop at the top of any potential archaeological features or deposits or, if none are identified, continue until a culturally sterile layer is identified. The depth of the excavation will be determined based on the results of excavations.

If archaeological features or deposits are identified, then mechanical excavation will cease and manual hand excavation would be carried out in order to clarify, investigate and record the feature/deposit. Deposits will be manually excavated with trowels in 5-centimetre units, following cultural horizons where possible. The grid should be reduced to 1 metre x 1 metre for the excavation of artefact deposits. Excavation units (contexts) will be recorded in a single running sequence for the site. All features will be planned to scale and photographed in situ using standard photography and 3D photogrammetry.

All deposits will be sieved through a set of nested 10-millimetre, six-millimetre and three-millimetre sieves (or similar arrangement). Artefacts will not be point-provenienced but will be bulk bagged according to type within each feature, context or grid square.

In the event of finding Aboriginal cultural material, all works will cease immediately and the project archaeologist will carry out the process provided in the Aboriginal Heritage Working Paper to manage the discovery of Aboriginal heritage.

C.3 Artefact retention and management

All artefacts relating to the occupation of the site will be retained, including surface material. The only artefacts to be sampled will be building debris such as bricks and stone. Material which is clearly related to the period after closure of the shipyard will not be retained but will be noted on context sheets and in the project report. Artefacts will be bulk bagged in the field according to material type within each feature, context or grid square. NSW Heritage Division, OEH will be contacted immediately if any artefacts with urgent conservation requirements are identified. An artefact conservator would be engaged at the beginning of the excavation to provide advice and to inform the detailed approach to artefact retention and management.

All artefacts recovered in the field will be processed and catalogued. A simple computerised archaeological database or spreadsheet will be used to catalogue the artefacts. Primary artefact processing (sort into material type, preliminary cleaning, and bagging) would be carried out in the field.

The significance of the artefact collection as a whole would be assessed in connection with the other results of the excavation and the research design to develop a plan for further artefact processing and analysis. Different approaches to retention and processing will depend on the information that the artefacts have the potential to provide.

Different methods of processing and cataloguing will be carried out for each type of artefact. For example, glass artefacts would be sorted by colour and component (eg base, rim) to enable minimum number of individual counts for specific contexts or groups of contexts. Specialist analysis including fabric, form and function would be carried out following the initial cataloguing by type and number. These data would also be added to the database.

The artefact collection would be lodged with a local historical society or museum, depending on the significance and conservation requirements of the artefacts recovered.

Any decision to discard excavated material on site will be thoroughly documented and will be subject to consultation with NSW Heritage Division, OEH.

C.4 Field program management

C.4.1 Excavation

For the archaeological excavations proposed, the field program would employ experienced trench supervisors who would supervise a small team of archaeologists with varying levels of experience. An artefact manager would also be employed on site and would be responsible for the collection as it is removed from the site.

During initial mechanical excavation, at least two trench supervisors would be employed in the first instance. Each trench supervisor would have two team members to carry out excavation, sieving and recording. Depending on the number of archaeological features or deposits identified, additional supervisors/teams may be required.

C.5 Excavation report

An excavation report will be prepared detailing methods, results, artefact analysis and responses to the research questions.

Appendix D. References to heritage item descriptions and significance assessments

Anzac Park Public School 2016 *Our School*. Retrieved 6 October from http://www.anzacpark-p.schools.nsw.edu.au/our-school.

Cammeray Golf Club 2017 *Golf*. Retrieved 5 October from http://www.cammeraygolf.com.au/golf.

Cosmos Archaeology 2020 *Western Harbour Tunnel and Warringah Freeway Upgrade: Appendix K - Technical working paper: Maritime non-Aboriginal heritage*, Roads and Maritime Services, Sydney.

Cramer, J. 1984 *North Sydney Anzac Memorial Club - the Beginning*. North Sydney: North Sydney Council.

David Scobie Architects Pty Ltd 2015 *Bus Shelter Heritage Review*, Report for the North Sydney Council, North Sydney.

Department of Main Roads 1968 Warringah Expressway Construction. *Journal of the Department of Main Roads, New South Wales* 34(1):10-16.

Godden Mackay Logan 2000 *Waverton Peninsula Industrial Sites: BP, Caltex, Coal Loader, Conservation Management Plan*. Prepared for North Sydney Council, Godden Mackay Logan, with Mary Dallas, Meredith Hutton and Musecape, Sydney.

Godfrey Eugene, P. 2014 *ANZAC Park North Sydney - War Memorial*. Retrieved 5 October from https://www.warmemorialsregister.nsw.gov.au/content/anzac-park-north-sydney-war-memorial.

Godfrey Eugene, P. and J. Williamson 2014 *ANZAC Park North Sydney - Memorial Grove*. Retrieved 5 October from https://www.warmemorialsregister.nsw.gov.au/content/anzac-park-north-sydney-memorial-grove.

Gregory's Street Directory 1939 *Gregory's Sydney Street Directory for Sydney and Suburbs: Map 59*. Sydney: AGB Co Ltd.

Higinbotham and Robinson 1887 *Map of St. Leonards on the North Shore Parish of Willoughby*. Sydney: Higinbotham and Robinson.

Jacobs 2020 *Western Harbour Tunnel and Warringah Freeway Upgrade: Appendix L - Technical working paper: Aboriginal cultural heritage assessment report*, Roads and Maritime Services, Sydney.

Kennedy, B. and B. Kennedy 1982 *Subterranean Sydney (The Real Underworld of Sydney Town)*. Retrieved 24 August from http://www.sydneyarchitecture.com/SUB/SUB-10.htm.

Monument Australia 2010 *North Sydney Tramways War Memorial*. Retrieved 5 October from http://monumentaustralia.org.au/themes/conflict/multiple/display/93916-north-sydney-tramways-war-memorial/.

North Sydney Council 2008 *North Sydney Heritage Leaflet 14: War Memorials in North Sydney*. North Sydney: North Sydney Heritage Centre.

North Sydney Council 2016 *Cammeray Park*. Retrieved 27 September from https://www.northsydney.nsw.gov.au/Recreation_Facilities/Sports_Sportsgrounds/Sportsgrounds/Cammeray_Park.

North Sydney Council 2017a *Green Park*. Retrieved 27 September from https://www.northsydney.nsw.gov.au/Recreation_Facilities/Parks_Reserves/Search_Parks/Green_Park.

North Sydney Council 2017b *Proposed Community Garden - Anzac Park*. Retrieved 5 October from http://yoursay.northsydney.nsw.gov.au/proposed-community-garden-anzac-park.

Park, M. and O. Karadimas 2001 *North Sydney's Heritage 32 - Federation Faces and Places in North Sydney: A Walking Tour*. North Sydney: North Sydney Council.

Roberts, A. 2017 *Western Harbour Tunnel Beaches Link, Yurulbin Park: Statement of Heritage Impact (Geotechnical Works)*. Report for Roads and Maritime Services, Jacobs Group (Australia Pty Ltd), Sydney.

RPS 2013 *Berrys Bay Wharf Demolition Works: Woodleys Shipyard Statement of Heritage Impact, Berrys Bay, NSW*, Prepared for Roads and Maritime Services, Sydney.

Spatial Services 2017 *Sydney 1943 Imagery*. Retrieved 31 October from https://maps.six.nsw.gov.au/.

Sydney Morning Herald 1968 $25m road opens June 18. *Sydney Morning Herald*. 9 May 1968.

The Australian War Memorial 2016 *The War Memorial at North Sydney Tramway Depot which was one of the memorials erected by the NSW Government Tramways*. Retrieved 6 October from https://www.awm.gov.au/collection/H16629/.

Wilkinson, D., C. Wilby and C. Coroneos 2017 *Western Harbour Tunnel and Beaches Link Maritime Archaeological Desktop Study (Draft)*. Prepared for NSW Roads and Maritime Services, Cosmos Archaeology, Sydney.

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