



Transport for NSW

# Beaches Link and Gore Hill Freeway Connection

Appendix J

Non-Aboriginal heritage

# Transport for NSW

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Beaches Link and Gore Hill Freeway Connection  
Technical working paper: Non-Aboriginal heritage  
December 2020

**Prepared for**

Transport for NSW

**Prepared by**

*Jacobs Group (Australia) Pty Ltd.*

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## Executive Summary

Transport for NSW is seeking approval under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to construct and operate the Beaches Link and Gore Hill Freeway Connection (the project), which would comprise two main components:

- Twin tolled motorway tunnels connecting the Warringah Freeway at Cammeray and the Gore Hill Freeway at Artarmon to the Burnt Bridge Creek Deviation at Balgowlah and Wakehurst Parkway at Killarney Heights, and an upgrade of Wakehurst Parkway (the Beaches Link)
- Connection and integration work along the existing Gore Hill Freeway at Artarmon (the Gore Hill Freeway Connection).

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

The assessment presented in this report has considered potential impact to non-Aboriginal heritage items within the study area, being the construction footprint associated with surface work plus the tunnel alignment, with a 50 metre zone on either side to account for potential construction or operation impact. The impact of the project on each heritage item is assessed, for direct, potential direct, and indirect impact. 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 impact 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 impact to the heritage items.

There are 73 listed heritage items and four potential heritage items within the study area, totalling 77 heritage items. These include four items listed on the State Heritage Register (North Sydney Sewer Vent, St Leonards Park, Tarella and the Walter Burley Griffin Incinerator), with the remainder being of local heritage significance. One of the four potential heritage items did not meet thresholds for heritage significance and is therefore not considered as a heritage item. There are no heritage items listed on the World Heritage List, National Heritage List or Commonwealth Heritage List in or adjacent to the study area.

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

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

In summary, 48 heritage items within the study area have been identified as not being impacted by the project, including St Leonards Park and North Sydney Sewer Vent (both State Heritage Register listed items). These heritage items that would not be impacted by the project are located within 50 metres of surface work along the Warringah Freeway corridor and within areas where only minor work would be carried out by the project within the existing road reserve. Any construction work would be carried out with safeguards put in place to establish minimum working distances for vibration-intensive construction activities and other standard construction management measures.

Of the 28 heritage items that would be potentially impacted:

- Three heritage items (Henry Lawson's Cave, Commercial building, and Grant's Wharf (remains)) would be in the vicinity of low impact work and impact to these items from settlement and vibration would be negligible. There would be no impact to one item in the vicinity of low impact work. Temporary and permanent visual impact is also unlikely as the distance to permanent infrastructure and the retained mature vegetation provides a visual barrier to the majority of the project-related infrastructure.
- Three heritage items (Bantry Bluff, The Upper Middle Harbour Area, and The Narrabeen Catchment Lagoon) within the study area, that are listed for landscape and natural values, have been identified as subject to negligible impact by the construction or operation of the project. In each case, the work is outside, or just within the curtilage of the item and work would be contained within previously disturbed areas. Mature vegetation would be retained between the construction footprint and heritage curtilage and any impact on the heritage items and their significance would be negligible.

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

Individual Statements of Heritage Impact have been prepared for 22 heritage items of significance that would be potentially impacted by the project. Heritage items situated above the tunnel alignment or adjacent to surface work, have been assessed as a groups of heritage items due to their proximity to each other, the similarity of impact, and similarity of mitigation measures.

Impact to the items above the tunnel alignment or adjacent to surface work, due to indirect impact from settlement, vibration or changed views related to operational facilities such as noise barriers, has predominantly been assessed as being negligible to minor.

Cammeray Park (including Golf Course) has been assessed as having moderate impact. 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 (BL1) which would support civil works associated with the project. Parts of the golf course would no longer be available for recreational uses, and the change in use would be inconsistent with the heritage values of the sites (eg recreation). Prior to these impacts, this heritage item would have already been impacted by the Western Harbour Tunnel and Warringah Freeway Upgrade project, which is assessed in the *Western Harbour Tunnel and Warringah Freeway Upgrade Technical working paper: Non-Aboriginal heritage* (Jacobs 2020b).

The Balgowlah Golf Course is a heritage item that is not listed. However, it has been assessed in this technical working paper as being of local significance. The heritage item would be significantly impacted by the project and would no longer function as a golf course once construction commences. The proposed works would be of large scale and major intensity, with portions of the golf course being modified through the construction of new and improved open space and recreation facilities. A dedicated consultation process jointly led by Transport for NSW and Northern Beaches Council will take place to give the community an opportunity to provide input on the final layout of the new and improved open space and recreation facilities at Balgowlah. Opportunities to retain and repurpose the club house would also be investigated with relevant stakeholders during the dedicated consultation process and during further design development.

The changes to the Balgowlah Golf Course would be permanent and irreversible as the heritage item would no longer demonstrate its original character as an interwar period golf course. While the implementation of the management measures described would record information about the physical nature of the heritage item as it currently exists, the level of impact on the heritage item would still be major.

An assessment of cumulative impacts has been carried out, for relevant projects overlapping or adjacent to the current project and with construction timeframe overlapping or recently completed. The Beaches Link and Gore Hill Freeway Connection project traverses areas of Sydney with a moderate 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 should be implemented during construction to manage potential impact to items of heritage significance from construction work in their vicinity. These measures include selection of construction equipment to minimise vibration and delineation of exclusion areas to avoid work inadvertently occurring within the curtilage of heritage items.

Site-specific management measures should 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 should be completed prior to any work that has the potential to impact upon the following items:

- Item 2: Cammeray Conservation Park (including Golf Course), Cammeray (to be completed by the Western Harbour Tunnel and Warringah Freeway Upgrade)
- Item 8: Clive Park and Tidal Pool, Northbridge
- Item 10: Balgowlah Golf Course, Balgowlah
- Item 11: Frenchs Bullock Track, Killarney Heights.

Additionally, where direct impact in the northern section of the Frenchs Bullock Track should occur due to permanent infrastructure, the Bullock Track would be reformed as close as possible to the existing alignment. Further detailed survey should be completed to confirm the heritage curtilage of the southern section of Frenchs Bullock Track prior to construction to determine if this section would be directly impacted. Where the heritage curtilage of the Frenchs Bullock Track is within the construction footprint or boundary of proposed permanent infrastructure the track should be avoided where possible through further design development.

## 1. Introduction

This section provides an overview of the Beaches Link and Gore Hill Freeway Connection (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), 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 Middle 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 the Gore Hill Freeway to Balgowlah and Killarney Heights and including the surface upgrade of the 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 areas 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 existing harbour crossings.

### 1.2 The project

Transport for NSW is seeking approval under Part 5, Division 5.2 of the Environmental Planning and Assessment Act 1979 to construct and operate the Beaches Link and Gore Hill Freeway Connection project, which would comprise two components:

- Twin tolled motorway tunnels connecting the Warringah Freeway at Cammeray and the Gore Hill Freeway at Artarmon to the Burnt Bridge Creek Deviation at Balgowlah and the Wakehurst Parkway at Killarney Heights, and an upgrade of the Wakehurst Parkway (the Beaches Link)
- Connection and integration works along the existing Gore Hill Freeway and surrounding roads at Artarmon (the Gore Hill Freeway Connection).

A detailed description of these two components is provided in Section 1.4.

### 1.3 Project location

The project would be located within the North Sydney, Willoughby, Mosman and Northern Beaches local government areas, connecting Cammeray in the south with Killarney Heights, Frenchs Forest and Balgowlah in the north. The project would also connect to both the Gore Hill Freeway and Reserve Road in Artarmon in the west.

Commencing at the Warringah Freeway at Cammeray, the mainline tunnels would pass under Naremburn and Northbridge, then cross Middle Harbour between Northbridge and Seaforth. The mainline tunnels would then split under Seaforth into two ramp tunnels and continue north to the Wakehurst Parkway at Killarney Heights and north-east to Balgowlah, linking directly to the Burnt Bridge Creek Deviation to the south of the existing Kitchener Street bridge.

The mainline tunnels would also have on and off ramps from under Northbridge connecting to the Gore Hill Freeway and Reserve Road east of the existing Lane Cove Tunnel. Surface works would also be carried out at the Gore Hill Freeway in Artarmon, Burnt Bridge Creek Deviation at Balgowlah and along the Wakehurst Parkway between Seaforth and Frenchs Forest to connect the project to the existing arterial and local road networks.

## 1.4 Key features of the project

Key features of the Beaches Link component of the project are shown in Figure 1-1 and would include:

- Twin mainline tunnels about 5.6 kilometres long and each accommodating three lanes of traffic in each direction, together with entry and exit ramp tunnels to connections at the surface. The crossing of Middle Harbour between Northbridge and Seaforth would involve three lane, twin immersed tube tunnels Connection to the stub tunnels constructed at Cammeray as part of the Western Harbour Tunnel and Warringah Freeway Upgrade project
- Twin two lane ramp tunnels:
  - Eastbound and westbound connections between the mainline tunnel under Seaforth and the surface at the Burnt Bridge Creek Deviation, Balgowlah (about 1.2 kilometres in length)
  - Northbound and southbound connections between the mainline tunnel under Seaforth and the surface at the Wakehurst Parkway, Killarney Heights (about 2.8 kilometres in length)
  - Eastbound and westbound connections between the mainline tunnel under Northbridge and the surface at the Gore Hill Freeway and Reserve Road, Artarmon (about 2.1 kilometres in length).
- An access road connection at Balgowlah between the Burnt Bridge Creek Deviation and Sydney Road including the modification of the intersection at Maretimo Street and Sydney Road, Balgowlah
- Upgrade and integration works along the Wakehurst Parkway, at Seaforth, Killarney Heights and Frenchs Forest, through to Frenchs Forest Road East
- New and improved open space and recreation facilities at Balgowlah
- New and upgraded pedestrian and cyclist infrastructure
- Ventilation outlets and motorway facilities at the Warringah Freeway in Cammeray, the Gore Hill Freeway in Artarmon, the Burnt Bridge Creek Deviation in Balgowlah and the Wakehurst Parkway in Killarney Heights
- Operational facilities, including a motorway control centre at the Gore Hill Freeway in Artarmon, and tunnel support facilities at the Gore Hill Freeway in Artarmon and the Wakehurst Parkway in Frenchs Forest
- Other operational infrastructure including groundwater and tunnel drainage management and treatment systems, surface drainage, signage, tolling infrastructure, fire and life safety systems, roadside furniture, lighting, emergency evacuation and emergency smoke extraction infrastructure, Closed Circuit Television (CCTV) and other traffic management systems.

Key features of the Gore Hill Freeway Connection component of the project are shown in Figure 1-2 and would include:

- Upgrade and reconfiguration of the Gore Hill Freeway between the T1 North Shore & Western Line and T9 Northern Line and the Pacific Highway
- Modifications to the Reserve Road and Hampden Road bridges
- Widening of Reserve Road between the Gore Hill Freeway and Dickson Avenue

- Modification of the Dickson Avenue and Reserve Road intersection to allow for the Beaches Link off ramp
- Upgrades to existing roads around the Gore Hill Freeway to integrate the project with the surrounding road network
- Upgrade of the Dickson Avenue and Pacific Highway intersection
- New and upgraded pedestrian and cyclist infrastructure
- Other operational infrastructure, including surface drainage and utility infrastructure, signage and lighting, CCTV and other traffic management systems.

A detailed description of the project is provided in Chapter 5 (Project description) of the environmental impact statement.

Subject to obtaining planning approval, construction of the project is anticipated to commence in 2023 and is expected to take around five to six years to complete.

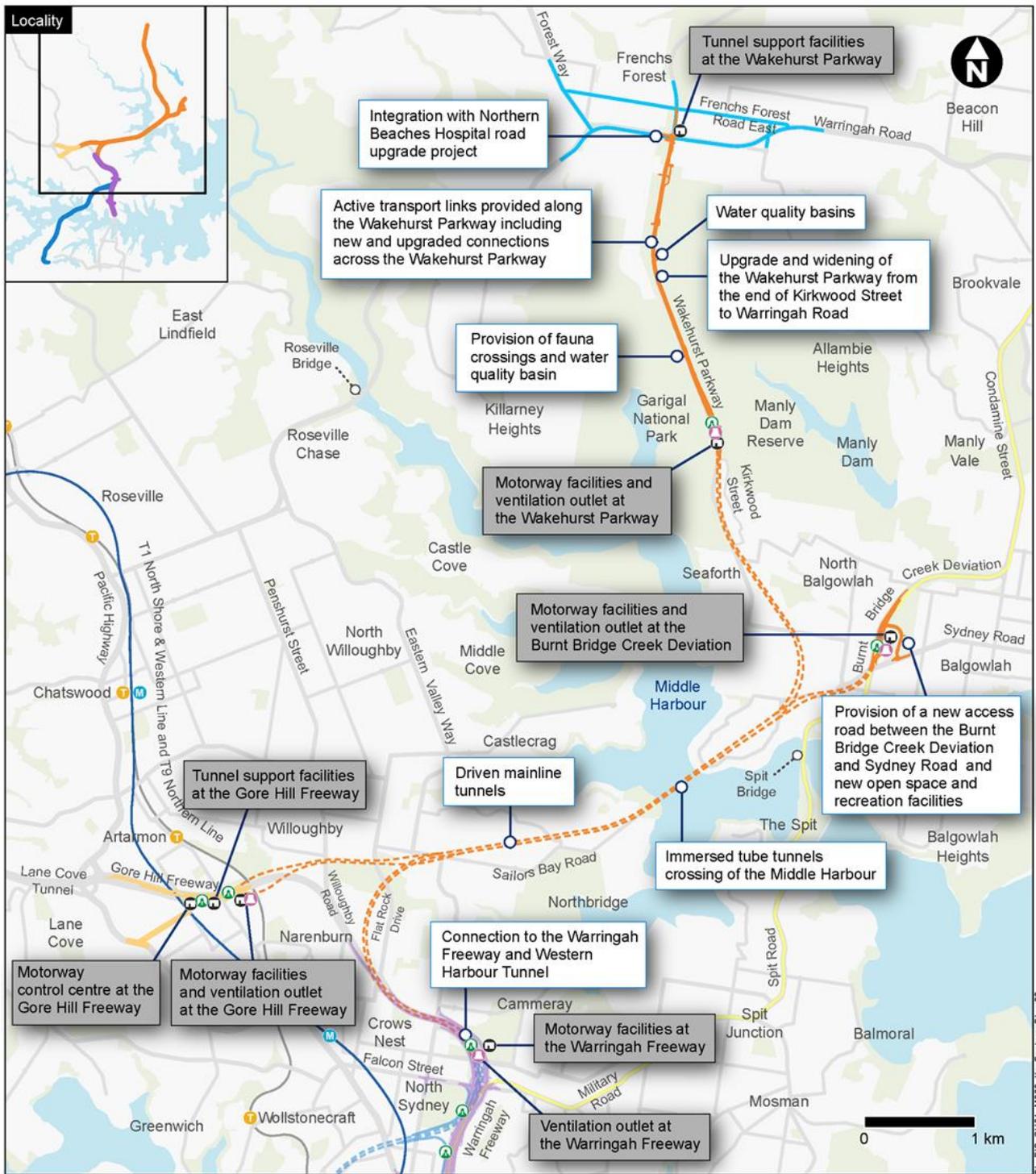


Figure 1-1 Key features of the Beaches Link component of the project

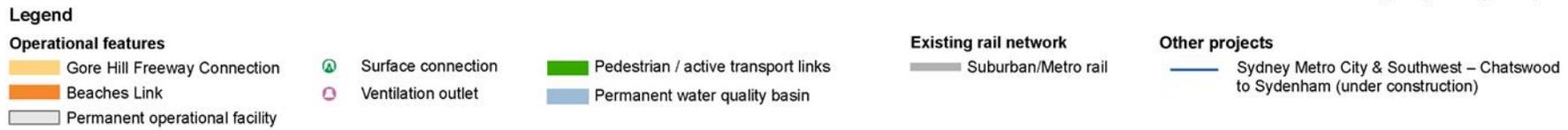
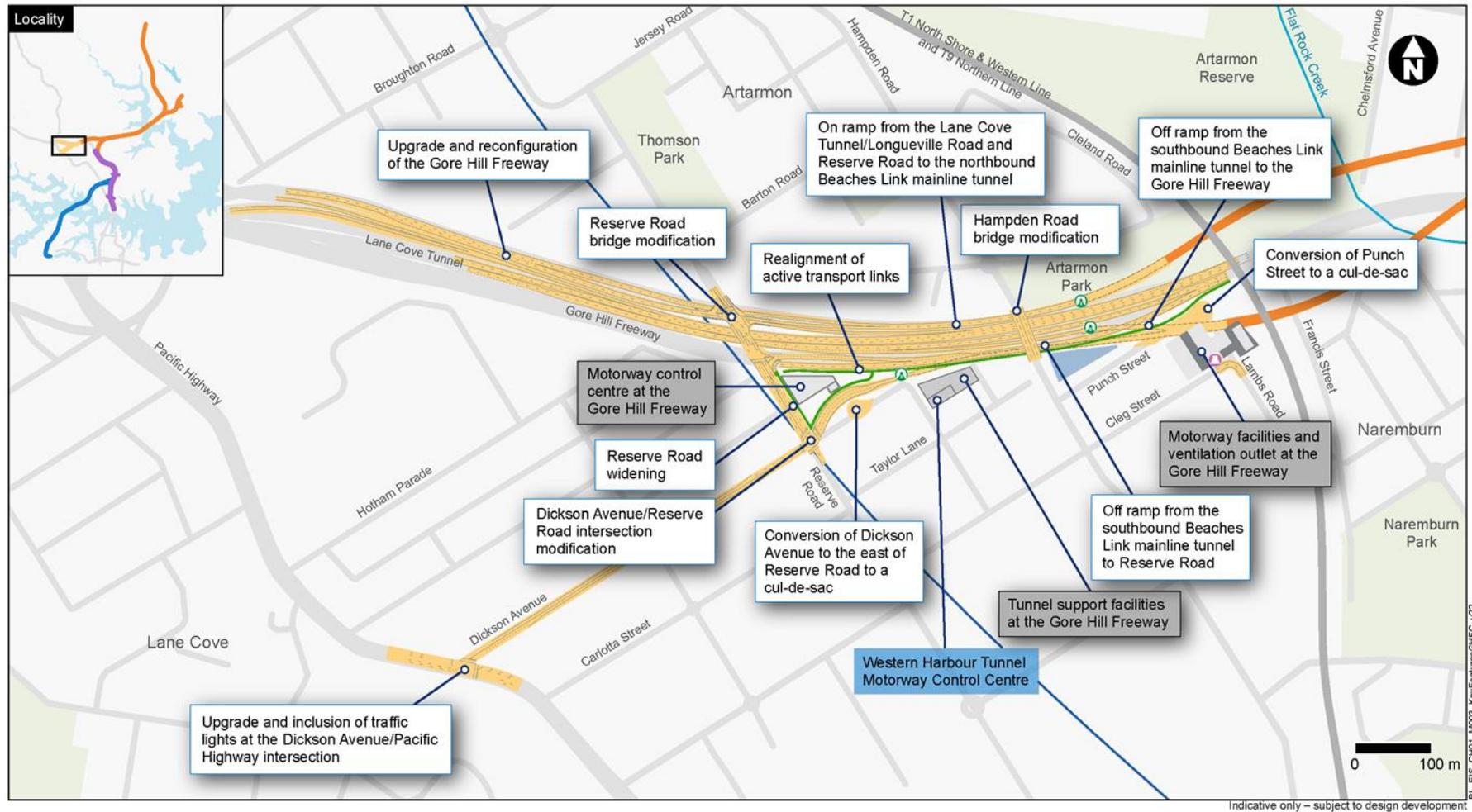


Figure 1-2 Key features of the Gore Hill Freeway Connection component of the project

### Beaches Link and Gore Hill Freeway Connection

## 1.5 Key construction activities

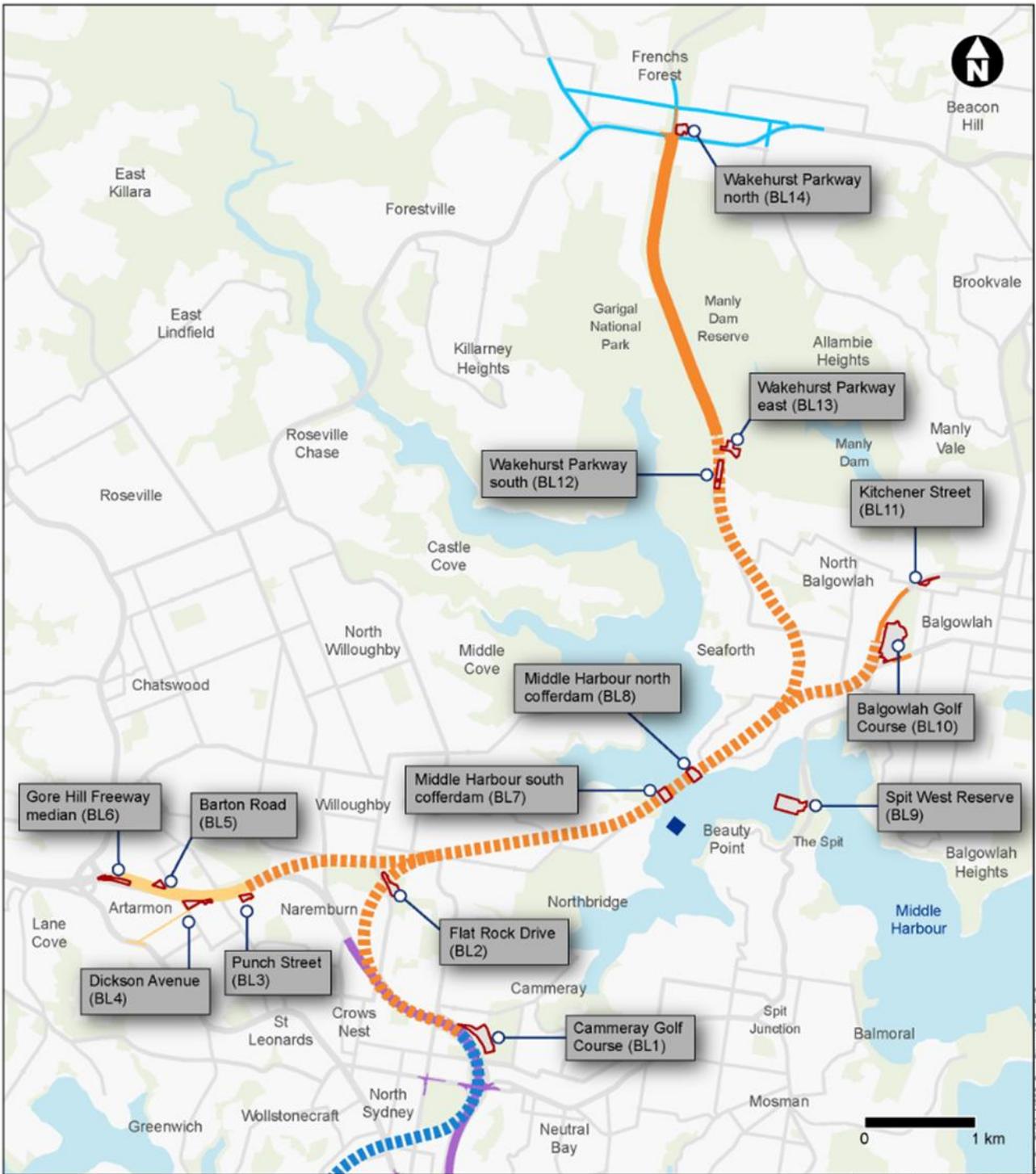
The area required to construct the project is referred to as the construction footprint. The majority of the construction footprint would be located underground within the mainline and ramp tunnels. However, surface areas would also be required to support tunnelling activities and to construct the tunnel connections, tunnel portals, surface road upgrades and operational 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), traffic management controls, vegetation clearing, earthworks, demolition of structures, building 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 and/or provision of alternative facilities (mooring or marina berth) within Middle Harbour
- Construction of the Beaches Link, with typical activities being excavation of tunnel construction access declines, construction of driven tunnels, cut and cover and trough structures, construction of surface upgrade works, construction of cofferdams, dredging and immersed tube tunnel piled support 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:
  - A motorway control centre at the Gore Hill Freeway in Artarmon
  - Tunnel support facilities at the Gore Hill Freeway in Artarmon and at the Wakehurst Parkway in Frenchs Forest
  - Motorway facilities and ventilation outlets at the Warringah Freeway in Cammeray (fitout only of the Beaches Link ventilation outlet at the Warringah Freeway (being constructed by the Western Harbour Tunnel and Warringah Freeway Upgrade project), the Gore Hill Freeway in Artarmon, the Burnt Bridge Creek Deviation in Balgowlah and the Wakehurst Parkway in Killarney Heights
  - A wastewater treatment plant at the Gore Hill Freeway in Artarmon
  - Installation of motorway tolling infrastructure
- Staged construction of the Gore Hill Freeway Connection at Artarmon and upgrade and integration works at Balgowlah and along the Wakehurst Parkway with typical activities being earthworks, bridgeworks, construction of retaining walls, stormwater drainage, pavement works and linemarking and the installation of roadside 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 would include:
  - Cammeray Golf Course (BL1)
  - Flat Rock Drive (BL2)
  - Punch Street (BL3)
  - Dickson Avenue (BL4)
  - Barton Road (BL5)

- Gore Hill Freeway median (BL6)
- Middle Harbour south cofferdam (BL7)
- Middle Harbour north cofferdam (BL8)
- Spit West Reserve (BL9)
- Balgowlah Golf Course (BL10)
- Kitchener Street (BL11)
- Wakehurst Parkway south (BL12)
- Wakehurst Parkway east (BL13)
- Wakehurst Parkway north (BL14).

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



**Legend**

**Construction features**

- Beaches Link
- Gore Hill Freeway Connection
- Construction support site
- Temporary mooring facility for completed immersed tube tunnel units

**Connecting projects**

- Western Harbour Tunnel
- Warringah Freeway Upgrade
- Northern Beaches Hospital road upgrade project (completed 2020)

Figure 1-3 Overview of construction support sites

## 1.6 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 *Cultural Heritage Guidelines* (Roads and Maritime Services 2015) 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 impact to heritage.

## 1.7 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. Matters relating to impacts on Aboriginal heritage objects and places which are referred to in the table below are addressed separately in Appendix L (Technical working paper: Aboriginal Cultural Heritage Assessment Report).

Table 1-1 Secretary's environmental assessment requirements - Heritage

Secretary's environmental assessment requirements	Where addressed
<p>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.</p> <p>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.</p>	<p>Overall report including:</p> <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Section 5.3 includes an assessment of impacts to heritage items in the vicinity of surface and tunnelling works.</li> <li>▪ Heritage items impacted by the project, including description of impact, level of impact and mitigation measures summary are presented in Section 5.4.</li> </ul>
<p>1. The Proponent must identify and assess any direct and/or indirect impacts (including cumulative impacts and visual impacts) to the heritage significance of listed (and nominated) heritage items inclusive of: [...]</p> <p>(c) environmental heritage, as defined under the <i>Heritage Act 1977</i> (including potential items of heritage value, conservation areas, open space heritage landscapes, built heritage landscapes and archaeology);</p> <p>(d) items listed on the State, National and World Heritage lists;</p> <p>(e) heritage items and conservation areas identified in local and regional planning environmental instruments covering the project area; and</p> <p>(f) marine items of potential heritage significance within Middle Harbour, such as any shipwrecks.</p>	<p>The results of all historical heritage register searches are presented in Table 3-2.</p> <p>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 and Annexure A (Heritage item descriptions and significance assessments).</p>

Secretary's environmental assessment requirements	Where addressed
<p>2. Where impacts to State or locally significant heritage items or archaeology are identified, the assessment must:</p> <ul style="list-style-type: none"> <li>(a) include a significance assessment and statement of heritage impact for all heritage items (including any unlisted places that are assessed of heritage value;</li> <li>(b) provide a discussion of alternative locations and design options that have been considered to reduce heritage impacts;</li> <li>(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;</li> <li>(d) 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);</li> <li>(e) provide a comparative analysis to inform the rarity and representative value of any heritage places proposed for demolition;</li> <li>(f) outline mitigation measures to avoid and minimise impacts identified in accordance with the current guidelines; and</li> <li>(g) 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).</li> </ul>	<p>Significance assessments are presented in Section 2.7, and further details are provided in Annexure A (Heritage item descriptions and significance assessments).</p> <p>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.</p> <p>A discussion of alternative locations and design options are outlined in Section 1 and Chapter 4 of the environmental impact statement.</p> <p>As outlined in Section 5.4, no whole heritage places are proposed for demolition, therefore no comparative analysis carried out.</p> <p>Environmental management measures are provided in Section 7.</p> <p>Qualifications of the heritage consultants involved in this assessment are shown in Table 2-2.</p>

## 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 *Cultural Heritage Guidelines* (Roads and Maritime Services 2015), 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
- Manly Local Environmental Plan 2013
- Mosman Local Environmental Plan 2012
- Willoughby Local Environmental Plan 2012
- Warringah Local Environmental Plan 2011.

### 2.2 Relevant guidelines and policies

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

- *Australia ICOMOS Charter for Places of Cultural Significance (The 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* (NSW Roads and Maritime Services 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), the maritime component is assessed in Technical working paper: Maritime heritage and consolidated within this technical working paper. Maritime heritage is defined as 'all material of potential heritage significance on or under the bed of the harbour below the Highest Astronomical Tide (the highest level of water which can be predicted to occur under any combination of astronomical conditions). This includes areas of former bed of the harbour that are under reclamation.'

All other maritime heritage items are considered in Technical working paper: Maritime heritage impact assessment.

## 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).

## 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
- Manly Local Environmental Plan 2013
- Mosman Local Environmental Plan 2012
- Willoughby Local Environmental Plan 2012

- Warringah Local Environmental Plan 2011
- 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, including the Northern Beaches Hospital project
- 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 construction footprint, 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 heritage conservation 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 item

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 Annexure A (Heritage item descriptions and significance assessments).

## 2.7 Significance assessments

Key historical themes for the study area have been identified from *NSW Historic Themes* (Heritage Council of NSW 2001).

For known heritage items, existing significance assessments and statements of heritage significance were collated and reviewed. Where substantial significance assessments did not exist, major updates were not carried out.

The detailed significance assessments are presented in Annexure A (Heritage item descriptions and significance assessments), 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 impact, 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, but can be managed, mitigated or avoided 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 impact 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 impact

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 impacts

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 work would have on that significance
- What measures are proposed to mitigate negative impact
- 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 *Statements of Heritage Impact guidelines* (NSW Heritage Office 2002), except for those heritage items that are located in the study area but would not be impacted, or where the project would have negligible impact on the heritage item. For some heritage items where there is a similarity of impact and mitigation measures, the assessment has grouped these heritage items for consideration of impacts.

The Statements of Heritage Impact consider both the construction and operational impact 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

As there were no heritage items identified as having archaeological potential, detailed research designs and methodology have not been prepared as part of this assessment.

### 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 that 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 impact; and status as approved or under statutory environmental impact assessment. The impact due to the Western Harbour Tunnel and Beaches Link program of works has 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. 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' settlement impact to heritage items outside the study area. Very slight severity may result in the following:

- Fine cracks in buildings that are easily treated during normal decoration
- Cracks may be visible on external brickwork or masonry.

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

## 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) (refer to 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
Rose Overberg	Bachelor of Arts (Archaeology/Anthropology) Bachelor of Science (Honours) (Geology)	Field survey Statements of Heritage Impact Technical advice and review

Name	Qualifications	Role
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
Deborah Farina	Bachelor of Arts (Archaeology/Palaeoanthropology)	Field survey
Andrew Costello	Bachelor of Arts (Honours) (Archaeology and Anthropology)	Field survey

## 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 North Sydney local government area

##### 3.1.1.1 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 5,800 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 1790, the *Cammeraygal* occupied the 'north-west part of this harbour' whilst the *Wallumedegal* occupied 'the opposite shore' (North Sydney Council 2007). 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.-d; 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.-d). 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.-d). In the 1820s, James Milson received a grant for land around the location of today's Milson Point by Governor Thomas Brisbane, and he purchased land in Kirribilli. Sandstone was mined 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 was that of 524 acres of coastal land given to Edward Wollstonecraft in 1821 by Governor Macquarie (Figure 3-1), 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.-e). 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.-e; 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, these people had been completely displaced from the area (North Sydney Council 2007; Wolfe 2014, p. 6).

##### 3.1.1.2 Crows Nest

In 1821, Wollstonecraft built a small cottage in the area of the present-day suburb on the Wollstonecraft Estate, which he named 'Crows Nest' (City of Sydney 2016e). According to Alexander Berry, Crows Nest Cottage was named this 'on account of its elevated and commanding position' (Berry 1912, p. 172). After Wollstonecraft's death in 1832, his sister Elizabeth inherited the land, which then passed to her husband, Alexander Berry, in 1845. He donated part of the land to the Anglican Parish of St Leonards in the same year, which opened the St Thomas' Cemetery on the land – the cemetery was handed to the North Sydney Council in 1967, who converted it to St Thomas' Rest Park (North Sydney Local Environmental Plan I0180). The tomb of Wollstonecraft, his sister, Elizabeth, and her husband Berry can be found in the park (City of Sydney 2016t). Subsequently, he built the large 'Crows Nest House' in 1850 on the land, where he lived until his death in 1873 (North Sydney Council n.d.-e; Office of Environment and Heritage 2011). The house and land were then leased by Berry's brother, David Berry, and were inherited by John Hay upon David's death in 1889. Hay carried out major renovations on the house around 1890, converting it into a Victorian mansion. On Hay's death in 1909, the land and house passed on to his wife, who lived in Crows Nest House until her death in 1931 (Office of Environment and Heritage 2011).

The land was then subdivided and the house was demolished (its gates, c. 1880, are still extant) to make way for the Lady Hay School in 1932. The school is now known as the North Sydney Demonstration School (North Sydney Council n.d.-b; Office of Environment and Heritage 2011).



Figure 3-1 Berry Estate map 1887

Subdivision of the Berry Estate occurred after Alexander Berry's death, with dozens of blocks being sold around the current location of Chandos and Atchison Streets during the 1880s. A tramline extension was added along Falcon Street from North Sydney to Crows Nest in 1893, which was replaced by an electric tramline in 1898, attracting a larger population to the area (Godden Mackay 1994). By the turn of the century, the houses in Crows Nest were predominantly filled by skilled workers and lower middle class clerks (North Sydney Council n.d.-e). By 1911, the small townships of Crows Nest and Chatswood had developed enough to warrant their own post office, rather than the grocery shop from which the post had previously been disseminated, to service the 2,300 residents within the municipality (Vincent 1997; Warne 2005, p. 58). The growth of retail shops and office buildings in the area began to rapidly increase from the 1920s, and the opening of the Sydney Harbour Bridge in 1932 transformed the township into a large commercial area and a popular shopping destination, and saw a marked increase in land values (City of Sydney 2016g; Warne 2005, p. 90).

After World War II, substantial growth started to occur within the suburb. By the 1960s, many townhouses and apartments were built in an effort to house the population. During the 1970s and 1980s, commercial growth accompanied residential development, and the 1990s and 2000s saw a substantial increase in population, particularly between 2001-2006 when further dwellings were built in the area (City of Sydney 2016g). The area is characterised by quiet neighbourhoods with wide roads and street tree plantings, and a lively dining district (North Sydney Council 2012a). In 2011, Crows Nest held a total population of 4,048 people, of whom six per cent were employed in the Computer Systems Design and Related Services industry (Australian Bureau of Statistics 2011d). By 2016, this population had risen to 4,798 (Australian Bureau of Statistics 2016e).

### 3.1.1.3 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 3-2), comprising present-day Cammeray Park and Cammeray Golf Course, Green Park, and ANZAC Park (North Sydney Council 2016a). The suspension bridge was completed in 1892, and the area soon came to be known as 'Suspension Bridge' (North Sydney Council n.d.-c).

One of the early houses in the area was Tarella (SHR 00270/North Sydney LEP I0001/RNE 2919), 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 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, which was restored in 1982 by John Hawkins, who also added a pond, fountain, and relocated iron gates. He also built a sympathetic coach house at the rear of the premises (Office of Environment and Heritage 2008; 2012).

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.-c; 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.-c).

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.-c). Bells Estate, likely named after the south-western section of Cooliatta Estate (named Bells Paddock), was one of them (North Sydney Council 2012b). 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 2016c). 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 2017).



Figure 3-2 Reserve for public recreation map 1886 (Source: National Library of Australia)

Further estates opened into 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 Course (North Sydney Council 2016a). Despite the growth, dairying continued in Cammeray until 1958 (North Sydney Council n.d.-c). During the 1960s, the construction of the Warringah Expressway cut the suburb into two, interrupting the suburb's residential growth. Parts of Cammeray Park and St Thomas' Cemetery, along with numerous homes, were negatively impacted by this construction (City of Sydney 2016c; Hoskins 2014, p. 33; North Sydney Council 2016b). 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 6,784. By 2016, the population had risen to 7006, despite relatively minor changes to its suburb boundary (Australian Bureau of Statistics 2011c; 2016d).

### 3.1.2 Willoughby local government area

#### 3.1.2.1 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, who lived in the area for about 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, perhaps half the Aboriginal population of the Sydney area had been wiped out by smallpox or similar disease. 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. In 1820, there is evidence of *Cammeraygal* people still living 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 2011e).

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 comprised 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 2011e). 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 instalment 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 5 100 by 1900 (Willoughby District Historical Society Inc 2011e).

### 3.1.2.2 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, a six acre lot awarded to Dugald MacPherson in 1853, and another six acre lot granted to him again 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 2016f). Housing mostly comprised 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 2013b; Willoughby District Historical Society Inc 2011b). 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 2013b).

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 2011b). 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.-c).

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 2011c). 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 2011b).

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 2011b).

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 2016f; Willoughby City Library Services 2013b). 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 increased in 2016 to 5884 (Australian Bureau of Statistics 2006e; 2011f; 2016c).

### 3.1.2.3 Northbridge

In one of the first land sales in the area, one lot was purchased by John Lewis Spencer, a solicitor from Sydney, in 1837. It comprised 10 acres of land in the area now known as Clive Park. By 1840, ten half-acre allotments had been purchased nearby by Harry (Henry) Lambert Brabazon, who subdivided the area with streets and housing blocks for sale, naming it the Albert Town Estate (Butler 2016). In c.1859, a subdivision plan shows it as Spencers' Grant 50 acres, Albert Town No. 31 (Figure 3-3). However, only one house was built on the estate, belonging to Mrs Jane Harvey, which was built there in the 1870s, possibly due to confusion with gazetteers believing Albert Town Estate to be a township unconnected with Northbridge (Butler 2016; Willoughby District Historical Society Inc 2011c). The Estate was purchased in 1907 by Joseph Booker, who ran it as a tea garden for several years. The land was resumed by the Willoughby Municipal Council in 1911 (Willoughby District Historical Society Inc 2011c). In 1914, it was designated as a recreational area and combined with adjacent Council land for the purpose. It was gazetted as a park in 1933, called Clive Park after Clive Backhouse, the Mayor of Willoughby between 1912-1913, and managed by the council (Butler 2016).

In 1848, ten acres of land in the Northbridge area had been purchased by Ross Donnelly at Fig Tree Point to the south of Clive Park. This land, along with another ten-acre lot owned by James William Bligh, was acquired by dentist William Lenty Twemlow in 1874, where he built a large sandstone house known as The Hermitage. This land was purchased in 1932 by Edward Hallstrom, who restored the house and established a small private zoo



Development, however, remained slow until after World War I, when, during the 1920s with the opening of the suspension bridge and the imminent opening of the Sydney Harbour Bridge in the early 1930s, more than 500 residences were built, housing a population of 2500 individuals, along with a number of shops (including estate agents, banks, and medical practitioners), schools, churches, and the Northbridge Baths, classified by the National Trust in 1994 and still operating today (Willoughby District Historical Society Inc 2011c; Willoughby Leisure n.d.). During the early 1920s, real estate advertising extended to the Hollywood sign-style spelling out Northbridge in large letters across two properties at the highest point of Weetawaa Road. The letters were removed in 1925, after the two agents involved sold their interests in the properties (Butler 2016). Plans for the Northbridge golf course (Willoughby LEP I180) were approved in 1933; the course was built on Long Bay Reserve, formerly used for public recreation since 1910. Construction of the course, designed by Hugh Douglas Robb, began in November 1933 under an emergency relief work scheme. The bridge was closed again in 1937, so it could be redeveloped as a concrete arch, and reopened in 1939 (Willoughby City Library Services 2013d).

Population growth then slowed during the Depression of the 1930s and World War II, but resumed in the 1940s (Willoughby City Library Services 2013d). The tidal pool in Clive Park (Willoughby LEP I179) was built in the mid-1940s by the Northbridge Volunteer Defence Force Association and the East Northbridge Progress Association, and was classified by the National Trust in 1994. The tidal pool is now in poor condition (Willoughby District Historical Society Inc 2011c).

Significant development followed during the post-war years, with the population growth only increasing slightly from the 1990s when new dwellings were built in Northbridge (City of Sydney 2016k). As of 2011, it had a population of nearly 6000. It held a relatively large Japanese population, with 2.7 per cent originating from Japan in 2001, which dropped to 1.8 per cent in 2011. Northbridge has had a Japanese population for at least a century, with Hideichiro Ide being a leading silk importer whose son, Winston 'Blow' Ide, represented Australia at rugby in a world-level competition in the late 1930s. Northbridge also has a large Chinese population, which rose from one per cent of Chinese-born citizens in 2001 to 1.7 per cent in 2011. Many Chinese lived at, and worked on, market gardens during the post-goldrush period in the late 19<sup>th</sup> century (Butler 2016).

As of 2016, it held a population of 6347. The number of Japanese-born citizens rose to 1.9 per cent, those of Chinese origin rose to three per cent (Australian Bureau of Statistics 2016i).

### 3.1.2.4 Willoughby

During the 1850s land boom following the first gold rushes, William Lithgow, who owned much of the land in the area of the present-day suburb of Willoughby, subdivided 600 acres of his land (Figure 3-4) and sold it for auction under the title of 'The Township of North Sydney' (Willoughby District Historical Society Inc 2011d). The place was known as North Sydney until 1890 (Willoughby City Library Services 2013c). There was little interest in purchasing Lithgow's land, and the area remained predominantly rural in nature, with dairies, orchards, and Chinese market gardens predominating throughout the 19<sup>th</sup> century. The Flat Rock Creek, between the harbour and the township, presented obstacles to travellers and settlers alike. The intended main track which led to the High Street and Mowbray Road in the township led to a creek crossing at Flat Rock, which was dangerous in winter. Travellers had to instead veer west and skirt the hillside down to Flat Rock Creek, crossing at Little Flat Rock, before climbing the hill back up to town near Penshurst Street and Mowbray Road. As such, Penshurst Street became the main commercial thoroughfare of Willoughby, rather than High Street.

The first school was opened in Willoughby in 1862, having been established by the Bush Missionary Society, which moved to the corner of Penshurst Street and Mowbray Road in 1863 where it was known as the North Sydney National Public School. The original school buildings were demolished in 1936, and replaced in 1938, and it continues to operate today as the Willoughby Public School (Willoughby District Historical Society Inc 2011d; Willoughby Public School 2016). The first post office was opened in 1871 adjoining the public school (Willoughby City Library Services 2013c).

It was not until 1866 that the North Willoughby Municipal Council started to build a crude bridge across Flat Rock Creek along the track. It opened in 1869, and was destroyed in a flood during 1870. Another bridge was subsequently built and swept away in a flood. In 1886, a substantial bridge was completed to replace them,

along the track which was eventually called Flat Rock Road. When the Willoughby tramway was installed in 1896, the bridge had to be strengthened and raised to accommodate its new load. This bridge still carries commuters and heavy traffic today along what is now known as Willoughby Road (Willoughby District Historical Society Inc 2011d).

The Willoughby Hotel was built in 1899, situated close to the tanneries and the tram terminus from Milsons Point, and prospered until the ownership of Joseph Knight Smith from 1901-1931. The hotel continues to operate as a pub today, after a 1998-1999 renovation and refurbishment by heritage architect, Kevin Riggs (Willoughby City Council n.d.-d; Willoughby District Historical Society Inc 2011d). The Bridge View Hotel opened in 1928, constructed by Stanley Cork for Tooth and Company. One of its supporters was Joseph Knight Smith, who acknowledged that Willoughby was then large enough to accommodate two hotels. This hotel, too, continues to operate today.

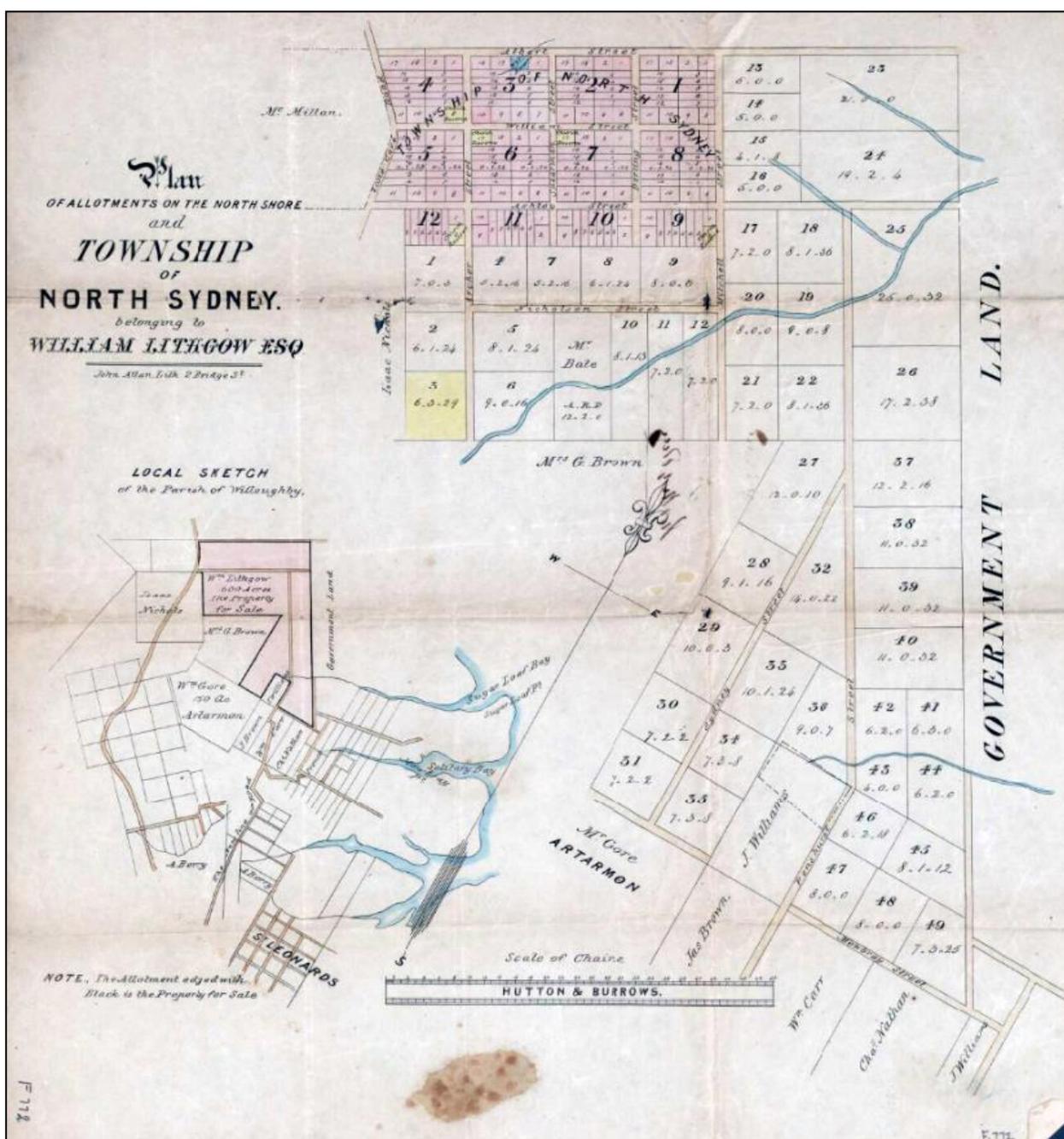


Figure 3-4 Plan of allotments on the north shore and township of North Sydney c.1850s (Source: National Library of Australia)

During his time in Naremburn from 1906-1907 and for a short period after the end of World War I, Australian poet Henry Lawson would, when he drank to excess, 'sleep it off in a little cave in Flat Rock Gully, listening to the cascade of the Naremburn Falls'. The location for this is alleged to be Henry Lawson's Cave<sup>1</sup> in Flat Rock Gully, near Bicentennial Reserve (Willoughby City Council n.d.-b).

During the 1930s, the population grew after the opening of the Sydney Harbour Bridge, which was soon followed by significant development during the post-war years (City of Sydney 2016o). Along with this 1930s population spurt, the Naremburn Falls, which was fed by the Flat Rock Creek, and the swimming hole below it, known as The Devil's Hole, were used for landfill. Naremburn Falls is no longer extant, having vanished underneath the tip by 1946 (Willoughby City Council n.d.-b). The need for rubbish disposal prompted the opening of the nearby Walter Burley Griffin Incinerator (State Heritage Register ID 00084/ Willoughby Local Environmental Plan 2012 ID I228/ Register of National Estate ID 2951) in 1934. It operated from 1934-1967 and was subsequently reopened as the 'Incinerator Restaurant' from 1980-1988, then operated as offices until a fire damaged the building in 1996. It has since undergone renovations, and now operates as an arts and function centre, including the Incinerator Gallery, and as a café (Willoughby City Library Services 2013c). Despite the establishment of the Incinerator, tipping continued into the 1940s, and did not cease until an order was issued by the Environmental Protection Authority in 1985 (Willoughby City Council 2012). In 1946 Sir Edward Hallstrom donated funds to Willoughby Council for the construction of a football oval opposite the landfill. It was named Hallstrom Park in his honour (Willoughby City Council n.d.-a). The park is still extant but is now a picnic area and is part of Bicentennial Reserve, which opened in 1988. The reserve also incorporates Flat Rock Reserve, and the restored Incinerator, along with a leisure centre and sporting facilities (Willoughby City Library Services 2013c).

The population of Willoughby remained generally stable from 1991-2006, at around 5400 people, increasing in 2011 up to 5921 people (Australian Bureau of Statistics 2001g; 2006f; 2011h). As of 2016, the population has grown rapidly to 6540 (Australian Bureau of Statistics 2016k).

### 3.1.2.5 Artarmon

Although ten land grants were offered in the West Artarmon area, very few of them were taken up, and the ones that were acquired by people were soon resold to others due to the location's tough terrain. The name of the suburb is thought to be a local adaption by Provost Marshal William Gore for his 150-acre lot of land, granted to him by Governor Lachlan Macquarie in 1810. Artarmon is said to be taken from the name of Gore's family home in Ireland, Ardtermon Castle (pronounced Art-e-mon). His farm prospered, he purchased an additional 12 surrounding farms, and by 1815, he owned most of the land between present-day St Leonards and Mowbray Road. When he built a cottage on his farm in 1818, he named it Artarmon House, and the land was thus known as Artarmon Estate. In 1818, Gore met with hard times and he sold most of his land. He died in 1845. Gore's cottage and his remaining land was purchased by Richard Harnett, Mayor of North Willoughby in 1871, who lived in the cottage. Harnett eventually built a large house adjacent to the cottage in 1869, which Harnett also called Artarmon House. Artarmon House was purchased by George Whiting in 1882, renaming it Valetta. The land was eventually sold to the North Sydney Brick and Tile Company in 1939, and Valetta was destroyed to make way for a brickyard. Only Valetta's coach house remains, on the grounds of the North Sydney College of Technical and Further Education (now TAFE NSW St Leonards), which was built in 1961 (Fallowfield 2008; Willoughby City Library Services 2013a; Willoughby District Historical Society Inc 2011a).

During the 1850s, Crown land was auctioned, with new settlers establishing farms, market gardens, and orchards, and new tracks across the inhospitable terrain were formed as they brought foot, and horse and cart traffic with them. The Gore Hill Cemetery was established in 1868, with the first recorded burial taking place in 1877. The council reserved 140 acres of land next to the cemetery in 1869 for public recreation, which was eventually broken up to make way for the Royal North Shore Hospital, while the remaining land became Gore Hill Park, Naremburn Park, and Artarmon Recreation Reserve. Reserve Road was first added to the Council Rate Books in 1882, followed by Elizabeth Street in 1887 (Fallowfield 2008). While brick making began in the area in 1828, it was not until 1889 that the nearby brick industry became the largest in New South Wales, with its use of Gore Hill shale – this, in turn, laid the foundation for the 1950s establishment of the Artarmon Industrial Area.

<sup>1</sup> Assessed as being of local significance as part of the current assessment. See Annexure A.

Brick making continued to be an important industry in the area until the 1960s (City of Sydney 2016e; Fallowfield 2008). The municipality of North Willoughby was formed in 1865, comprising Artarmon, Lane Cove, and Willoughby (Fallowfield 2008). It was not until the opening of the North Shore Railway in 1880 that subdivision and development took off – predominantly from the 1890s. The opening of the Artarmon train station in 1898 spurred the suburb’s urbanisation (City of Sydney 2016e; Willoughby District Historical Society Inc 2011a). This included the establishment of hospitals, such as the North Shore Cottage Hospital in 1887, public utilities, such as gas lighting in 1896 and sewerage installations from 1899 into the 1920s. By the turn of the century, the North Shore Cottage Hospital was too small for its population, and so the Royal North Shore Hospital was built in 1903. It became a training school in 1948 and continues to operate today.

By 1907, there were 152 houses and four businesses in Artarmon. Due to the growing population, and the inability of the Chatswood Post Office to meet the needs of the residents, a mailbox was established at Artarmon railway station in 1907, and a local shopkeeper was appointed as postmaster in 1909. The first church, a Methodist church, was opened in 1910, followed by St Basil’s Anglican Church in 1912. By 1914, there were a total of 11 shops in the township. The post-war building boom of 1919-1920 proved the need for the township having its own post office, which was eventually built in 1924 (Fallowfield 2008). Artarmon Public School, previously an infants’ school dating to 1910, started providing primary education from 1917, and it continues to serve the community today (Fallowfield 2008). Electricity was provided in the area from 1914. The Artarmon and District Progress Association community organisation was also set up in the same year.

It was not until the 1920s that subdivision of east Artarmon began, an area which had remained rural in nature (Fallowfield 2008). The first homes to be built there were Federation-style and row houses, followed by Californian bungalows and small blocks of flats in the 1930s (Fallowfield 2008; Willoughby District Historical Society Inc 2011a). The 1920s also saw the council setting up a garbage collection service due to the rapid increase in the residential population, and Flat Rock Creek became the designated landfill until the Walter Burley Griffin Incinerator (State Heritage Register ID 00084/ Willoughby Local Environmental Plan 2012 ID I228/ Register of the National Estate ID 2951) was opened in 1934 (Fallowfield 2008; Willoughby City Library Services 2013a). By 1951, there were 42 factories operating from the Artarmon Industrial Area in Artarmon’s south, which employed 444 individuals. With the 1956 advent of television in Australia, Artarmon became the base for the Australian film and television industry. Other industries in the area include car repair workshops, recycling services, and printing and publishing services (Willoughby District Historical Society Inc 2011a). The Artarmon library building was built in 1958 with help from the Artarmon and District Progress Association (Fallowfield 2008).

More intensive development occurred from the 1960s, and in response, the Willoughby Council initiated the West Artarmon Residential Area Redevelopment Plan to open the way for medium and high density buildings, including high-rise residential towers and public housing developments (City of Sydney 2016e; Willoughby District Historical Society Inc 2011a). The NSW Institute of Technology opened in 1969 in a building originally intended for the North Sydney College of Technical and Further Education. The Institute became part of the University of Technology Sydney, in 1988. The Gore Hill campus was eventually shut in 2006, when it was merged with the main Sydney campus (Fallowfield 2008). By the 1980s, the Royal North Shore Hospital was seen as one of the most modern teaching hospitals in Australia.

The opening of the Gore Hill Freeway in 1992 separated Artarmon’s industrial area in the south from its residential area in the north (Willoughby City Library Services 2013a). In 2001, the suburb housed 8082 individuals, which had risen to 8363 by 2006, then 8642 by 2011. Population then rose significantly to 9523 as of 2016 (Australian Bureau of Statistics 2001b; 2006b; 2011b; 2016b).

### 3.1.3 Northern Beaches local government area

#### 3.1.3.1 Initial occupation and settlement

The first people to occupy the Northern Beaches region were the *Kuring-gai* language group, who lived in the area at least 5800 years, especially along a large stretch of the central coastline of New South Wales (Guringai Tribal Link Aboriginal Corporation 2010; Kohen n.d.). In 1788, whilst exploring Port Jackson, Captain Arthur

Phillip noted the confidence and 'manly behaviour' of the Aboriginal people he saw in the northern reaches of the harbour, and so named the place Manly Cove (Ashton 2008; Manly and Northern Beaches 2017c). The *Kuring-gai* also encountered Captain John Hunter and his crew in 1789 in Broken Bay, during the time Hunter was charting the waters to the north of the present-day municipality (Guringai Tribal Link Aboriginal Corporation 2010). However, a smallpox epidemic in 1789 is estimated to have killed about half the Indigenous population of the Sydney area, and the European settlers further harmed the local people as they took land and resources away from them. Despite the low settlement rate, by the 1830s, few members of the *Kuring-gai* remained in the area (Manly and Northern Beaches 2017c).

While the first land grants were offered in 1810, the land was typically used for farming. A few scattered settlements were established in the 1820s, around both Manly Cove and North Harbour, however population remained minimal, and Manly had a total population of 70 by the mid-1850s (City of Sydney 2016i; Manly and Northern Beaches 2017c). During the mid-1850s, Henry Gilbert Smith, an English businessman living in Sydney, bought land in the area with the intent of turning the area into the Brighton of the South Pacific. Between 1854 and 1856, he organised the first Manly Wharf to be built and a pier to be constructed to its east, had the Pier Hotel (later known as the Grand Pier Hotel) erected, laid out The Corso as a boardwalk to link the harbour pier with the ocean beach, and encouraged a ferry service to be established. He also purchased a paddle steamer, Phantom, to provide a regular ferry service in 1859. This spurred a population growth in the area (Ashton 2008; City of Sydney 2016i; Manly and Northern Beaches 2017a; 2017b; 2017c). By 1876, the local population petitioned to become part of a municipality, and the Municipality of Manly was incorporated in 1877 (Ashton 2008). Rapid growth took place in the 1880s, and the area became a popular seaside resort (City of Sydney 2016i).

The land surrounding the Narrabeen Peninsula to the north of the Municipality of Manly remained unincorporated, despite being settled in the early 1800s when land grants were taken up, due to its isolation and difficult terrain. It was not until 1906 that the Warringah Council was established, with a population of about 2800 occupying 700 residences (Warringah Council 1998). The council's first meeting took place in Narrabeen, which had first been settled in 1815 (City of Sydney 2016j; 2016n; Morcombe 2016b). Land within the Warringah area remained rural, with only minimal settlement in the valleys between the headlands, until the 1880s when some growth occurred. The Warringah name was in use during the late 1800s. It is an Aboriginal word that may mean 'sea' or 'across the waves', referring to Middle Harbour, or alternatively meaning 'grey head' or 'signs of rain' (Warringah Council 1998). Growth continued as portions of the Warringah area was subdivided for weekenders and holiday homes as it became a tourist destination for recreational purposes after both the early 1900s extension of the tramline and the construction of the Spit and Roseville bridges to the area in 1924. Many surf clubs and rock pools were set up during this time to cater for the tourists who visited the area (City of Sydney 2016n).

Pittwater Shire was also incorporated in 1906, when it was 'A Riding' ward of Warringah Shire. Due to its inaccessibility, although land grants were offered in 1810, few took up the offer and the area was only utilised for timber-getting and farming. By the 1880s as access to the area improved, land use comprised farming, orcharding, grazing, along with some instances of boat building, fishing and timber cutting. The A Riding area, too, became a popular holiday destination with numerous holiday and guesthouses built to accommodate tourists from the early 1900s (City of Sydney 2016l). This ward remained part of Warringah until 1992, when it broke away and was established as the Municipality of Pittwater. This was due to a remote council who A Riding residents felt did not look after their interests combined with the 'inappropriate, and un-sympathetic development, of the multi-storey development building in Mona Vale, which completely disregarded the views of Pittwater residents' (Morcombe 2015; Pearson 2016).

### 3.1.3.2 Seaforth

While settlement first began early in the 1800s, the rural population remained minimal until the late 1800s (City of Sydney 2016m). Professor Theodore Gurney built his home, Clavering, in the Seaforth area in the 1880s or 1890s, after he was appointed the second professor of mathematics and natural philosophy at the University of Sydney in 1877 (MacRitchie 2008b; Morcombe 2016a). Clavering was purchased by Albert Dalwood in 1922 and donated to the 'Food for Babies Fund' in 1928. Then known as Dalwood House, it was eventually

incorporated as a public hospital in 1932 and admitted a number of children of servicemen as residents during World War II. Since 1992, it has operated under the auspices of Manly Hospital, and is now known as the Dalwood Children's Home (Dalwood Auxiliary 2017; MacRitchie 2008b). Expansion continued into the early 1900s, as it was a popular destination for campers and picnickers. The street trees at Alan Avenue (Manly LEP I264) were planted in 1905, including the Jacarandas. Development started after Henry Halloran, a developer, subdivided land in the area at auction in 1906 (City of Sydney 2016m; MacRitchie 2008b). Although Halloran had intended to name the subdivision as the Balfour Estate, after the British Prime Minister, his wife, Alice Mabel Cobcroft, named Seaforth Estate (Figure 3-5), after Loch Seaforth and Seaforth Island in Scotland (Atchison 1983; MacRitchie 2008b). Halloran also sold the adjoining Bluff Estate (Figure 3-6), named after the cliff faces along the foreshore, by auction in 1909.

The first school in the area was built by the government in 1881 as a weatherboard cottage, it was replaced in 1893 by the Balgowlah Public School, built out of sandstone by James Booth. Nearby land was purchased in 1936 for the Seaforth Public School, which opened 1940 and the Balgowlah Public School was unused until 1944 when it was converted into a children's library and craft centre run by a group of local women. Balgowlah Public School was then officially opened as the Balgowlah Seaforth Library in 1945, was eventually opened to adult members in 1978 and continues operating in the heritage-listed building as a public library today. Part of the original school site was given to the Technical Education branch of the Department of Education in 1952 for Seaforth Technical College, which operated as Seaforth TAFE during the 1980s and 1990s, and now operates as Bupa Aged Care Seaforth (Deare 2013; MacRitchie 2008b; Manly and Northern Beaches 2017b). Significant development did not occur in Seaforth until after World War II, especially during the 1950s and 1960s. The suburb's population again expanded rapidly during the 1990s as new residences were built to accommodate the rising population (City of Sydney 2016m; MacRitchie 2008b). The population continues to grow, from 6,045 in 2001 to 7,139 in 2016 (Australian Bureau of Statistics 2001d; 2016j). The industry in Seaforth that employs the most residents switched from legal and accounting services at 4.8 per cent in 2006 and at 5.2 per cent in 2011, to banking services at 3.9 per cent in 2016 (Australian Bureau of Statistics 2006f; 2011g; 2016j). Today, Seaforth is a residential area with parklands, and commercial areas along Sydney Road (City of Sydney 2016m).



Figure 3-5 Map of the Seaforth subdivision 1906 (Source: National Library of Australia)



Figure 3-6 Map of the Bluff subdivision 1909 (Source: Manly Library)

### 3.1.3.3 Balgowlah

The first settler to the Balgowlah area was likely John Fincham, a former Third Fleet convict, who arrived in 1791. His claim is inscribed on the grant for Allotment 19. Balgowlah, an Aboriginal word meaning 'north harbour' was used for the village of North Harbour as early as 1828 by Major Thomas Livingstone Mitchell (MacRitchie 2008a). The township was situated at the head of North Harbour, laid out with 31 allotments on a grid plan, with Fincham's name on Allotment 20 (Figure 3-7). The village was also published as Balgowlah in his *Map of the Nineteen Counties* (MacRitchie 2008a). However, the township was also known as Jilling in surveyor James Larmer's 1834-1835 field book, a word used by the local Aboriginal population to describe the area (City of Sydney 2016b; MacRitchie 2008a). The last reference to Fincham is a listing showing him living at North Harbour in the 1836 Post Office Directory.

James Jenkins, a former convict who arrived in 1802, purchased land in Long Reef in 1823 and Manly Vale in 1826, and built a public road (along with 13 bridges) between them, reaching the loading place near present-day King Avenue. As he wanted to take his produce to Sydney by boat, he petitioned for a halfway house at North Harbour/Balgowlah in 1827, and was granted Allotment 29 (Figure 3-7). Robert Tiffin, a former convict who worked for Fincham and Jenkins, is also shown on the map as having taken up the lot next door to Fincham - Allotment 19 (Figure 3-7). Tiffin married Mary Blue (Blues Point headland being named after her family), and died at North Sydney in 1842 (Morcombe 2013). John Crane Parker, a market gardener, purchased 20 acres of land in 1837, using the site as a market garden until 1853, when the land was purchased by Henry Gilbert Smith where he built his Georgian-style home, Fairlight. Fairlight went through two other owners before being demolished in 1939 (City of Sydney 2016p; MacRitchie 2008a). Despite Jenkins' road which opened the peninsula up to travellers, the population remained minimal until the 1880s (City of Sydney 2016f; 2016j). Manly Reservoir was built in 1892 and was fed by the Manly Dam (Warringah LEP C9). Independent of the Metropolitan supply from the Upper Nepean Scheme until 1906, it was built by the NSW Department of Public Works. The Bantry Bay Reservoir (s170/Warringah LEP I147) was built in 1924 by the Metropolitan Water Sewerage and Drainage Board. Also built in 1924, the Bantry Bay Water Pumping Station (s170/Warringah LEP I148) was established to improve the service of the Manly Dam water delivery system. This made the Manly Dam supply to the Manly Reservoir redundant. The Bantry Bay Reservoir was connected to the Pymble Reservoir by main in 1933, integrating it into the Metropolitan supply. The reservoir continues to operate today, and the pumping station serves as a booster unit (Office of Environment and Heritage 2014a; 2014b).

There was population expansion in the 1920s after the opening of the Spit Bridge. The Balgowlah Golf Club<sup>2</sup> was formed in 1925, and its club house designed by architect Frank L'Anson Bloomfield in 1926. One of the founders of the golf club was Australian Olympic swimmer and diver, James (Jim) Sydney Wallace Eve (Jobling 1996; Manly Library n.d.). The Balgowlah Progress Association built the Balgowlah Hall, which became the Balgowlah Theatre from 1927 until it was demolished in 1984 to make way for a retail- and commercial-based mini-plaza. Balgowlah Oval was opened in 1934 and a school, later known as Balgowlah Boys High School, was established in 1945, also to cater to the growing needs of the residents. However, significant development did not occur in the area until the post-war years of the 1950s. During this period, the remaining dairy farms disappeared as the area urbanised. The Totem Shopping Centre, which contained 33 shops and a bowling alley, was opened in 1959 – it was redeveloped in 2007 and now operates as the Stockland Balgowlah Shopping Centre (MacRitchie 2008a).

Many apartments and units were constructed in the 1960s and 1970s (City of Sydney 2016f; 2016j). North Balgowlah was separated from Balgowlah as a residential suburb in 1984. In more recent years in the North Balgowlah region, an influx of young residents have renovated existing homes, and the suburb has gradually increased since the mid-1990s (City of Sydney 2016s). The population of Balgowlah remained relatively stable from the 1990s but has increased significantly from 6183 in 2001 to 7961 in 2016 (Australian Bureau of Statistics 2001c; 2016c; City of Sydney 2016f). North Balgowlah, on the other hand, has had a slow increase in population from 3154 in 2001 to 3667 in 2016 (Australian Bureau of Statistics 2001f; 2016h).

<sup>2</sup> Assessed as being of local significance as part of the current assessment. See Annexure A.

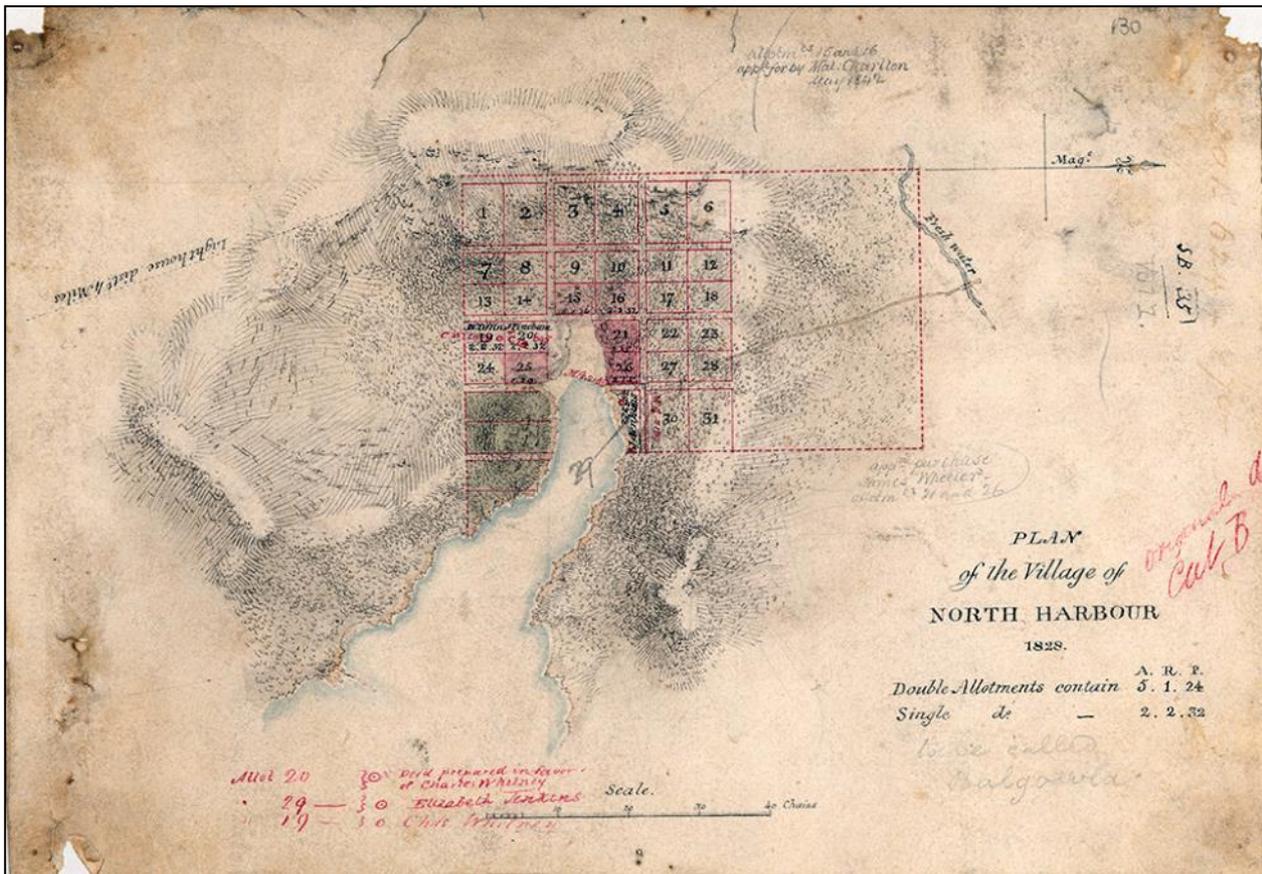


Figure 3-7 North Harbour Village plan (pencil reads "to be called Balgowlah") 1828 (Source: Western Sydney Records Centre)

### 3.1.3.4 Killarney Heights

Although settlement in the area of present-day Killarney Heights began in the late 1800s, growth was minimal until post-war years of the 1940s, despite a failed attempt by Richard Harnetts Senior and Junior to sell the large-scale Heidelberg Estate subdivision in the area of present-day Killarney Heights in 1886 (City of Sydney 2016h; 2016r; Souter 2012b). Originally part of Forestville, the area was developed as South Forestville and Heidelberg during the 1950s (The Daily Telegraph 2015). However, significant growth occurred in the area during the 1960s, after the suburb was subdivided by LJ Hooker as Killarney Heights in 1962 (City of Sydney 2016h; 2016r; Souter 2012b). The Killarney Heights Post Office opened in 1965, and closed in 1987 (Premier Postal Auctions 2005d).

During the 1990s the population fluctuated slightly and has only grown slightly during the 2000s. The population rose from 4047 in 2001 to 4469 in 2016 (Australian Bureau of Statistics 2001e; 2016g; City of Sydney 2016h). Of the suburb's 2016 population, 4.9 per cent work in the Computer Systems Design and Related Services industry, which has been the predominant industry of Killarney Heights' population since 2006 (Australian Bureau of Statistics 2001e; 2006d; 2016g). Today, the suburb is a residential neighbourhood surrounded by bushland.

Upper Middle Harbour Area (RNE 15000) is a large, untouched area of natural bushland in a major urban centre. The Davidson National Park, which comprises much of the area, was gazetted as a public recreation area in 1923. It was named after Sir Walter Davidson, former governor of New South Wales (Department of Environment and Energy 1983). Killarney Heights derives its name from Killarney in Ireland, and many of its streets have Irish-based names, such as Blarney and Tipperary Avenues and Shamrock Parade (City of Sydney 2016h; 2016r).

### 3.1.3.5 Allambie Heights

The area of present-day Allambie Heights was settled from the late 1880s, with country lots being sold at auction from crown lands in 1893 (Figure 3-8), just after the Manly Dam was built across Curl Creek in 1892 (George Pile Swyny and Co 1893; Office of Environment and Heritage 2005). The dam was built by the Public Works Department and was a significant component in the development of the Sydney metropolitan water supply within the Manly area (Department of Environment and Energy 2001). The Manly Dam and its surrounds (Warringah LEP C9) are now part of the Manly-Warringah War Memorial Park (Northern Beaches Council 2017). After the 1893 sale, crown land was once again sold at auction, this time announcing 'the new suburb' of Allambie in 1918, then sold as allotments of the Bell Bird Estate subdivision in the early 1920s (Warringah Image Library 1918; 1923).

Significant development occurred during the post-war years, especially between the 1950s and 1960s, as soldiers returning from World War II took up land in the area on which to build residences. The Allambie Heights Post Office opened in 1961 and continues to operate today (Premier Postal Auctions 2005a). Also in 1961, the Cerebral Palsy Alliance opened an electronics company, Centre Industries, in Allambie Heights to provide training for people with cerebral palsy who would then be employed alongside able-bodied employees, which became a model for commercial operations launching similar projects across America and Japan (Cerebral Palsy Alliance n.d.; Souter 2012a).

New buildings were built in the suburb throughout the mid-1990s, attracting a larger population, and by 2001, the population had grown to 6748 people (Australian Bureau of Statistics 2001a; City of Sydney 2016d). As of 2016, the population was 7009, and 3.4 per cent of the population is employed in the Computer Systems Design and Related Services industry, overtaking the School Education industry which employed 4.1 per cent of the population in 2006 and 2011 (Australian Bureau of Statistics 2006a; 2011a; 2016a). The name Allambie is said to be an Aboriginal word meaning 'peaceful place' (City of Sydney 2016a; 2016d).

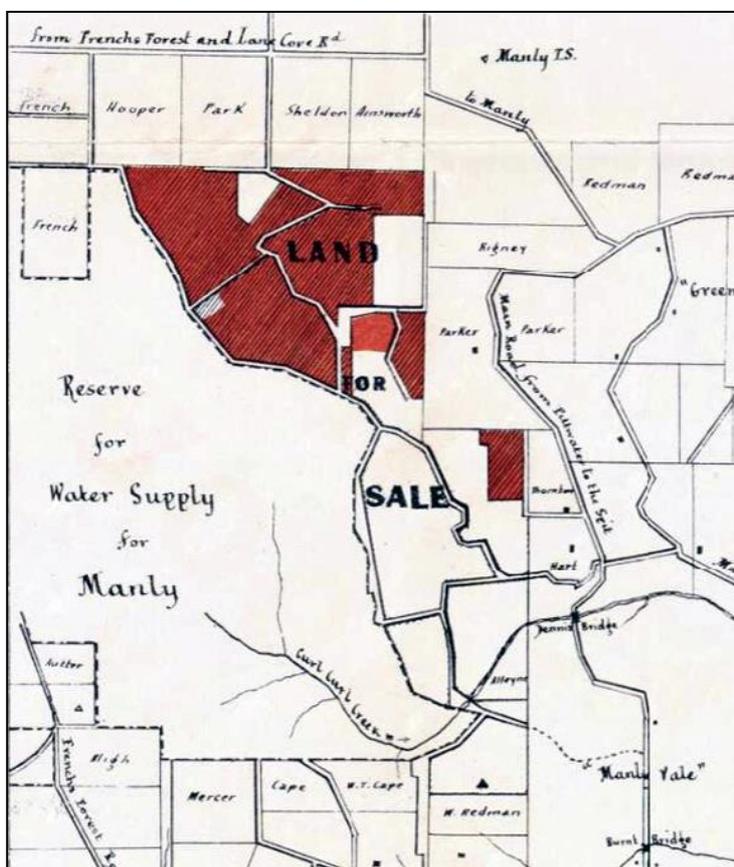


Figure 3-8 Sales plan for land in the suburb of Allambie Heights 1893 (Source: National Library of Australia)

### 3.1.3.6 Frenchs Forest

Settlement in the Frenchs Forest area first began in the 1850s (City of Sydney 2016q). One of the first people to own land there was the civil servant and land agent, Simeon Henry Pearce, and his brother, James Pearce, who purchased an allotment of 200 acres in the area of present-day Frenchs Forest in 1854 (Atchison 1974). James Harris French (or French) purchased the land in 1856, noting that, 'The greater portion... is of good light soil timbered with stringybark and gum. There is but scanty herbage, the ground being covered with scrub; there is good supplies of water in the creeks' (Park 1974, p. 280). He was a special constable and crown lands ranger who also established a major timber-getting and milling operation, clearing much of the location's forest, and built a wharf on Bantry Bay from which he shipped his timber to Sydney (Australia For Everyone 2017; City of Sydney 2016q). Traces of the 1856 bullock track (Warringah LEP 163) on which he hauled the logs from his sawmills to the wharf are still extant today along a bushwalking track within the Garigal National Park between Bantry Bay and the Wakehurst Parkway (NSW National Parks and Wildlife Service 2017). After Robert Tiffin, a former convict, died in 1842, French married Tiffin's widow, Mary Blue (Park 1974, p. 280). French died in 1893. After Mary died in 1895, the land was put up for auction as French's Rodborough farms (Figure 3-9). By the turn of the century, the area was known as French's Forest, after James French, and allotments for the development of a township began in the 1920s (Hugh Duff and Co 1903; Township Estate 1926).

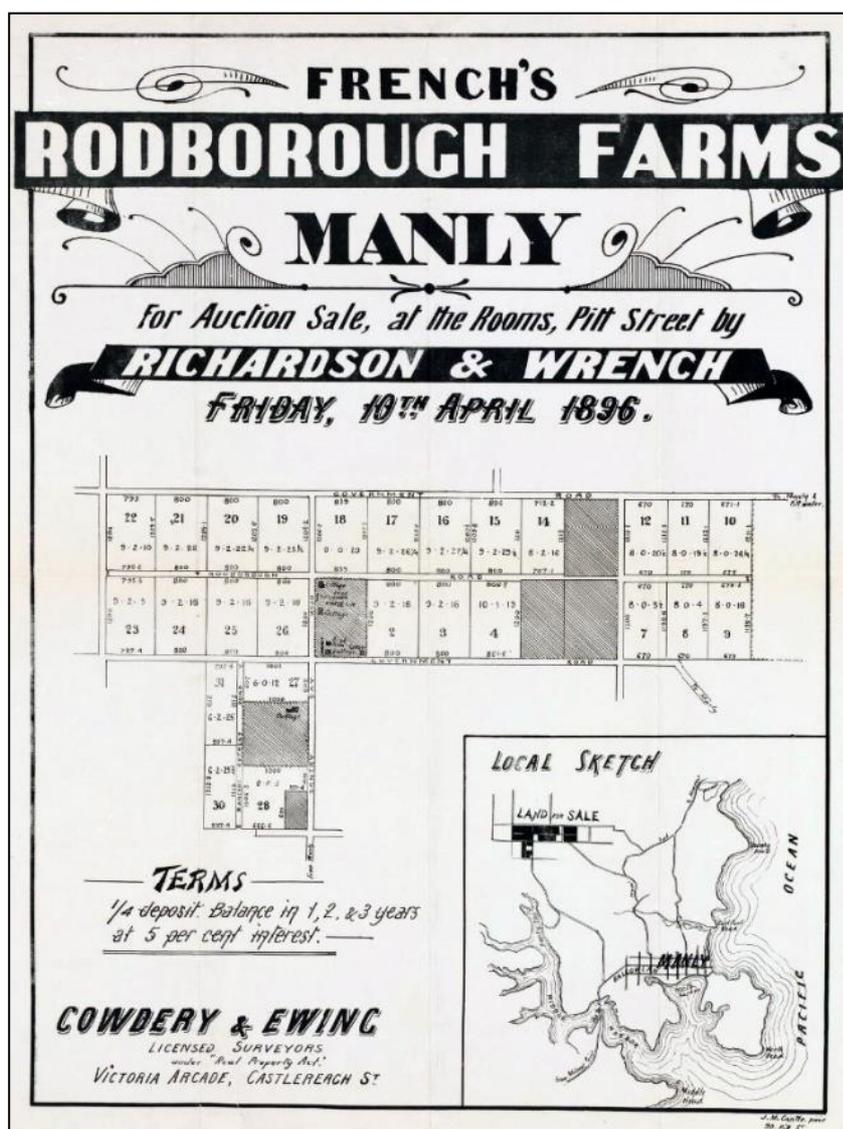


Figure 3-9 Plan of allotments for sale at French's Rodborough farms 1896 (Source: National Library of Australia)

The township's first post office opened as a receiving office in 1910, and became an official post office in 1917 (Premier Postal Auctions 2005b). In 1916 when soldiers were returning home from World War I, the government set up the 'French's Forest Soldier's Settlement' on crown land in what is now Forestville, which comprised 38 farms for wounded soldiers (Browne Young 1991; Lonely Beaches 2016). A receiving office for the French's Forest Settlement opened in 1920, which became an official post office in 1927. It was renamed the Forestville Post Office in 1947 (Premier Postal Auctions 2005c). Due to the poor soil and isolation, population growth was negligible until after World War II, but significant development only occurred within the 1960s and 1970s. Industrial growth soon followed. The British-based Arndale shopping centre opened in 1964, and operates today as the Forestway Shopping Centre (Maloney n.d.).

Further growth occurred in the late 1990s, and the population increased slowly (City of Sydney 2016q). Since 2001, the population has grown from 12,292 to 13,473 in 2016 (Australian Bureau of Statistics 2001d; 2016f). In 2006 and 2011, the major industry employing the local population was the school education industry, at 4.6 per cent and 5.3 per cent respectively (Australian Bureau of Statistics 2006c; 2011e). As of 2016, school education is no longer within the top five industries employing the population of Frenchs Forest, and the major industry at 4.2 per cent is Computer Systems Design and Related Services (Australian Bureau of Statistics 2016f).

### 3.1.4 Historical theme

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, 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, piggeries, and dairy farms

Australian theme (Australian Heritage Commission 2001)	NSW theme (Heritage Council of NSW 2001)	Local theme	Site types
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, and grasslands
Developing local, regional and national economies	Forestry	Activities associated with identifying and managing land covered in trees for commercial timber purposes	Forested area, sawmills, and timber tracks
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	Ethnic influences	Activities associated with common cultural traditions and peoples of shared descent, and with exchanges between such traditions and peoples	Chinese market gardens, Japanese population, Chinese population
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, 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
Developing local, regional and national economies	Communication	Activities relating to the creation and conveyance of information	Post offices, printing houses, publishing houses, and television industry
Building settlements, towns and cities	Accommodation	Activities associated with the provision of accommodation, and particular types of accommodation	Apartments, mansions, humpies, caves, hotels, homesteads, cottages, guesthouses, holiday houses, and slums
Educating	Education	Activities associated with teaching and learning by children and adults, formally and informally	Primary schools, high schools, universities, TAFEs, 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, asylums, and teaching hospitals

Australian theme (Australian Heritage Commission 2001)	NSW theme (Heritage Council of NSW 2001)	Local theme	Site types
Developing local, regional and national economies	Industry	Activities associated with the manufacture, production and distribution of goods	Factories, workshops, timber mills, quarries, shipbuilding yards, wharfs, jetties, tanneries, and brickyards
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, garbage dumps, bridges, reservoirs, pumping stations, and dams
Governing	Defence	Activities associated with defending places from hostile takeover and occupation	War memorials
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	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, exemplars of architectural styles, libraries, art galleries, and television studios
Developing Australia's cultural life	Leisure	Activities associated with recreation and relaxation	Hotels, parks, clubhouses, picnic places, sports clubs, bush walking tracks, swimming holes, tidal pools, golf courses and seaside resorts
Developing Australia's cultural life	Religion	Activities associated with particular systems of faith and worship	Churches, halls, and graveyards
Developing Australia's cultural life	Social institutions	Activities and organisational arrangements for the provision of social activities	Art galleries, and public libraries
Developing Australia's cultural life	Sport	Activities associated with organised recreational and health promotional activities	Ovals, leisure centres, and bowling alleys

## 3.2 Physical context

### 3.2.1 Non-Aboriginal heritage register search

Non-Aboriginal heritage items identified on the relevant registers and schedules within or adjacent to the study area are presented in Table 3-2 and mapped on Figure 3-18. Note that some heritage items are listed on more than one register. There are non-Aboriginal heritage items listed on the State Heritage Register, Local Environmental Plans, Section 170 Heritage and Conservation Registers, and the Register of the National Estate. There are no heritage items listed on the World Heritage List, National Heritage List or Commonwealth Heritage List in or adjacent to the study area, therefore there is no assessment against the requirements of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), and no triggers for a referral under this Act in relation to non-Aboriginal heritage.

Table 3-2 Results of Non-Aboriginal heritage register searches

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
House	North Sydney Local Environmental Plan 2013	I0988	185 Walker Street	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0994	207 Walker Street	North Sydney	North Sydney	Local
North Sydney Sewer Vent	State Heritage Register	01641	Falcon Street and Freeway	North Sydney	North Sydney	State
	s.170 NSW State agency heritage register	285047				
	North Sydney Local Environmental Plan 2013	I0839	Falcon Street (south-west of Warringah Freeway)			Local
	Register of the National Estate - Indicative Place, Historic	101165	Falcon Street			
House	North Sydney Local Environmental Plan 2013	I0633	2 Kurraba Road	North Sydney	North Sydney	Local
House	North Sydney Local Environmental Plan 2013	I0634	4 Kurraba Road	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
House, sandstone rock wall and cliff face	North Sydney Local Environmental Plan 2013	I0735	2 Winter Avenue	Neutral Bay	North Sydney	Local
Flat building	North Sydney Local Environmental Plan 2013	I0542	439 Alfred Street North	Neutral Bay	North Sydney	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
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
St Leonards Park; North Sydney Oval	State Heritage Register	01941	283A Miller street	North Sydney	North Sydney	State
	North Sydney Local Environmental Plan 2013	I0916	Miller Street			Local
	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			

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Walker and Ridge Streets heritage conservation area	North Sydney Local Environmental Plan 2013	CA20	Walker and Ridge Streets	North Sydney	North Sydney	Local
Whaling Road heritage conservation area	North Sydney Local Environmental Plan 2013	CA21	Whaling Road	North Sydney	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
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

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
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
Northern Beaches Ocean Outfall	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/ Mosman/Ryde/ The Hills/ Warringah/ Parramatta/ Lane Cove	Local
Cammeray Park (including golf course)	North Sydney Local Environmental Plan 2013	I0024	Cammeray	Cammeray	North Sydney	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
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				
	North Sydney Local Environmental Plan 2013	I0001				
	Register of the National Estate - Indicative Place, Historic	2919				
	National Trust of Australia (NSW)	R10089				
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				
Tarella	State Heritage Register	00270	3 Amherst Street	Cammeray	North Sydney	State
House	North Sydney Local Environmental Plan 2013	I0023	280 West Street	Cammeray	North Sydney	Local
Holtermann Estate Conservation Area (A)	North Sydney Local Environmental Plan 2013	CA07	Crows Nest	Crows Nest	North Sydney	Local
	Register of the National Estate - Indicative Place, Historic	100845				

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
St Cuthbert's Anglican Church (including original interiors)	North Sydney Local Environmental Plan 2013	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
Naremburn Central Township	Willoughby Local Environmental Plan 2012	C9	Naremburn	Naremburn	Willoughby	Local
House (including original interiors)	Willoughby Local Environmental Plan 2012	I169	40 Slade Street	Naremburn	Willoughby	Local
House (including original interiors)	Willoughby Local Environmental Plan 2012	I170	42 Slade Street	Naremburn	Willoughby	Local
House (including original interiors)	Willoughby Local Environmental Plan 2012	I162	38 Market Street	Naremburn	Willoughby	Local
House (including original interiors) – Dangog (1914)	Willoughby Local Environmental Plan 2012	I163	40 Market Street	Naremburn	Willoughby	Local
House (including original interiors) – Romatrapa	Willoughby Local Environmental Plan 2012	I161	33 Market Street	Naremburn	Willoughby	Local
Walter Burley Griffin Incinerator	State Heritage Register	00084	2 Small Street	Willoughby	Willoughby	State
	Willoughby Local Environmental Plan 2012	I228				
	Willoughby Local Environmental Plan 1995	Schedule 6				

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
	National Trust of Australia (NSW)	S8569				
	Royal Australian Institute of Architects Register	4700895				
	Register of the National Estate - Registered, Historic	2951				
Artarmon; Artarmon Urban Conservation Area	Willoughby Local Environmental Plan 2012	C1	Artarmon/Willoughby	Artarmon/Willoughby	Willoughby	Local
	National Trust of Australia (NSW)	S6655				
Clive Park and Tidal Pool; Clive Park Rock Pool	Willoughby Local Environmental Plan 2012	I179	Sailors Bay Road	Northbridge	Willoughby	Local
	Register of the National Estate – Indicative Place, Historic	103499	Bay Road	Northbridge	Willoughby	Local
Grant's Wharf (remains); Remains of former Grant Wharf	Mosman Local Environmental Plan 2012	A492	Parriwi Road	Mosman	Mosman	Local
	Sydney Regional Environmental Plan No 23 – Sydney and Middle Harbours 2005	Schedule 5	Spit Road			
Harbour foreshores	Manly Local Environmental Plan 2013	I1	Extent of Municipal boundary adjacent to the Harbour	Seaforth	Manly	Local
Street trees	Manly Local Environmental Plan 2013	I264	Alan Avenue	Seaforth	Manly	Local
House	Manly Local Environmental Plan 2013	I271	18 Edgecliffe Esplanade	Seaforth	Manly	Local

Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Stone library (former school house)	Manly Local Environmental Plan 2013	I273	Frenchs Forest Road (corner Sydney Road and Frenchs Forest Road)	Seaforth	Manly	Local
House	Manly Local Environmental Plan 2013	I274	14 Palmerston Place	Seaforth	Manly	Local
Street trees	Manly Local Environmental Plan 2013	I275	Panorama Parade (from Edgecliffe Esplanade to Ponsonby Parade)	Seaforth	Manly	Local
House	Manly Local Environmental Plan 2013	I278	14 Ross Street (corner Panorama Parade)	Seaforth	Manly	Local
Reserved track for trams	Manly Local Environmental Plan 2013	I280	The Spit (from Whittle Avenue to The Spit Bridge)	Balgowlah	Manly	Local
House	Manly Local Environmental Plan 2013	I285	1 Whittle Avenue	Balgowlah	Manly	Local
Commercial building	Manly Local Environmental Plan 2013	I25	463 Sydney Road	Balgowlah	Manly	Local
Upper Middle Harbour Area	Register of the National Estate – Indicative Place, Historic	15000	Wakehurst Parkway	Killarney Heights	Northern Beaches	Local
Bantry Bluff	Manly Local Environmental Plan 2013	I268	Wakehurst Parkway	Seaforth	Manly	Local
Bantry Bay Reservoir WS0008	Sydney Water Section 170 Heritage and Conservation Registers	4575790	Lot 1 Kirkwood Street	Killarney Heights	Warringah	Local
	Warringah Local Environmental Plan 2011	I147				

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Place name	Register	Listing No	Address	Suburb	LGA	Heritage significance
Bantry Bay Water Pumping Station WPO122; Bantry Bay Water Pumping Station (WPS 122)	Sydney Water Section 170 Heritage and Conservation Registers	4574709	Lot 1 Kirkwood Street	Killarney Heights	Warringah	Local
	Warringah Local Environmental Plan 2011	I148				
Manly Dam and Surrounds; Manly Dam and Old Water Treatment Works	Warringah Local Environmental Plan 2011	C9	King Street	Manly Vale	Warringah	Local
	National Trust of Australia (NSW)	S11603				
Frenchs Bullock Track	Warringah Local Environmental Plan 2011	I63	Wakehurst Parkway	Killarney Heights	Warringah	Local
Narrabeen Lagoon Catchment	Register of the National Estate – Indicative Place, Historic	15880	Wakehurst Parkway	Narrabeen	Northern Beaches	-

### 3.2.2 Previous heritage assessments

#### 3.2.2.1 Northern Beaches Hospital environmental impact statement

The Northern Beaches Hospital environmental impact statement (Lester 2014) is the main relevant prior assessment for the Beaches Link project as both projects interconnect within the suburb of Frenchs Forest. The Northern Beaches Hospital study area is immediately adjacent to the current study area along the Wakehurst Parkway between Warringah Road and Frenchs Forest Road West. A summary of the two reports related to this project is presented in Table 3-3.

Table 3-3 Summary of previous heritage assessments for Northern Beaches Hospital

Author	Summary
<p>Australian Museum Business Services (2012)</p>	<p>Appendix J of the environmental impact statement report for the Northern Beaches Hospital comprises a Historic Heritage Impact Assessment prepared by Australian Museum Business Services for SMEC Australia Pty Ltd, for the Northern Beaches Hospital Road Connectivity and Network Enhancement project. The report explores the statutory and historic contexts of the project location, before detailing a physical analysis and impact assessment. The study area for the Northern Beaches Hospital Road Connectivity and Network Enhancement project is adjacent to the current project area along at its south-eastern boundary, and partially overlaps with the current project area along its eastern and north-eastern boundaries.</p> <p>The Bantry Bay Road study area, situated between Warringah Road, Wakehurst Parkway, Frenchs Forest Road West, and the Forest High School, is located opposite the end of the Wakehurst Parkway section of the current Beaches Link project. It comprised an area of 14 houses and landscaped gardens dating to the mid to late 20<sup>th</sup> century, and a densely vegetated and uninhabited area to the west which was covered in dense, natural scrub.</p> <p>The report determined that although no potential heritage items were identified by the background research and the physical assessment, there was potential for evidence associated with the building complex, shown in historic aerial photography to be located near the south-eastern corner of the Bantry Bay Road study area, to be present. This site is located immediately adjacent to the current study area along the eastern boundary, near the corner of Warringah Road and Wakehurst Parkway.</p>
<p>Lester (2014)</p>	<p>LFA (Pacific) Pty Ltd prepared an environmental impact statement report for the Northern Beaches Hospital (Stage 2) project in Sydney. The project forms part of a wider program for the delivery of improved health services in the Northern Sydney Local Health District. Part of this project involves the development of a new Northern Beaches Hospital at Frenchs Forest, which is located at the northernmost end of the study area, at the end of the Wakehurst Parkway. The Northern Beaches Hospital (Stage 2) study area is adjacent to the current study area along at its south-eastern boundary, and partially overlaps with the current study area along its eastern and north-eastern boundaries.</p> <p>The assessment determined that:</p> <ul style="list-style-type: none"> <li>▪ The site does not contain registered heritage items</li> <li>▪ There is archaeological potential based on historical aerial photographic imagery in the south-east corner of the hospital site, within the parcel of land at 17 Bantry Bay Road, Frenchs Forest</li> <li>▪ The potential heritage items are located within land immediately adjacent to the current study area along the eastern boundary, near the corner of Warringah Road and Wakehurst Parkway.</li> </ul>

### 3.2.2.2 Local heritage studies

Previous heritage studies in the study area provide relevant information relating to the nature and extent of non-Aboriginal heritage and archaeological sites and places. Relevant, previous studies within the study area that were able to be obtained and reviewed are summarised in Table 3-4.

Table 3-4 Summary of previous heritage studies reviewed in the study area

Author	Summary
Latona Masterman and Associates (1981)	Latona Masterman and Associates produced the <i>North Sydney Heritage Study</i> for the North Sydney Municipal Council and the Heritage Council of New South Wales. 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. Of the sites listed within the study, Tarella is located within the current study area.
(Godden Mackay 1993)	Godden Mackay published the <i>North Sydney Heritage Study Review</i> for the North Sydney Council to update the original 1981 <i>North Sydney Heritage Study</i> . Their methodology involved fieldwork which covered the entire Council area, background research, a review of the existing planning data and policies, and an analysis of future directions and potential threats. It investigated both heritage items and conservation areas. Of the sites identified, Tarella and St Thomas Rest Park are within the current study area.
Kate Blackmore and Associated Consultants (1986)	<p>Kate Blackmore and associated Consultants produced the <i>Heritage Study: Municipality of Manly</i> for the Department of Environment and Planning and the Manly Municipal Council. This study was based on the former Municipality of Manly, now part of the Northern Beaches Council. The study methodology included background research into the municipality's history, the review and analysis of previously identified heritage items, a field survey of the municipality, and recommendations for conservation management. However, the authors note that this does not comprise an exhaustive list of heritage items, but instead opens the way for future study.</p> <p>A few heritage places, such as Bantry Bay Reserve and the Alan Avenue street trees, are located within close proximity to the current study area. The study also outlined six environmental areas, however none of these places were within the current study area.</p>
Warringah Council (2013)	<p>The Sustainable Urban Planning Team, Environment Division of the Warringah Council published the <i>Warringah Community Based Heritage Study</i> for the Warringah Council. The report notes that there were 'about 145 places and areas of significance currently listed in Warringah', which included private dwellings, commercial buildings, ocean rock pools, coastal cliffs, memorials, street trees, parks, and bus shelters. The purpose of the report was to update the council's heritage database, which was based on prior heritage studies.</p> <p>The report involved a review of existing heritage items, the identification of potential heritage items, and the assessment of these items. A background review on all properties within the council area was conducted, and a call for nominations for potential heritage items was held in 2011 – a total of 69 submissions were received, with 100 properties being affected.</p> <p>All heritage items were then assessed, both existing and potential, with two sites removed from the heritage listing, and 14 new heritage items being recommended for addition to the council's heritage list. None of these heritage items were within the current study area. However, Bantry Bay Reservoir and Bantry Bay Pumping Station were noted as state government section 170 heritage items that should be added to the Warringah Council's heritage list – both of these heritage items are within the Beaches Link study area.</p>

### 3.2.3 Other historic information

ANZAC Park, Henry Lawson's Cave, and the Balgowlah Golf Course have also been considered as areas for potential non-Aboriginal heritage. Full details can be found in Annexure A.

### 3.3 Field survey results

Field surveys were carried out on foot and from a vehicle between 4 to 8 September 2017, on 24 August 2018, and on 20 March 2020, in accordance with the methodology outlined in Section 2. 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 Annexure A.

Four potential non-Aboriginal heritage items were investigated on foot during the survey, and are summarised in Table 3-5. The significance assessment for these items is presented in Annexure A. The summary statements of significance are presented in Table 4-1. No additional non-Aboriginal heritage items or areas of archaeological potential were identified during the field survey.

Table 3-5 Potential Non-Aboriginal heritage items

Name	Location	Description	Annexure reference
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 3-10-Figure 3-11).	Annexure A.1 (Item 1)
Balgowlah Golf Course	506 Sydney Road, Balgowlah	Balgowlah Golf Course comprises a 9-hole course, with bunkers and putting greens, designed and laid out by William Whytock across 11.5 hectares of land in 1925, and a clubhouse, built in red brick with hipped tiled roofing, designed by Frank L'Anson Bloomfield (Associate of the Royal Institute of British Architects) in 1926 (Figure 3-14-Figure 3-15).	Annexure A.10 (Item 10)
Henry Lawson's Cave	Bicentennial Reserve, Small Street, Willoughby	Henry Lawson's Cave comprises a sandstone rock shelter within Flat Rock Gully. A six course sandstone mini-amphitheatre is installed opposite the rock shelter, from which an audience can view poetry performances (Figure 3-12-Figure 3-13).	Annexure A.15 (Item 15)
Burnie (House)	16 Dudley Street, Balgowlah	Burnie (House) comprises a brick interwar bungalow-style house with sandstone footings and base wall and projecting square bay windows. The roof line comprises a hip roof with a projecting gabled front and a skillion roof over the front verandah, clad with Marseille terracotta tiles and topped with decorative finials. The verandah piers and balustrading are of masonry, supporting timber posts. The house incorporates a single chimney (Figure 3-16-Figure 3-17).	Annexure A.17



Figure 3-10 ANZAC Park, facing east along Ernest Street

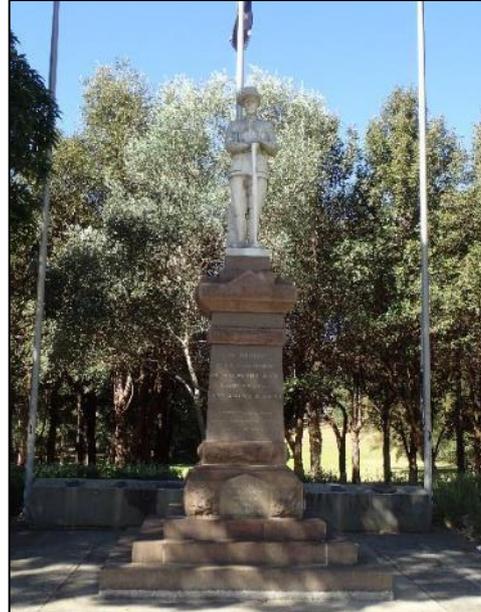


Figure 3-11 North Sydney Tramway Depot War Memorial, ANZAC Park



Figure 3-12 View of Henry Lawson's Cave, facing southeast



Figure 3-13 View of amphitheatre for Henry Lawson's Cave, facing east



Figure 3-14 View of Balgowlah Golf Course club house eastern extension, facing west



Figure 3-15 View of Balgowlah Golf Course, facing west



Figure 3-16 View of Burnie (House), facing east

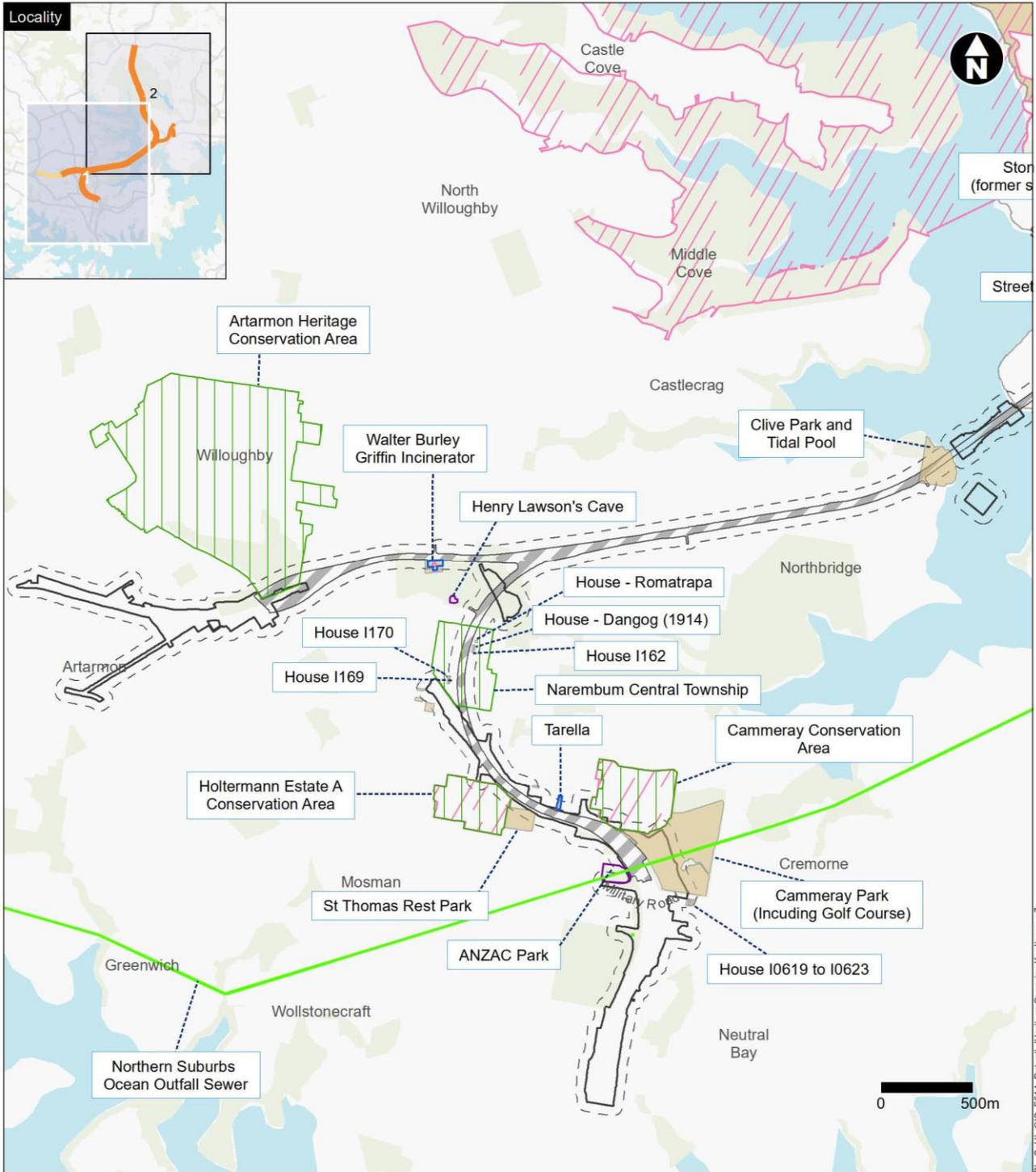


Figure 3-17 View of Burnie (House), facing northeast

### 3.4 Summary of historical and physical context

There were 73 non-Aboriginal heritage items and four potential non-Aboriginal heritage items (Figure 3-18 and Figure 3-19) identified within the study area during previous studies, surveys, heritage register searches, and the September 2017, August 2018 and March 2020 field surveys. A full listing of the heritage items is presented in Table 3-2 and Table 3-5, and a summary of significance assessments is presented in Table 4-1.

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



**Legend**

- Study area
- Tunnel
- Construction footprint
- State Heritage Register (DPE 2017)
- s170 area (compiled by Jacobs 2017)
- Register of the National Estate (DOE 2015)
- LEP Heritage Conservation Area - Landscape (DPE 2020)
- LEP Heritage Item (DPE 2020)
- Potential non-Aboriginal heritage item

Indicative only – subject to design development

Figure 3-18 Location of all heritage items and potential heritage items within the study area (Map 1)

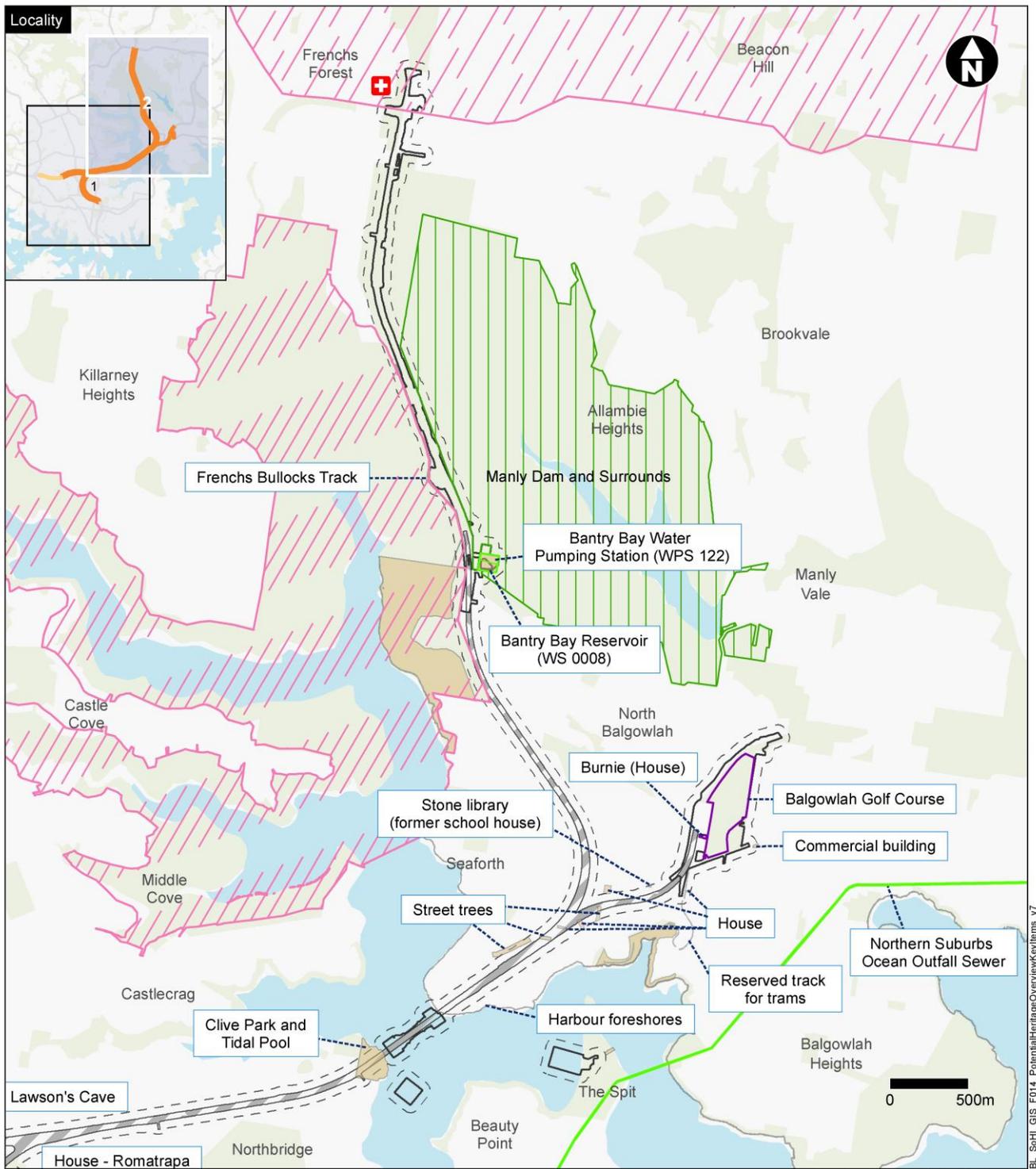


Figure 3-19 Location of all heritage items and potential heritage items within the study area (Map 2)

## 4. Significance assessment

A statement of significance has been provided for heritage items identified within the study area, both known heritage items and those potential heritage items identified during the field survey. A detailed history, description and significance assessment of these items is provided in Annexure A. A summary of their statements of significance is provided in Table 4-1. Heritage items identified in heritage register searches (Table 3-2) that are within the study area, located above the tunnel alignment and in locations that are unlikely to have significant impacts from the project, have been grouped and a summary of their significance is provided in Table 4-1. The specific heritage criteria for each of the grouped heritage items is provided in Annexure A.16.

Table 4-1 Summary heritage significance of heritage items

Item no	Item name	Statement of significance
1	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, in ANZAC Park no plantings or historic items dated to the mid- to late-1800s are extant. This site is of local heritage significance.
2	Cammeray Park (including Golf Course)	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 twentieth century reclamation of watercourses in urban areas. This site is of local heritage significance.
3	Cammeray heritage 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.
4	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 site is of state heritage significance.
5	St Thomas Rest Park	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. This site is of local heritage significance.
6	Holtermann Estate A Conservation Area	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. This area is of local heritage significance.

Item no	Item name	Statement of significance
7	Artarmon Heritage Conservation Area	The Artarmon Heritage Conservation Area has been listed as a conservation area due to the wide range of largely intact Californian and Interwar bungalows as well as Federation housing in generally good condition, which occur in either groupings of consistent styles or with subtle blends of successive periods, producing a mix of interesting and varied streetscapes. This area is of local heritage significance.
8	Clive Park and Tidal Pool	Clive Park is of historical significance at a local level as an example of the 19th century community recognition of the value in setting aside areas of the harbour foreshore for public recreation and use. Clive Park is of aesthetic significance for its picturesque combination of natural and modified bushland, rocky outcrops and viewing points and for its tidal pool, one of the smallest pools in a harbour location, the rustic appearance and isolated scenic location of which has considerable visual appeal. Clive Park is also important for its Aboriginal archaeological sites. NB the three boatsheds in Clive Park and Northbridge Sailing Club are also of considerable significance and are dealt with separately as items 54 and 31 respectively. This site is of local heritage significance.
9	Harbour foreshores	Natural landscape type – Aesthetic. This site is of local heritage significance.
10	Balgowlah Golf Course	Balgowlah Golf Course is of historical significance as it represents an example of Sydney’s post-World War I suburban expansion in the 1920s. This reflects the growth of the middle-class of the Balgowlah community prior to the Great Depression, and the community’s desire for recreational activities – membership reached capacity in 1926, following the club’s 1925 formation. The course was laid out on land formerly used for public recreation, dating to the late 1800s. It also holds historical association significance in relation to one of its founders, James (Jim) Sydney Wallace Eve (1899-1978), Parramatta-born Olympic swimmer and Australian sports administrator who was the son of Albert Sydney Eve and English-born Freda Maude, daughter of Frederick Cavill, and with architect Frank L’Anson Bloomfield (1879-1949), chief Architect of the NSW Branch of the War Services Homes Commission between 1920-1922 who designed the Balgowlah golf club house in 1926. This site is of local heritage significance.
11	Frenchs Bullock Track	Historically significant due to association with James French, an early pioneer of the area, early land grants and early establishment of a timber industry. Aesthetically significant as evidence of the high degree of technical expertise in track and bridges. This site is of local heritage significance.
12	Bantry Bay Water Pumping Station (WPS 122)	The former Bantry Bay water pumping station was constructed in 1924, and is an example of hydro pneumatic pumping station constructed of reinforced concrete in Sydney in the 1920s. The construction of the station is associated with the development of water supply to the local area, which (in association with the reservoir) is a major element of the historic built environment of the local government area of Warringah. The former use and age of the station provides a focus for an understanding of the suburban development of the area. The significant elements are the location near the original reservoir (inclusive of views from the street) and fabric of the pumping station superstructure. This site is of local heritage significance.

Item no	Item name	Statement of significance
13	Bantry Bay Reservoir (WS 0008)	Bantry Bay Reservoir (WS 0008). One of a small group of cylindrical concrete reservoirs, serving the needs of suburban communities, and demonstrating the growth of demand. It is one of the three main structures of the Manly Water Supply Scheme, which was independent of the Metropolitan Supply, the other structures being Manly Dam and Manly Reservoir (WS 64). The listing includes the reservoir and all associated pipework, valves and valve houses to the property boundary, as well as other structures described in this listing. This site is of local heritage significance.
14	Manly Dam and Surrounds	Manly Dam is a representative example of a medium-sized, concrete gravity dam of the late nineteenth century, as regards both design and construction. It has historical significance for its role in the historical development of Sydney's water supply, in particular as being an independent scheme, built despite the fact that the renowned first stage of the Upper Nepean Water Supply, a comprehensive, long-term scheme with capacity for progressive augmentation by the successive construction of major dams on the contributing rivers, had recently been completed. It has technical significance as a representative example of its type and for the pioneering strengthening methodology which was developed for this dam. The dam is a rare remnant of an independent water supply system within the Sydney Metropolitan Area, providing evidence of the progressive and independent development of Sydney's suburbs, and has local aesthetic value. The former treatment plant and pumping station buildings are also significant but are not owned by the Sydney Water Corporation. This site is of local heritage significance.
15	Henry Lawson's Cave	Henry Lawson's Cave is important for its historical association with Henry Lawson. Anecdotal evidence suggests that Henry Lawson spent time in the Flat Rock Gully rock shelter whilst he lived in Naremburn (between 1906-1907 and for a short time after the end of World War I). It is believed that he wrote poetry during the time he spent within the shelter. It is also of social significance to the local community due to the Willoughby City Council's restoration of Henry Lawson's Cave, including the installation of an amphitheatre for the purposes of seating an audience for the bush poetry events they have regularly held there since the turn of the twenty-first century. It is also identified as a stopping point on the Council's Artarmon to Middle Harbour Interpretive Walk.
n/a	Other heritage items	The heritage items in this group are mostly individual houses, or residential areas and streetscapes, with some early commercial development of local heritage significance. These are significant for their architectural styles including early surviving Victorian examples, reflecting the growth of the area and generally modest streetscape character. Some of the individual houses are also significant as part of the earliest land grants and for their association with prominent early persons of the area. This group also includes two utilitarian heritage items, an early incinerator (State heritage significance) and sewer system (local heritage significance). These are significant for a wide range of criteria including historical development of technology, architectural and aesthetic significance, and association with important designers.
n/a	Burnie (House)	Burnie (House) was built in c. 1920, in a small interwar bungalow-style common across Sydney suburbs. While it was built as part of the post-World War I housing boom, the house is not historically significant and is not associated with any particularly important individual or group. Further it does not demonstrate any aesthetic or architectural features at a high degree, and is not of social significance to any particular community group. This place <b>does not meet the significance criterion thresholds</b> 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 minimised impacts to heritage in the following ways:

- The majority of the project would be constructed and located underground, avoiding impacts through the subsurface tunnelling of the project
- 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 outside operational requirements) would be returned to enable incorporation into the golf course at the completion of construction
- At Middle Harbour, the construction methodology for the project has been selected to avoid direct impacts on foreshore areas, such as Clive Park. Specifically, the use of cofferdams has minimised temporary and permanent impacts to the shoreline and avoids direct impacts to the park
- At Wakehurst Parkway, project work has been contained within the existing road reserve to avoid direct impact to Bantry Bluff, which is listed on the Manly Local Environmental Plan 2013 as locally significant, and Upper Middle Harbour Area and the Narrabeen Catchment Lagoon, which are listed on the Register of the National Estate for landscape values
- The Wakehurst Parkway east construction support site (BL 13) has been designed to avoid direct impacts to key heritage elements of the Bantry Bay Water Pumping Station and the Bantry Bay Reservoir
- Permanent direct impacts to the Manly Dam and surrounds have been avoided. Less than one per cent of the heritage item would be impacted during a short period of the construction phase to reconnect the upgrade works to an existing fire trail / high voltage powerline maintenance access track.

### 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 where:

- Connections to and from Beaches Link are proposed at the Warringah Freeway, Gore Hill Freeway, Burnt Bridge Creek Deviation and the Wakehurst Parkway
- Surface road work is required as part of the project. This includes the upgrade and integration work along the Gore Hill Freeway at Artarmon, along and around the Burnt Bridge Creek Deviation and along the Wakehurst Parkway
- Permanent motorway facilities are proposed. This includes ventilation facilities, a motorway control centre and temporary construction support sites required to support their construction
- Construction work is required to support the construction of the immersed tube tunnels at Middle Harbour. This includes the installation of cofferdams.

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

- Direct impact due to work within heritage curtilages including demolition or modification to the heritage item, or a change in use
- Direct impact 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 impact 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
- Risk of damage to heritage items due to ground settlement (eg subsidence) due to tunnelling activities
- Change in use, association or access, resulting in social-related heritage impact
- Impact 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 heritage conservation architect would be sought.

Installation of at-property treatment at eligible properties along the Warringah Freeway corridor would be carried out as part of the Warringah Freeway Upgrade component but are considered in this assessment for totality.

### 5.2.2 Potential direct impacts

Physical direct impact may potentially 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, mitigate or avoid 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 impact (structures located within the minimum working distances), 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 stress redistribution 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, no buildings along the alignment were found to be in the 'moderate' 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). Any impact from settlement caused by the project would be rectified to the condition prior to construction works. An Independent Property Impact Assessment Panel, comprising 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 (Aesthetic)
Less than 10	Very slight	Fine cracks that are easily treated during normal decoration. Damage generally restricted to internal wall finishes. Cracks may be visible on external brickwork or masonry. (Aesthetic)
10 to 50	Slight	Cracks easily filled. Redecoration probably required. Recurrent cracks can be masked by suitable linings. Crack may be visibly externally and some repointing may be required to ensure weather-tightness. Doors and windows may stick slightly. (Aesthetic)

Maximum settlement of building (mm)	Degree of severity	Typical impact
50 to 75	Moderate	The cracks require some opening up and can be patched by a mason. Repointing of external brickwork and possibly a small amount of brickwork to be replaced. Doors and window sticking. Service pipes may fracture. Weather-tightness often impaired. (Serviceability)
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. (Serviceability)
Greater than 75	Very severe	This requires 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. (Stability)

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 and an indicative height identified. The final height and design of the noise barrier (eg materials) would be determined during further design development and in consultation with the immediately affected community. This would consider urban design responses to minimise visual impacts.

Proposed noise barriers along the Warringah Freeway corridor would likely be carried out as part of the Warringah Freeway Upgrade component, but are considered in this assessment for totality.

### 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 impact 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 between areas of construction works and heritage items prior to construction commencing and would remain in place until the conclusion of the works in the vicinity of these heritage items. Potential impact related to sediment and runoff from construction support 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 (Royal Haskoning DHV 2018). 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 2018, 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

Figure 3-18 and Figure 3-19 provide an overview of the heritage items and potential heritage items within the study area for the project.

#### 5.3.1 Heritage items in the vicinity of minor works adjacent or in proximity to Warringah Freeway or surface connections at Balgowlah

Thirty- six heritage items within the study area have been identified as not being impacted and are listed in Table 5-2. These heritage items are located within 50 metres of proposed surface works for the Beaches Link project along the Warringah Freeway or surface connections at Balgowlah. Those items along the Warringah Freeway are also within areas impacted by the Warringah Freeway Upgrade component of the Western Harbour Tunnel and Warringah Freeway Upgrade project. The proposed work in the vicinity of these items would be minor and limited to the existing road reserve. Works include signage, line marking, pavement work and adjustments to medians and barriers. Any construction work would be carried out with safeguards put in place to establish minimum working distances for vibration-intensive construction activities and other standard construction management measures. As such, impact to these heritage items has not been carried forward for further detailed assessment.

Table 5-2 Heritage items not impacted by the project - items in the vicinity of minor works adjacent or in proximity to the Warringah Freeway or the surface connections at Balgowlah

Item name (heritage ID)	Listing	Heritage significance
Flat building (I0542)	North Sydney Local Environmental Plan 2013	Local
House (I0633)		
House (I0634)		
House, sandstone rock wall and cliff face (I0735)		
House (I0842)		
House (I0843)		
House (I0844)		
House (I0845)		
House (I0846)		
'St Helens' (I0981)		
'St Malo' (I0982)		
House (I0988)		
Walker and Ridge Streets heritage conservation area (CA20)		
Whaling Road heritage conservation area (CA21)		
House (I0582)		
House (I0583)		
House (I0584)		
House (I0585)		
House (I0586)		

Item name (heritage ID)	Listing	Heritage significance
House (I0587)		
House (I0588)		
House (I0589)		
House (I0590)		
House (I0591)		
House (I0595)		
House (I0596)		
House (I0994)		
St Leonards Park	State Heritage Register North Sydney Local Environmental Plan 2013 Register of the National Estate National Trust of Australia (NSW) Register	State
North Sydney Sewer Vent	State Heritage Register North Sydney Local Environmental Plan 2013 Sydney Water Section 170 Heritage and Conservation Register Register of the National Estate National Trust of Australia (NSW) Register	State
W. Tunks Memorial Fountain	North Sydney Local Environmental Plan 2013	Local
War memorial	North Sydney Local Environmental Plan 2013	Local
House (I0023)	North Sydney Local Environmental Plan 2013	Local
St Cuthbert's Anglican Church (including original interiors) (I172)	Willoughby Local Environmental Plan 2012	Local
Group of shops (I174)	Willoughby Local Environmental Plan 2012	Local
Shops (I175)	Willoughby Local Environmental Plan 2012	Local
House (I285)	Manly Local Environmental Plan 2013	Local

### 5.3.2 Heritage items in the vicinity of the mainline tunnels, or ramp tunnels leading to surface connections at Balgowlah

Twelve heritage items within the study area have been identified as not being impacted by settlement and are listed in Table 5-2. These heritage items would be located within 50 metres of the mainline tunnels, or of ramp tunnels to surface connections at Balgowlah. Settlement contour modelling indicates that there would be no impact from settlement (Table 5-1) for these heritage items. As such, impact to these heritage items has not been carried forward for further detailed assessment.

Table 5-3 Heritage items not impacted by the project - items in the vicinity of the mainline tunnels, or ramp tunnels leading to the surface connections at Balgowlah

Item name (heritage ID)	Listing	Heritage significance
House (I271)	Manly Local Environmental Plan 2013	Local
Stone library (former school house) (I273)	Manly Local Environmental Plan 2013	Local
House (I274)	Manly Local Environmental Plan 2013	Local
Street trees (I275)	Manly Local Environmental Plan 2013	Local
House (I278)	Manly Local Environmental Plan 2013	Local
Reserved track for trams (I280)	Manly Local Environmental Plan 2013	Local
House (including original interiors) – Romatrapa	Willoughby Local Environmental Plan 2012	Local
House (including original interiors)	Willoughby Local Environmental Plan 2012	Local
House (including original interiors) – Dangog (1914)	Willoughby Local Environmental Plan 2012	Local
House (including original interiors)	Willoughby Local Environmental Plan 2012	Local
House (including original interiors)	Willoughby Local Environmental Plan 2012	Local
Northern Suburbs Ocean Outfall Sewer	Sydney Water Section 170 Heritage and Conservation Registers	Local

### 5.3.3 Heritage items in the vicinity of low impact works

Impacts to the three heritage items listed in Table 5-4 would be avoided or any potential impact would be negligible.

For Henry Lawson’s Cave, the closest surface activity to the site would be the Flat Rock Drive construction support site (BL2), located about 200 metres to the east. The mainline tunnel alignments would also pass to the north and southeast of the heritage item, with the closest portion of the tunnel being a distance of about 100 metres. The item is at sufficient distance outside the construction footprint and the tunnel alignments, and is beyond the influence of indirect impacts related to vibration and settlement. As such, impacts to this heritage item have not been carried forward for further detailed assessment.

The Commercial Building heritage item, located on Sydney Road, would be located within 20 metres of the construction footprint. Works closest to the heritage item would be limited to work required to tie-in the new access road and Sydney Road intersection to the current road alignment. Any construction work would be carried out with safeguards put in place to establish minimum working distance to achieve a vibration screening level of 2.5 millimetres per second and standard construction management measures. As such, impacts to this heritage item have not been carried forward for further detailed assessment.

The Grant’s Wharf (remains) heritage item comprises both a build item and an archaeological site, which is located on Parriwi Road, Mosman, on the east side of Spit Road. It is approximately 45 m to the east of the construction footprint of the Spit West Reserve construction support site (BL9). The project would not include construction work within the heritage curtilage of this heritage item. Works closest to the heritage item are located on the west side of Spit Road, and are limited to vehicles entering and exiting the support site from Spit Road. The item is therefore at sufficient distance outside the construction footprint and beyond the influence of indirect impacts. As such, impacts to this heritage item have not been carried forward for further detailed assessment.

Table 5-4 Heritage items in the vicinity of low impact works

Item name (heritage ID)	Location	Listing	Heritage Significance	Potential type of impact	Level of impact
Henry Lawson's Cave (Item 15)	Bicentennial Reserve, Small Street, Willoughby	N/A	Local	Indirect – vibration Indirect – settlement	Negligible
Commercial building (I25)	463 Sydney Road, Balgowlah	Manly Local Environmental Plan 2013	Local	Potential direct Indirect – vibration Indirect – visual	Negligible
Grant's Wharf (remains)	Parriwi Road	Mosman Local Environmental Plan 2012 Sydney Regional Environmental Plan No 23 – Sydney and Middle Harbours 2005	Local	Potential direct	Negligible

### 5.3.4 Landscape heritage items

Three heritage items within the study area that are listed for landscape values have been identified as being subject to negligible impact by the construction or operation of the project. These are listed in Table 5-5.

Table 5-5 Heritage items – Landscape

Item name	Location	Listing	Heritage Significance	Potential type of impact	Level of impact
Bantry Bluff	Bantry Bay/Seaforth entrance Middle Harbour, Garigal National Park, Wakehurst Parkway	Warringah Local Environmental Plan 2011	Local	Indirect – vibration Indirect – visual	Negligible
Upper Middle Harbour Area	Around an 800-hectare area west of Wakehurst Parkway, Killarney Heights	Register of the National Estate	Local	Direct Potential direct Indirect – vibration Indirect – visual	Negligible
Narrabeen Lagoon Catchment	Around a 5000-hectare area north of Wakehurst Parkway, Narrabeen	Register of the National Estate	-	Direct Potential direct Indirect – vibration Indirect – visual	Negligible

These items are large areas identified mainly for their landscape and natural values. Impacts to these heritage items have not been carried forward for further detailed assessment for the following reasons:

- Bantry Bluff is a heritage item of local significance listed in the Manly Local Environmental Plan 2013. The heritage significance of the heritage item relates to the significant backdrop it provides to Middle Harbour. The curtilage for the heritage item is outside the construction footprint. Existing mature vegetation would be retained between the construction footprint and heritage curtilage. As such, any impacts on the heritage item and its significance would be negligible.
- The Upper Middle Harbour Area is listed on the Register of the National Estate (a non-statutory register). The construction footprint enters the heritage curtilage in minor ways along the Wakehurst Parkway corridor, which may be due to the lack of resolution of the spatial data. The impacts along Wakehurst Parkway would be primarily associated with the visual changes to the landscape. While these impacts are likely to be moderate to high during construction, and moderate during operation (Arup 2020), the works are limited to the eastern boundary of the conservation area and, in the context of the total area covered by the listing, would be negligible.
- The Narrabeen Catchment Lagoon is listed on the Register of the National Estate (a non-statutory register). Activities within the heritage curtilage include the Wakehurst Parkway North construction support site (BL 14) and minor surface road integration works (line marking). The construction support site would be located in an area already used as a construction support site for the Northern Beaches Hospital Connectivity and Road Network Enhancement (Stage 2) project. The construction support site for the project would be contained within previously disturbed areas, and road works limited to existing pavements. As such, any impact on the heritage item and its significance would be negligible.

### 5.3.5 Heritage items potentially impacted

Individual Statements of Heritage Impact have been prepared for heritage items that would be subject to direct impact, potential direct impact or indirect impact from construction and operation of the project and are summarised in Table 5-6. Where impacts have been identified, it has been assumed that these would be managed through both the standard construction measures (see Section 5.2.2) and the individual measures outlined in each Statement of Heritage Impact (see Section 5.2.20) to determine the assessment of level of impact.

Heritage items situated above the tunnel alignment or adjacent to surface works, have been assessed as groups due to their proximity to each other, the similarity of impact, and similarity of mitigation measures (Section 5.4.15 and Section 5.4.16).

Table 5-6 Non-Aboriginal heritage items potentially impacted by the project

Item Number	Item Name	Heritage Significance	Impact	Level of impact
1	ANZAC Park	Local	Direct impact – Areas previously disturbed by Western Harbour Tunnel and Warringah Freeway, no impact on significance. Potential direct Indirect impacts – Visual, vibration	Negligible
2	Cammeray Park (including golf course)	Local	Direct impact – Areas previously disturbed by Western Harbour Tunnel and Warringah Freeway. Potential direct Indirect impacts – Settlement, vibration, visual and social	Moderate

Item Number	Item Name	Heritage Significance	Impact	Level of impact
3	Cammeray Conservation Area	Local	Direct impacts – Areas previously disturbed by Western Harbour Tunnel and Warringah Freeway. Potential direct Indirect impacts – Settlement, vibration, visual	Minor
4	Tarella	State	Direct impacts – possible architectural noise treatment Indirect impacts – Settlement, vibration	Negligible
5	St Thomas Rest Park	Local	Indirect impacts – Settlement, vibration	Negligible
6	Holtermann Estate A Conservation Area	Local	Direct impact – possible architectural noise treatment Indirect impacts – Settlement, vibration	Negligible
7	Artarmon Heritage Conservation Area	Local	Direct impacts – no impact on significance Indirect impacts – Settlement, vibration, visual	Negligible
8	Clive Park and Tidal Pool	Local	Potential direct Indirect impacts – Settlement, vibration, visual	Minor
9	Harbour foreshores	Local	Potential direct Indirect impacts – Settlement, vibration, visual	Minor
10	Balgowlah Golf Course	Local	Direct impact – demolition of building* and golf course Indirect impacts – Visual, social	Major
11	Frenchs Bullock Track	Local	Direct impact – partial destruction Potential direct impacts Indirect impacts – Vibration, visual	Minor
12	Bantry Bay Water Pumping Station (WPS 122)	Local	Direct impact – construction compound setup Potential direct impacts Indirect impact – Visual	Minor
13	Bantry Bay Reservoir (WS 0008)	Local	Direct impact – construction compound setup Potential direct impacts	Minor

Item Number	Item Name	Heritage Significance	Impact	Level of impact
14	Manly Dam and Surrounds	Local	Direct impacts – edge of curtilage, no impact on significance Potential direct impacts Indirect impacts – Settlement, vibration, visual	Negligible
n/a	Three heritage items situated above the tunnel alignment with potential settlement impacts	Local	Indirect impacts – Settlement, vibration	Negligible
n/a	Five heritage items situated immediately adjacent to surface works	Local	Direct – possible acoustic treatment Potential direct impacts Indirect impacts – Visual	Negligible

\* Note: for the purposes of this assessment a worst case scenario approach of demolition has been taken for Balgowlah Golf Course club house so that this potential option is fully assessed. However, further opportunities to retain and repurpose the club house would be investigated with relevant stakeholders during the dedicated consultation process and during further design development.

## 5.4 Statements of heritage impact

### 5.4.1 Item 1: ANZAC Park

#### 5.4.1.1 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 listed. However, it has been assessed in this technical working paper as being of local significance as it meets criterion D (social). See Annexure 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.

#### 5.4.1.2 Proposed works

Any works within the curtilage of ANZAC Park would be within areas previously disturbed as a result of the Warringah Freeway Upgrade component, and any works would be minor.

Key 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 Western Harbour Tunnel project. Minor works include signage, line marking, pavement works and adjustments to medians and barriers. Any construction work would be carried out with safeguards put in place to establish minimum working distance to achieve a vibration screening level of 2.5 millimetres per second and standard construction management measures
- The Cammeray Golf Course construction support site (BL1) 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. These works would likely be carried out by the Warringah Freeway Upgrade project

- Fitout of the ventilation outlet at the Warringah Freeway. The structure would be built by the Western Harbour Tunnel and Warringah Freeway Upgrade project
- Construction and fitout of the motorway facilities at the Warringah Freeway.

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

Key permanent features which would have already occurred as part of the Western Harbour Tunnel and Warringah Freeway Upgrade project works prior to the commencement of the Beaches Link construction, include:

- Upgrade and integration works along the existing Warringah Freeway, including allowance for connections to the project
- A five metre 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 further design development. This noise barrier would be built as part of Warringah Freeway Upgrade component
- Motorway facilities at the Warringah Freeway would be built as part of Western Harbour Tunnel. The facilities would be located within the existing Cammeray Golf Course construction support site, and the ventilation outlet within the Warringah Freeway
- Construction of new shared user bridge between Cammeray Park and ANZAC Park as part of the Warringah Freeway Upgrade project.

### 5.4.1.4 Impact assessment

Permanent road or ancillary infrastructure associated with the project would avoid direct impact to the heritage item as work would be situated outside its heritage boundary, and at a distance to the item.

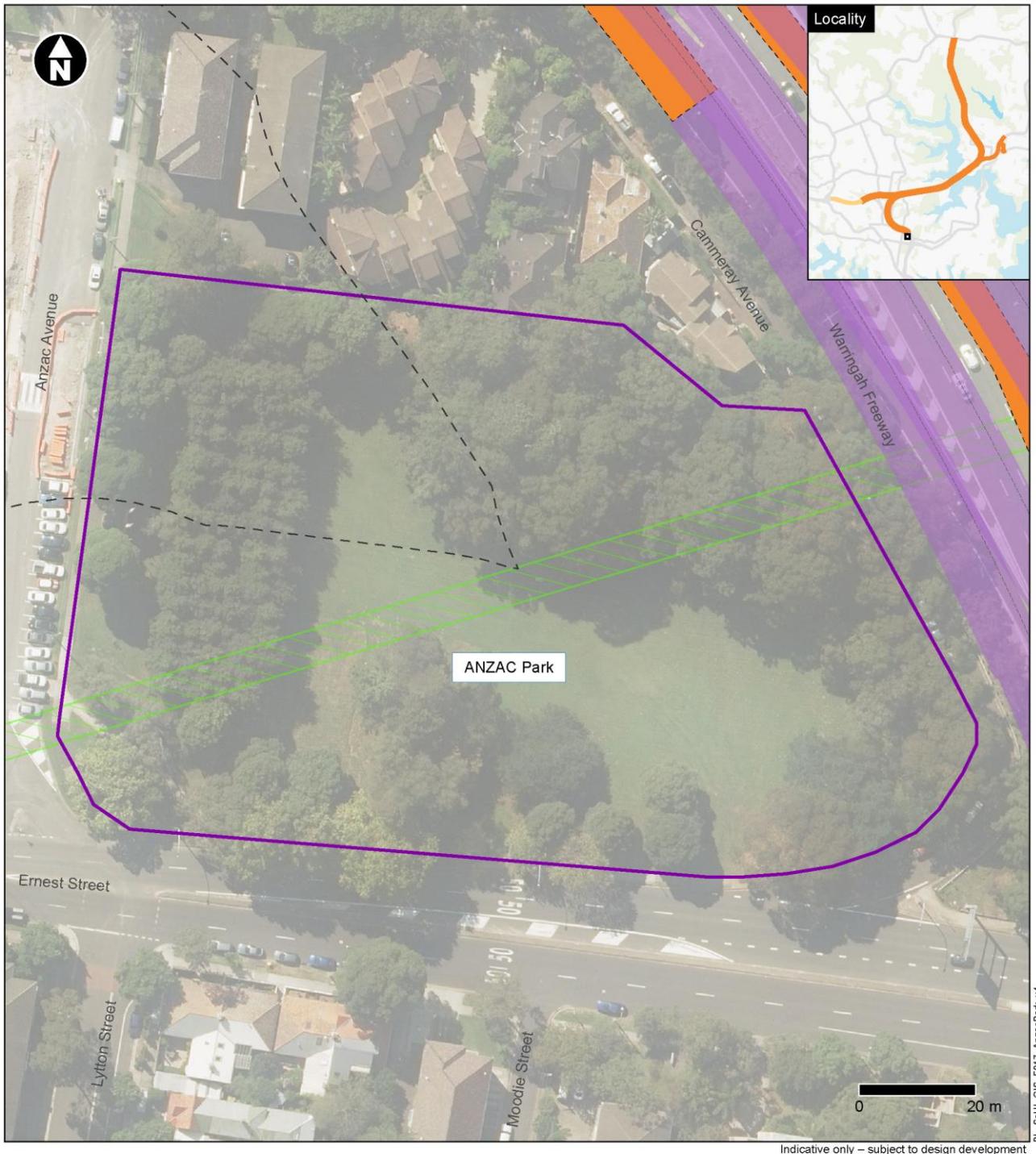
Table 5-7 outlines the following aspects of the project which could detrimentally impact on heritage significance as well as the measures that are to be taken to minimise impacts.

Table 5-7 Impact assessment – ANZAC Park, Cammeray

Impact type	Consideration
Direct	Any direct impacts would be contained within previous disturbed areas and work 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 or area of archaeological potential would be negligible.
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 also manage this risk.
Indirect – Visual	Views of the ventilation outlet and other operational infrastructure would be filtered by vegetation within the park and the future noise barrier. In particular, the stand of trees and visual setting around the war memorial would not be impacted by the project. All other works would be completed within the road reserve, or at a lower level to the item. As such, the project would have a negligible impact on the heritage item.
Indirect – Vibration	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.

5.4.1.5 Conclusion

With the implementation of the management measures described, there would be little or no impact on the heritage significance of the heritage item from any of the physical impacts. As such, the level of impact as a result of the works would be **negligible**.



Legend

- |                        |                                     |                           |
|------------------------|-------------------------------------|---------------------------|
| Study area             | Heritage items                      | Connecting projects       |
| Construction footprint | Potential heritage item             | Warringah Freeway Upgrade |
| Beaches Link           | s170 area (compiled by Jacobs 2017) |                           |

Figure 5-1 Non-Aboriginal Heritage – ANZAC Park map

## 5.4.2 Item 2: Cammeray Park (including Golf Course), Cammeray

### 5.4.2.1 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 A (historical), D (social), F (rarity), and G (representativeness). See Annexure A for full site description, photographs and significance assessment.

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

### 5.4.2.2 Proposed works

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 enabled the land use of the heritage item (Cammeray 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.

Any works within the curtilage of heritage item would be within areas previously disturbed as a result of the Western Harbour Tunnel and Warringah Freeway Upgrade project. The construction and permanent footprint for the program of works has been designed to enable the remaining land to continue to function as a golf course. Residual land (ie outside operational requirements) would be returned to enable incorporation into the golf course at the completion of construction.

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

- The Cammeray Golf Course construction support site (BL1) which would support civil works associated with the project. This includes temporary access from the Warringah Freeway
- Construction of the Beaches Link portals within the Warringah Freeway corridor, including cut and cover structures. These works would likely be carried out by the Warringah Freeway Upgrade project team
- Fitout of the ventilation outlet at the Warringah Freeway. The structure would be built by the Western Harbour Tunnel and Warringah Freeway Upgrade project
- Construction, fitout and operation of the motorway facilities at Warringah Freeway
- 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 outside operational requirements).

### 5.4.2.3 Permanent features associated with the Western Harbour Tunnel and Warringah Freeway Upgrade project

Key permanent features which would be part of the Western Harbour Tunnel and Warringah Freeway Upgrade project and would have already occurred prior to the commencement of the Beaches Link construction include:

- The site works to prepare this area for a site to support the three projects, Western Harbour Tunnel project, Warringah Freeway Upgrade project and later Beaches Link project would be carried out initially by the Warringah Freeway Upgrade project team
- Construction of new shared user bridge between Cammeray Park and ANZAC Park as part of the Warringah Freeway Upgrade project

- Upgrade and integration works along the existing Warringah Freeway, including allowance for connections to the Beaches Link and Gore Hill Freeway Connection project
- A five metre 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 design development. This noise barrier would be built as part of Warringah Freeway Upgrade
- Motorway facilities at the Warringah Freeway, built as part of Western Harbour Tunnel component. The facilities would be located within the existing Cammeray Golf Course site, and the ventilation outlet within the Warringah Freeway.

### 5.4.2.4 Impact assessment

There would be substantial impact to the heritage significance of Cammeray Park. To help 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 5-8 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 impacts. This assessment assumes that changes as a result of the Western Harbour Tunnel and Warringah Freeway Upgrade project have occurred.

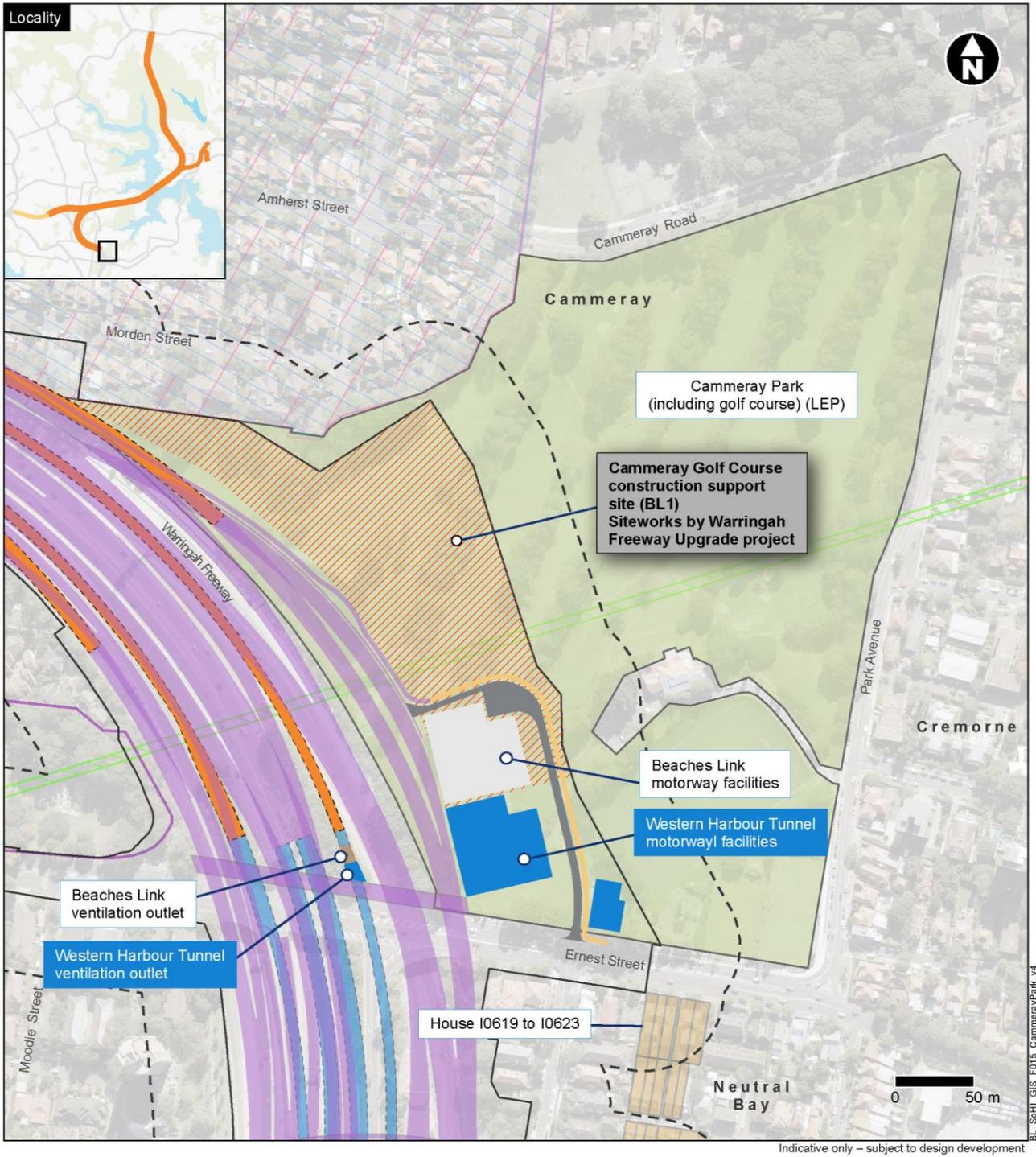
Table 5-8 Impact assessment – Cammeray Park (including Golf Course), Cammeray

Impact type	Consideration
Direct	<p>Temporary and permanent direct impacts associated with the project would be contained within areas previously disturbed by the Western Harbour Tunnel and Warringah Freeway Upgrade project. The site would initially be established as a construction support site for the Western Harbour Tunnel and Warringah Freeway Upgrade project. 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). These direct impacts would reduce the historical significance and social significance of the heritage item. Its intactness as an early reservation to protect water supply would be compromised. Its social value for general recreation facilities and open space would also be reduced.</p> <p>As the majority of the impacts would occur as a consequence of the Western Harbour Tunnel and Warringah Freeway Upgrade project, the additional impacts of the project would likely be minor (as the Beaches Link ventilation fitout and commissioning works, and motorway facilities construction and fitout works would be within the established construction support site), and the total impact of the program of works would be moderate.</p> <p>An archival photographic recording of the heritage item would be completed as a mitigation measure for the Western Harbour Tunnel and Warringah Freeway Upgrade.</p>
Potential direct	<p>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 also manage this risk.</p>

Impact type	Consideration
Indirect – Visual	<p>Temporary and permanent visual impacts would occur due to the change in land use and the presence of permanent infrastructure (motorway facilities) which would detract from the visual appeal of the heritage item. Landscape impacts during construction and operation have been rated as moderate to high, with the permanent impact to the landscape character likely to reduce as replacement planting matures over time (Arup 2020).</p> <p>The motorway facilities have been developed to reduce the perceived scale of the building and enhance its integration into the surrounding context (Arup 2020). This has been achieved through a number of approaches including 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 and open space receivers surrounding the park. The design and treatment of the facilities and outlet during further design development would look at further refinements, as well as opportunities to provide increased screening through landscape plantings. A landscape plan that utilises tree canopy to diminish the perceptible construction footprint within the park, where feasible, would also be developed.</p>
Indirect – Social	<p>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. 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. Where the park is not to be subject to ongoing operational use, it should be reinstated to allow for public access, to help reduce the impact on the social values of Cammeray Park.</p>
Indirect – Vibration	<p>The predicted vibration levels at the heritage item from tunnelling (rock breaking only) 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 levels and subject to structural review.</p> <p>The management measures outlined in Section 5.2 should be considered to control and minimise vibration impacts from the construction.</p>
Indirect – Settlement	<p>The settlement modelling for this project indicates that the ground settlement levels at Cammeray Golf Course would have a predicted maximum surface settlement of 25 - 30 millimetres and a predicted maximum surface angular distortion of 1:500. As such, the degree of severity to structures within the heritage item is 'slight'. However, the areas predicted to be impacted by settlement are contained in areas to be directly impacted by the project.</p>

#### 5.4.2.5 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**.



**Legend**

- Study area
- Construction footprint
- Beaches Link
- Beaches Link operational facilities
- Site access
- Construction site

**Heritage items**

- Register of the National Estate (DOE 2015)
- s170 area (compiled by Jacobs 2017)
- Potential heritage item
- LEP Heritage Conservation Area - General (DPE 2020)
- LEP Heritage Item - General (DPE 2020)
- LEP Heritage Item - Landscape (DPE 2020)

**Connecting projects**

- Western Harbour Tunnel operational facilities
- Western Harbour Tunnel
- Warringah Freeway Upgrade

Figure 5-2 Item 2 Cammeray Park (including Golf Course) map

### 5.4.3 Item 3: Cammeray Conservation Area

#### 5.4.3.1 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 Annexure A for full site description, photographs and significance assessment.

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

#### 5.4.3.2 Proposed works

Any works within the curtilage of the heritage item would be within areas previously disturbed as a result of the Western Harbour Tunnel and Warringah Freeway Upgrade project. This includes a number of properties within the conservation area, which would be demolished as part of that project.

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

- The Cammeray Golf Course construction support site (BL1) which would support civil works associated with the project. This includes temporary access off the Warringah Freeway
- Construction of the Beaches Link portals within the Warringah Freeway corridor, including cut and cover structures
- Fitout of the ventilation outlet at Warringah Freeway. The structure would be built by the Western Harbour Tunnel and Warringah Freeway Upgrade project
- Construction, fitout and operation of the motorway facilities at the Warringah Freeway
- 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 outside operational requirements).

#### 5.4.3.3 Permanent features associated with the Western Harbour Tunnel and Warringah Freeway Upgrade project

Key permanent features which would have already occurred as part of the Western Harbour Tunnel and Warringah Freeway Upgrade project, prior to the commencement of the Beaches Link construction include:

- The siteworks to prepare this area for a site to support the three projects, Western Harbour Tunnel project, Warringah Freeway Upgrade project and later Beaches Link project will be carried out initially by the Warringah Freeway Upgrade project team
- Construction of new shared user bridge between Cammeray Park and ANZAC Park as part of the Warringah Freeway Upgrade project
- Upgrade and integration works along the existing Warringah Freeway, including allowance for connections to the Beaches Link and Gore Hill Freeway Connection project
- A five-metre 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 Warringah Freeway built as part of Western Harbour Tunnel component. The facility would be located within the existing Cammeray Golf Course site, and the ventilation outlet within the Warringah Freeway.

#### 5.4.3.4 Impact assessment

The project would avoid direct impacts on the majority of the heritage conservation area, and the works would be contained within areas previously disturbed by the Western Harbour Tunnel and Warringah Freeway Upgrade project.

Table 5-9 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. This assessment assumes that changes as a result of the Western Harbour Tunnel and Warringah Freeway Upgrade project have occurred.

Table 5-9 Impact assessment – Cammeray Conservation Area

Impact type	Consideration
Direct	Temporary and permanent direct impacts associated with the project would be contained within areas previously disturbed by Western Harbour Tunnel and Warringah Freeway Upgrade project. As the majority of the impacts would occur as a consequence of the Western Harbour Tunnel and Warringah Freeway Upgrade project, the additional impacts of the project would likely be negligible and the total impact of the program of works would be minor (as the Beaches Link ventilation fitout and commissioning works, and motorway facilities construction and fitout works would be within the established construction support site). An archival photographic recording of the heritage item would be completed as a mitigation measure for the Western Harbour Tunnel and Warringah Freeway Upgrade.
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 also manage this risk.
Indirect – Visual	<p>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 moderate to high, with permanent impacts to the landscape character likely to reduce as replacement planting matures over time (Arup 2020).</p> <p>The motorway facilities have been developed to reduce the perceived scale of the building and enhance its integration into the surrounding context (Arup 2020). This has been achieved through a number of approaches including 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 further design development would look at further refinements, as well as opportunities to provide increased screening through landscape plantings. A landscape plan that utilises tree canopy to diminish the perceptible construction footprint where feasible, would also be developed.</p>
Indirect – Vibration	The predicted vibration levels at the heritage item from tunnelling (rock breaking only) 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 levels and subject to structural review. The management measures outlined in Section 5.2 should be considered to control and minimise vibration impacts from the construction.
Indirect – Settlement	<p>The settlement modelling for this project indicates that the ground settlement levels within the heritage conservation would have a predicted maximum surface settlement of less than 10 millimetres and a predicted maximum surface angular distortion of 1:500. As such, the degree of severity to structures within the heritage item is 'very slight'.</p> <p>To protect heritage buildings 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 buildings.</p>

#### 5.4.3.5 Conclusion

If the proposed works for the project occur after the works for Western Harbour Tunnel and Warringah Freeway Upgrade project, there would be little or no impact on heritage significance from any physical impacts. Therefore, the level of impact would be **negligible**.

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

Further mitigation and management measures are recommended in Section 7 of this report, including heritage interpretation.

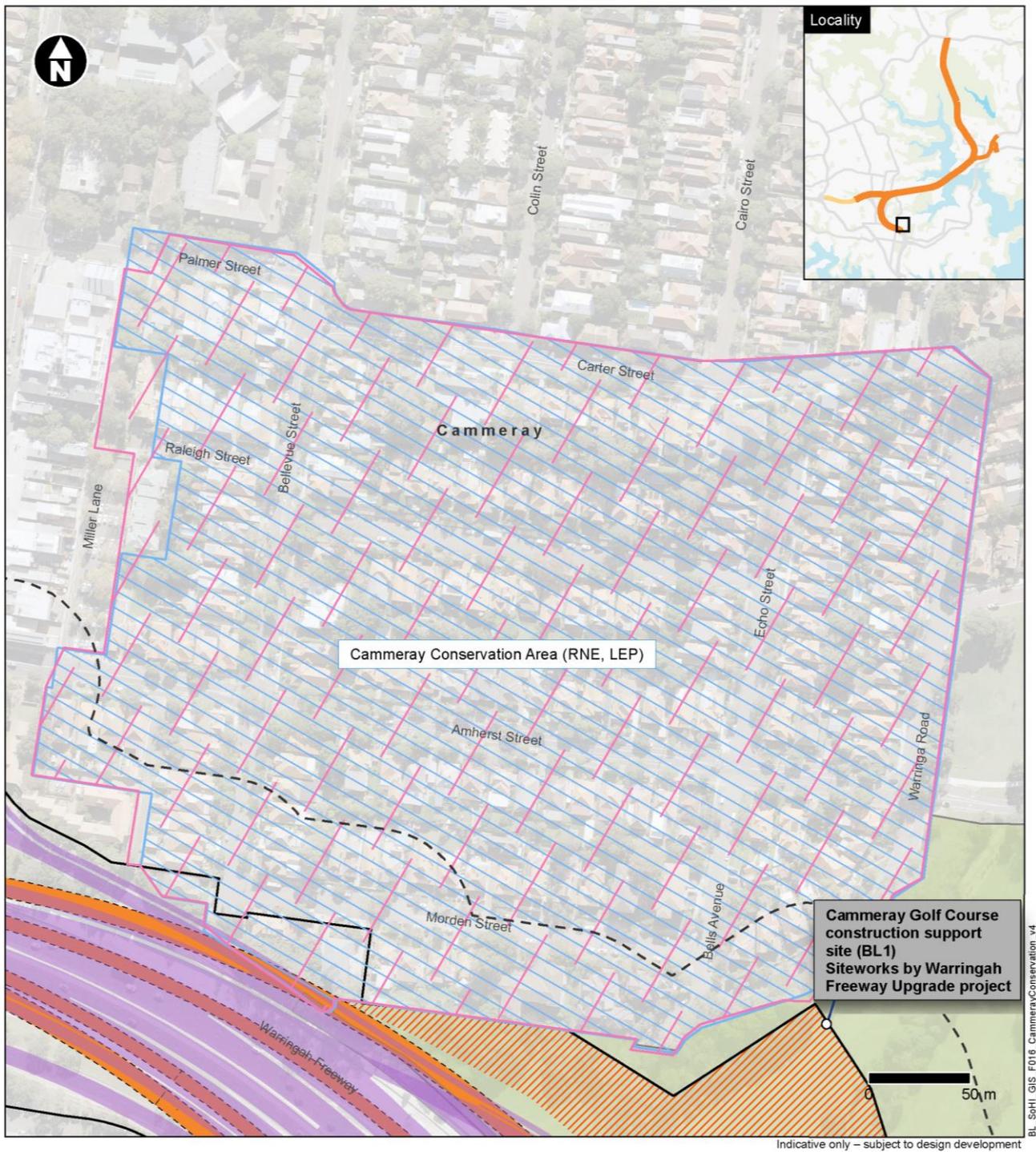


Figure 5-3 Item 3 Cammeray Conservation Area

### 5.4.4 Item 4: Tarella, Cammerayep

#### 5.4.4.1 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 A (historical), criterion B (historical association), criterion C (aesthetic), criterion F (rarity), and G (representativeness). See Annexure A for full site description, photographs and significance assessment.

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

#### 5.4.4.2 Proposed works

The mainline tunnels are located in proximity to the heritage item (around 10 metres due south and about 40 metres below existing ground level) but would not be located directly under the heritage item.

At the surface, the construction footprint abuts the heritage curtilage for the item. However, at this location only minor adjustment works would be carried out within the Warringah Freeway corridor as part of the project as described in Section 1.

A permanent noise barrier would be constructed along the southern property boundary as part of the Warringah Freeway Upgrade. The item has also been identified as being eligible for architectural noise treatment for road traffic noise mitigation. The final barrier heights and eligibility for architectural noise treatment would be determined during further design development.

#### 5.4.4.3 Impact assessment

Permanent road or ancillary operational infrastructure associated with the project would avoid direct impact to the heritage item as work would be situated outside its heritage boundary, on a lower level than that of the heritage item.

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

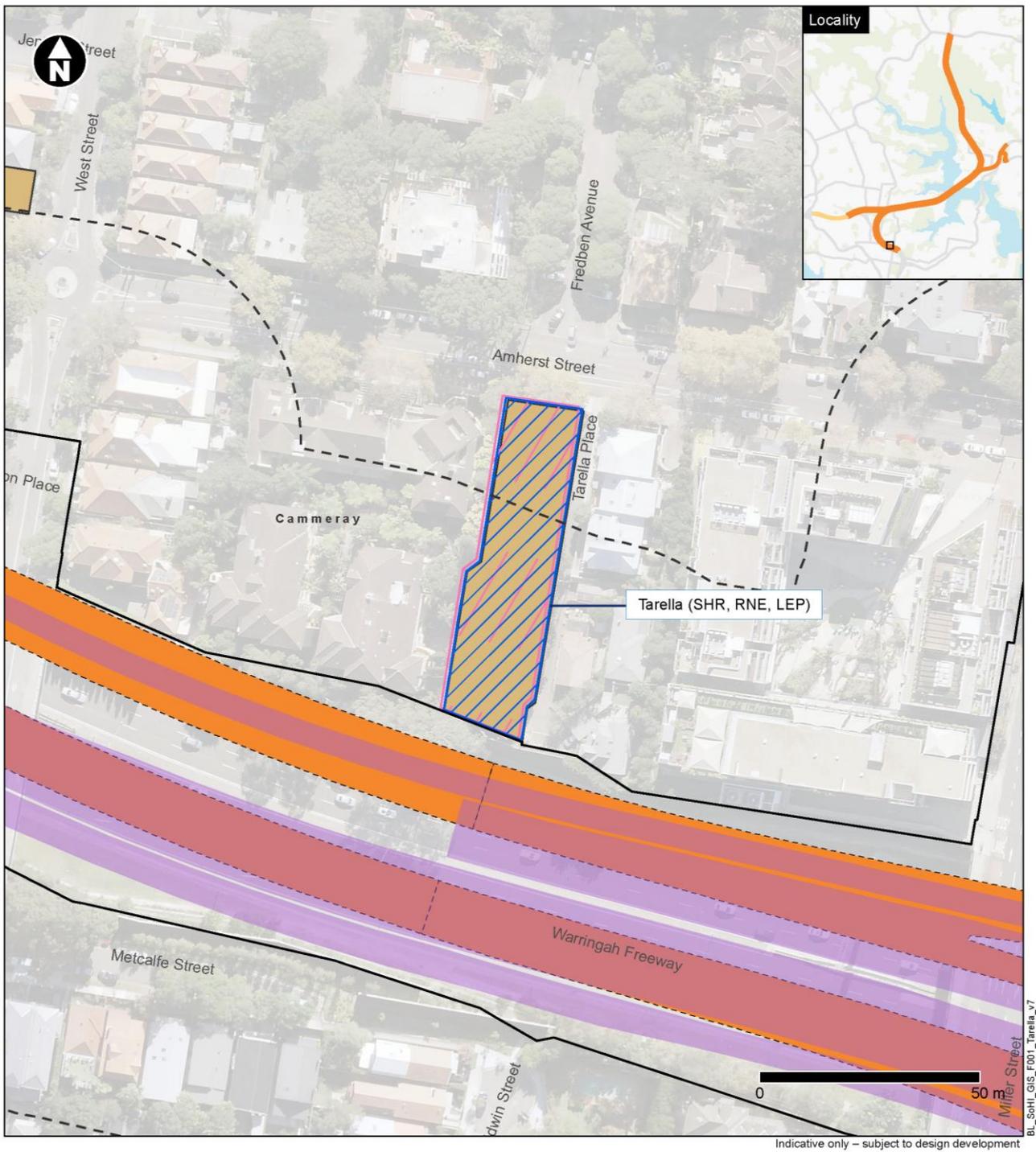
Table 5-10 Impact assessment – Tarella, Cammeray

Impact type	Consideration
Direct	<p>Direct impact to the heritage item would be restricted to architectural noise treatment. Eligibility would be confirmed during further design development and in consultation with the landowner. This may impact on the heritage fabric of the item, particularly in relation to its architectural significance as a fine example of a grand Victorian mansion.</p> <p>Should architectural noise treatment be required, this would be done in such a way to minimise heritage impact, 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.</p>

Impact type	Consideration
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 new noise barrier would be unlikely to result in indirect impact to the heritage item. A maximum barrier height of five metres was identified for this location in response to urban design considerations. The final barrier height and design (eg materials) would be determined during further design development.
Indirect – Vibration	Vibration from tunnelling activities would be below 2.5 millimetres per second. 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 the heritage item.
Indirect – Settlement	<p>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 Tarella 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'.</p> <p>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.</p>

**5.4.4.4 Conclusion**

With the implementation of the management measures described, the level of impact on the heritage item particularly in relation to its architectural significance, would be **negligible**.



**Legend**

- Study area
- Construction footprint
- Beaches Link

- Heritage items**
- State Heritage Register (DPE 2017)
  - Register of the National Estate (DOE 2015)
  - LEP Heritage Item - General (DPE 2020)

- Connecting projects**
- Warringah Freeway Upgrade

Figure 5-4 Non-Aboriginal heritage – Tarella

### 5.4.5 Item 5: St Thomas Rest Park, Crows Nest

#### 5.4.5.1 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), criterion C (aesthetic), criterion D (social) and criterion G (representativeness). Refer to Annexure 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.

#### 5.4.5.2 Proposed works

The mainline tunnels are located in proximity to the heritage item (around 15 metres due north and about 45 metres below existing ground level) but would not be located directly under the heritage item.

At the surface, the construction footprint is around two metres from the heritage curtilage for the item. However, at this location, only minor adjustment works would be carried out within the Warringah Freeway corridor as part of the project as described in Section 1.

#### 5.4.5.3 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, the project would respect the heritage significance of the item.

Table 5-11 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 5-11 Impact assessment – St Thomas Rest Park, Crows Nest

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 tunnelling activities would be below 2.5 millimetres per second. Surface work in the vicinity of the heritage item would be minor. Minimum working distances for vibration-intensive activities would be applied to avoid indirect impact to the heritage item.
Indirect – Settlement	Settlement and ground movement from tunnel excavation may cause damage to St Thomas Rest Park. 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 impact 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 **negligible**, as the proposed works would be located on a lower level outside the heritage boundary.

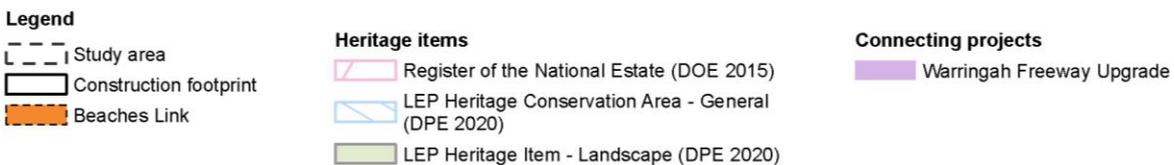
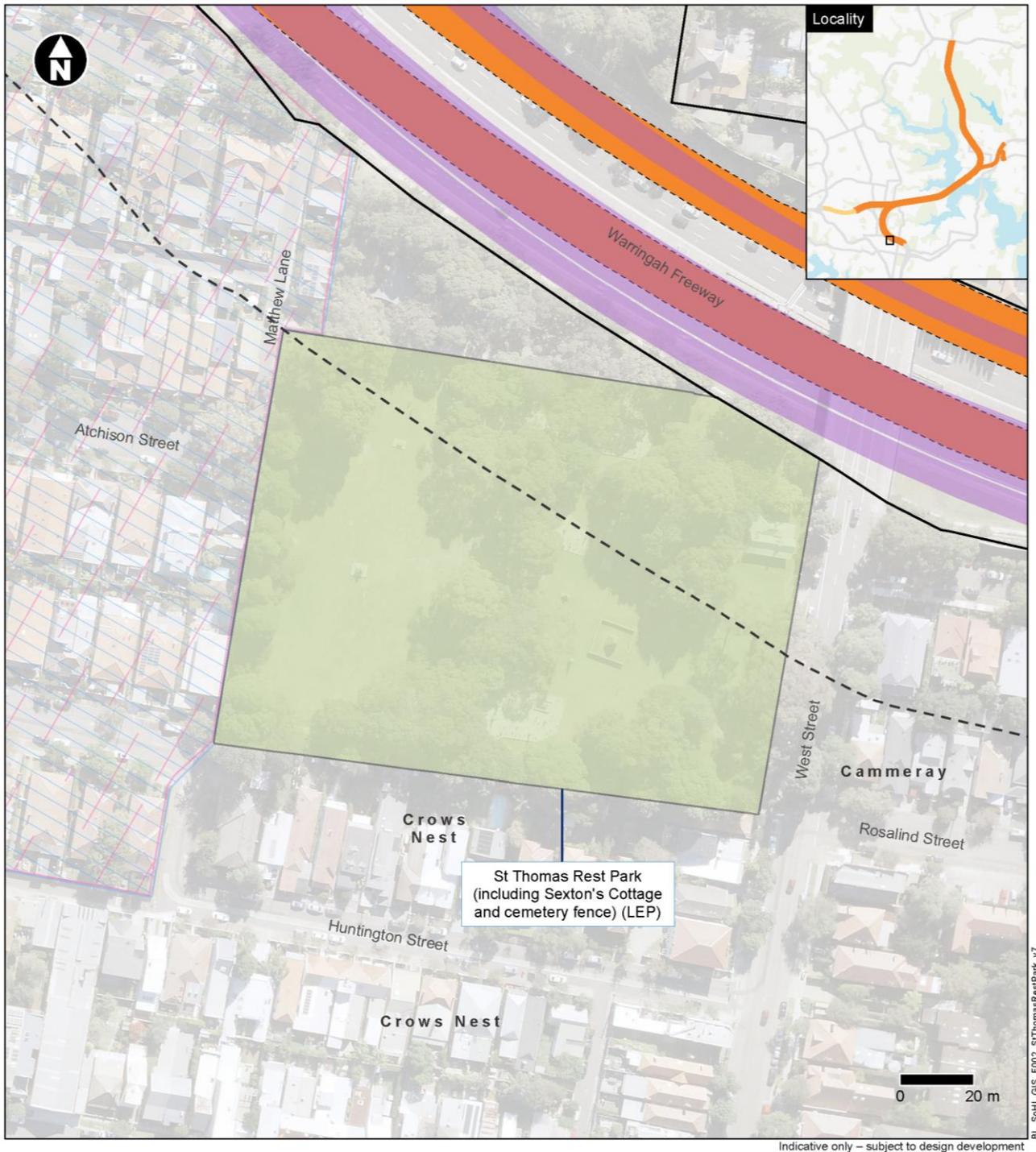


Figure 5-5 Non-Aboriginal Heritage – St Thomas Rest Park map

#### 5.4.6 Item 6: Holtermann Estate A Conservation Area. Crows Nest

##### 5.4.6.1 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 Huntingdon 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 Annexure A for full site description, photographs and significance assessment.

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

##### 5.4.6.2 Proposed works

The mainline tunnels are located in proximity to the heritage conservation area (around 10 metres due north and around 50 metres below existing ground level) but would not be located directly under the heritage item.

At the surface, the construction footprint is adjacent to the heritage conservation area (on a lower level than that of the structures within the heritage conservation area). However, at this location, only minor adjustment works would be carried out within the Warringah Freeway corridor, as part of the project as described in Section 1.

A new noise barrier would be provided along the boundary of the conservation area that is shared with the Warringah Freeway road reserve.

##### 5.4.6.3 Impact assessment

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

Table 5-12 Impact assessment – Holtermann Estate A Conservation Area, Crows Nest

Impact type	Consideration
Direct	<p>A number of residences within the conservation area have been identified as being eligible for architectural noise treatment. Eligibility would be confirmed during further design development and in consultation with the landowner. This may impact on the heritage fabric of the buildings that contribute to the values of the heritage conservation area.</p> <p>Should architectural noise treatment be required, this would be done in such a way to minimise heritage impact, 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.</p>

Impact type	Consideration
Indirect – Visual	Negligible. Only views to or across the Warringah Freeway would be impacted by the proposed noise barrier. A maximum barrier height of four metres was identified for this location in response to urban design considerations. The final barrier height and design (eg materials) would be determined during further design development.
Indirect – Vibration	Vibration from tunnelling activities would be below 2.5 millimetres per second. 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 the heritage item.
Indirect – Settlement	<p>Settlement and ground movement from tunnel excavation may cause damage to contributory heritage buildings within Holtermann Estate A Conservation Area.</p> <p>The settlement modelling for this project indicates that the ground settlement levels within Holtermann Estate A Conservation Area would have a predicted maximum surface settlement of 10-15 millimetres, and a predicted maximum surface angular distortion of less than 1:2000. As such, the degree of severity to buildings within the heritage conservation area is between 'slight' (around one per cent of the heritage conservation area) and 'very slight' (for around 92 per cent of the heritage conservation area).</p> <p>To protect heritage buildings 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 buildings. Any repairs required as a result of the settlement damage, would be carried out under the guidance of a suitably qualified heritage professional.</p>

**5.4.6.4 Conclusion**

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

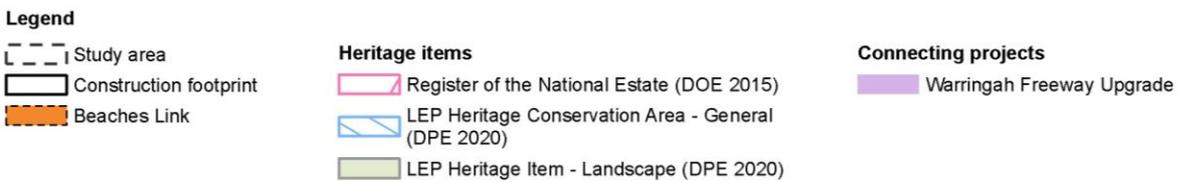
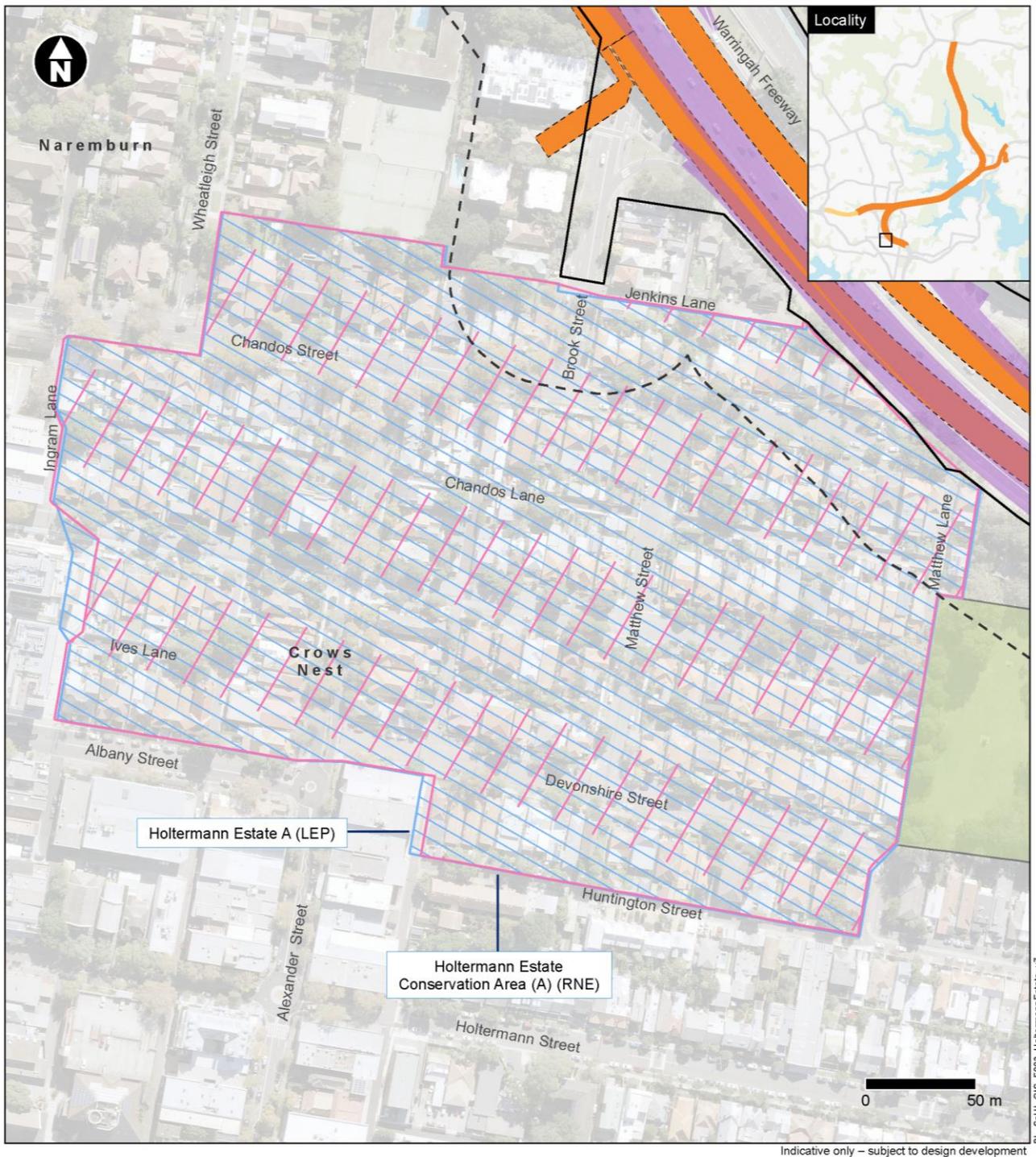


Figure 5-6 Non-Aboriginal Heritage – Holtermann Estate A Conservation Area map

### 5.4.7 Item 7: Artarmon Heritage Conservation Area

#### 5.4.7.1 Site details

The Artarmon Heritage Conservation Area comprises the area defined roughly by Mowbray Road, Sydney Street, Wyalong Street, Artarmon Road and Chelmsford Avenue, the Gore Hill Freeway and the T1 North Shore, Northern and Western Line rail line.

The heritage conservation area is listed as having local heritage significance under the Willoughby Local Environmental Plan 2012.

The conservation area is significant due to the wide range of largely intact Californian and Interwar bungalows as well as Federation housing in generally good condition, which occur in either groupings of consistent styles or with subtle blends of successive periods, producing a mix of interesting and varied streetscapes.

There are no known or suspected areas of archaeological potential within the heritage item boundary as contained in the construction footprint, therefore no further archaeological investigations are proposed.

#### 5.4.7.2 Proposed works

The on and off ramps for the connections to and from the Gore Hill Freeway Connection to the mainline tunnels are located directly below the southern extent of the heritage conservation area.

Any physical works associated with the project at the surface would be limited to the Gore Hill Freeway road reserve or existing water quality basins.

#### 5.4.7.3 Impact assessment

Works associated with the project within the heritage conservation area would be minor and restricted to previously disturbed areas. As such, the project would respect the heritage significance of the heritage item. Table 5-13 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 5-13 Impact assessment – Artarmon Heritage Conservation Area

Impact type	Consideration
Direct	Temporary or permanent works associated with the project within the heritage conservation area would be minor (such as pavement or drainage works) and restricted to previously disturbed areas. As such, any impact would be negligible.
Indirect – Visual	Any work would be restricted to previously disturbed areas. As such, any impact would be negligible.
Indirect – Vibration	Vibration from tunnelling activities (including rock breaking) would be above 2.5 millimetres per second, however the area that would experience these levels is vegetated open space (Artarmon Reserve) and no structures relevant to the listing are present. As such, any impact would be negligible.
Indirect – Settlement	Settlement and ground movement from tunnel excavation would not have an impact given the area that would be impacted by the project is a vegetated area of Artarmon Reserve (open space). As such, any impact would be negligible.

#### 5.4.7.4 Conclusion

As there would be little or no impact on heritage significance from any physical impact, the level of impact on these heritage items would be **negligible**.

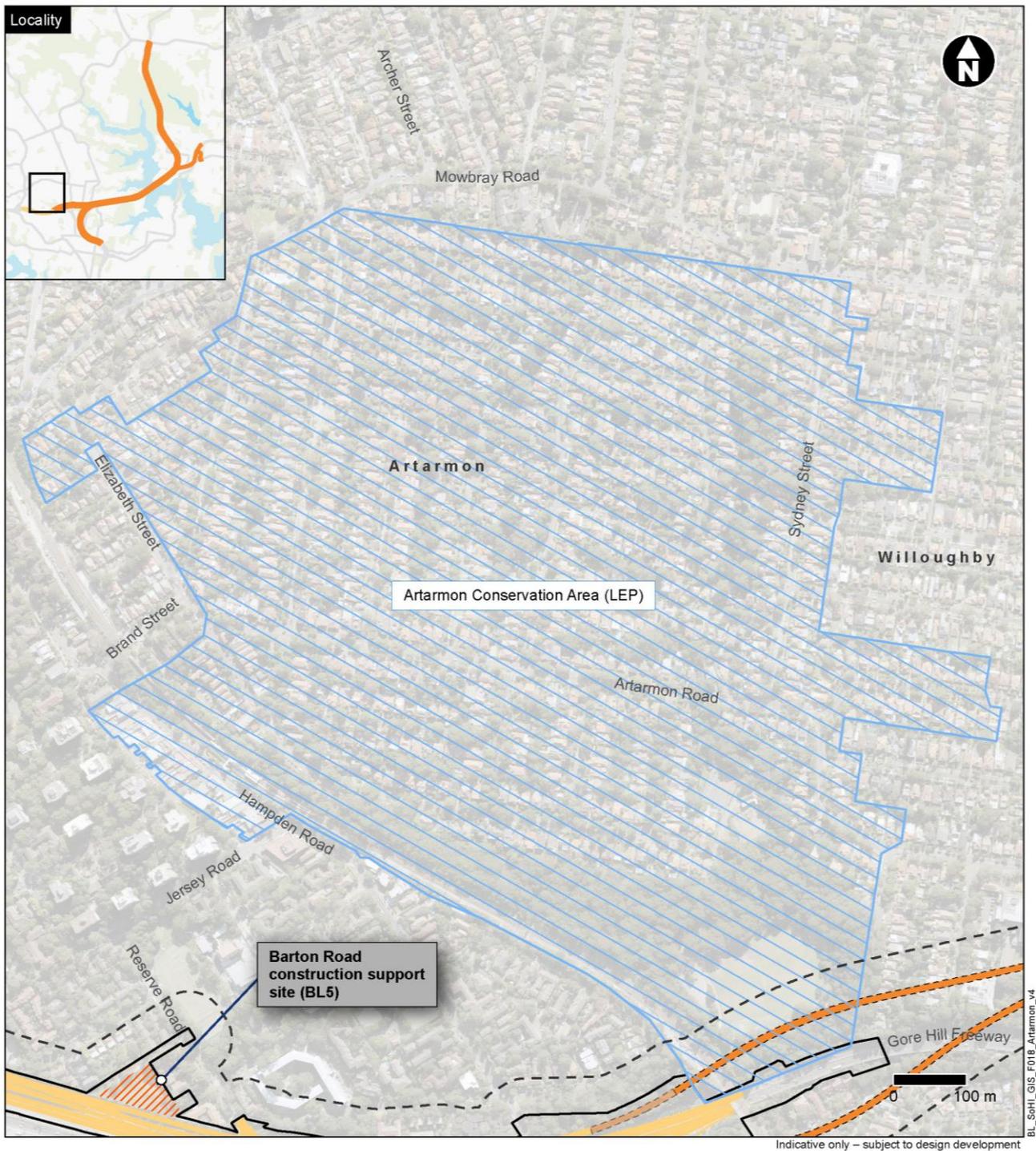


Figure 5-7 Non-Aboriginal Heritage – Artarmon Conservation Area map

### 5.4.8 Item 8: Clive Park and Tidal Pool, Northbridge

#### 5.4.8.1 Site details

Clive Park and Tidal Pool is located on Sailors Bay Road, Northbridge (Lot 7093 DP 93909 and Lot 347 DP 1130320). The heritage item is listed on the Willoughby Local Environmental Plan 2012, 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 Annexure A for full site description, photographs and significance assessment.

There are no known or suspected areas of historical archaeological potential within the heritage item boundary, therefore no further historical archaeological investigations are proposed.

The following impact assessment focuses on the land-based impacts within Clive Park and Tidal Pool, and summarises the maritime-based impacts. For details of the impact assessment related to the adjacent cofferdams in the maritime environment, refer to Technical working paper: Maritime heritage.

#### 5.4.8.2 Proposed works

The mainline tunnels are located directly below the heritage item. Offshore, adjacent to the heritage item, the Middle Harbour south cofferdam (BL7) would be installed to connect the immersed tube tunnel to the mined tunnels in this location, alongside dredging activities and the installation of the immersed tube tunnels. Following the completion of construction, no permanent features above the water would be present.

Associated with the Spit West Reserve construction support site (BL9), a mooring facility would be located to the east of Clive Park.

As described in Chapter 4 (Project development and alternatives) of the environmental impact statement, the construction method for the project has been selected to avoid direct impact on Clive Park. Specifically, the use of cofferdams has minimised temporary and permanent impacts to the shoreline and avoided direct impact to the park.

#### 5.4.8.3 Impact assessment

Permanent road or ancillary operational infrastructure associated with the project would avoid direct impact to the heritage item as work would be situated outside its heritage boundary. As such, the project would respect the heritage significance of the item.

Table 5-14 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 5-14 Impact assessment – Clive Park and Tidal Pool, Northbridge

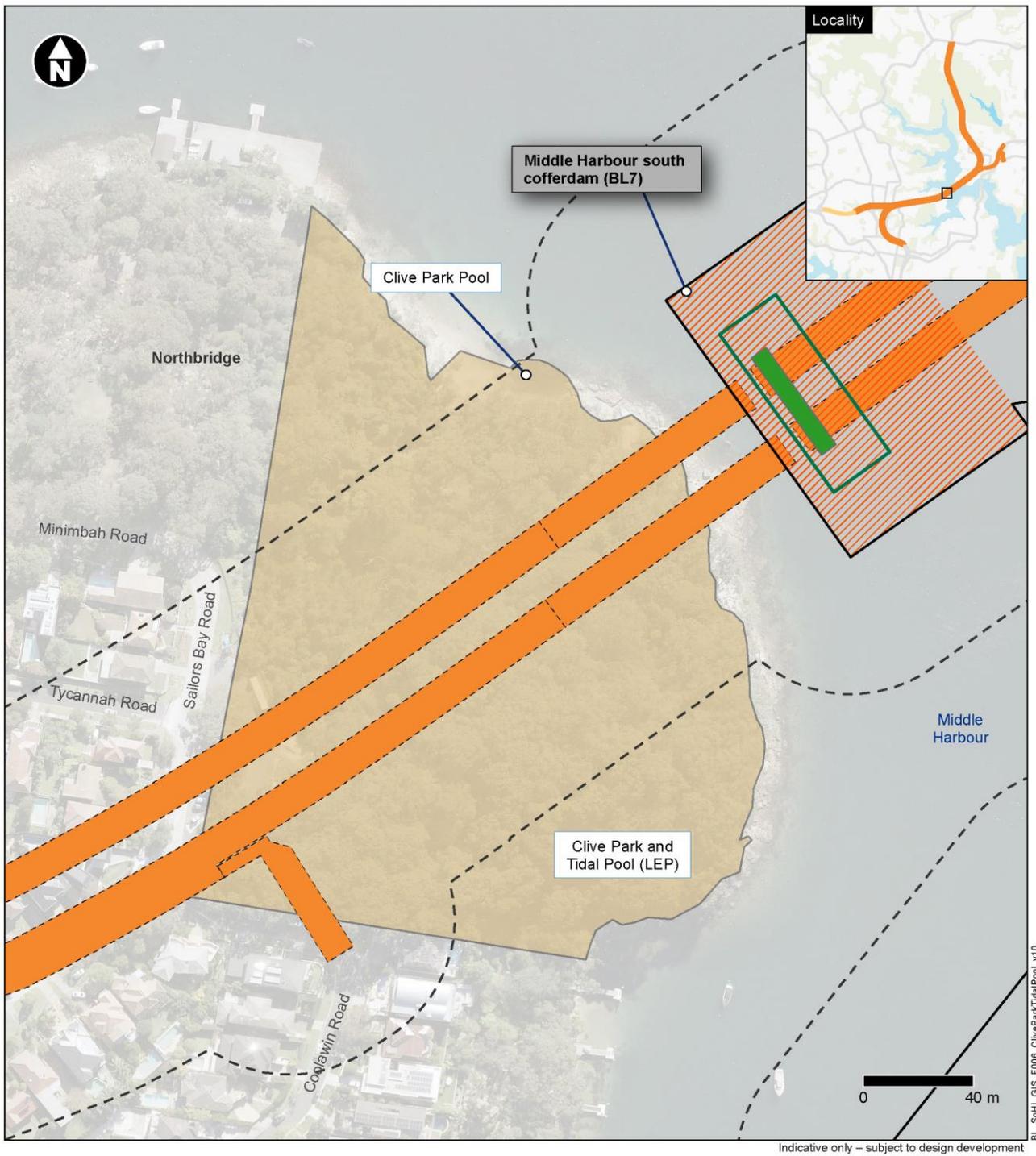
Impact type	Consideration
Direct	The project would avoid direct impact to the heritage item, as all activities at the surface would be located outside the curtilage, and the mainline tunnel would be situated around 25 metres below the ground surface.
Potential direct	As described in Technical working paper: Maritime heritage there is potential, though highly improbable, for the site to be physically impacted from anchoring by construction related-vessels. The area would be marked as a restricted zone.

Impact type	Consideration
Indirect – Visual	<p>Temporary visual impacts would occur while construction work in Middle Harbour is underway, given the presence of the cofferdams, cranes and other construction-related vessels and equipment. The impact would be considerable but considered minor given the local significance of the item. Visual impact would be more evident where views are not obstructed by mature vegetation, or where access to the shoreline is possible.</p>
Indirect – Vibration	<p>Vibration from mined tunnelling activities would not exceed 2.5 millimetres per second. Activities associated with the installation of cofferdam and other activities (primarily piling) would exceed 2.5 millimetres per second.</p> <p>As described in Technical working paper: Maritime heritage, the Clive Park and Tidal Pool is a ruin and damage caused by vibration may only slightly accelerate the natural processes already affecting an unmaintained collapsed structure in a maritime environment. This would result at most in a partial reduction in maritime heritage values intrinsic to the site through physical loss of integrity. Potential indirect impact due to vibration is considered to be minor.</p>
Indirect – Settlement	<p>Settlement and ground movement from tunnel excavation may cause damage to the heritage item which is situated above the main alignment tunnel. The settlement modelling for this project indicates that the ground settlement levels at this heritage item would not exceed a predicted maximum surface settlement of 10-15 millimetres and/or a predicted maximum surface angular distortion of 1:2000. As such, the degree of severity is 'slight'. The only structure in the heritage item is the tidal pool.</p> <p>To protect the heritage structure and reduce exposure to settlement impact (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 structure. Any repairs required as a result of the settlement damage would be carried out under the guidance of a suitably qualified heritage professional.</p>

#### 5.4.8.4 Conclusion

The construction method for the project has been selected to avoid direct impact on Clive Park. However, indirect impact would occur due to vibration, settlement and temporary changes to the visual setting of the item. The proposed work would be small/localised, and of low intensity. Therefore, with the implementation of the management measures described, the potential impact to the heritage item would be **minor**.

Further mitigation and management measures are recommended in Technical working paper: Maritime heritage.



**Legend**

- Study area
- Construction footprint
- Construction support site
- Beaches Link
- Cofferdam
- Interface structure

**Heritage items**

- LEP Heritage Item - General (DPE 2020)

Figure 5-8 Non-Aboriginal Heritage – Clive Park and Tidal Pool map

#### 5.4.9 Item 9: Harbour foreshores

##### 5.4.9.1 Site details

The Harbour foreshores is located along the Sydney Harbour foreshore at Seaforth, Clontarf, Balgowlah Heights, Balgowlah, Fairlight, and Manly, within the Manly local government area. The heritage item is listed on the Manly Local Environmental Plan 2012, and is of local significance as it meets criterion A (historical) and C (aesthetic).

The following impact assessment focuses on the land-based impacts within Harbour foreshores and summarises the maritime-based impacts. For details of the impact assessment related to the construction work in the maritime environment, refer to Technical working paper: Maritime heritage.

##### 5.4.9.2 Proposed works

At Middle Harbour, the following construction work would be carried out:

- Installation of the Middle Harbour south cofferdam (BL7) and Middle Harbour north cofferdam (BL8), the latter located adjacent to the heritage item
- Installation of supporting piles for the immersed tube tunnel units
- Dredging and installation of the immersed tube tunnel
- Establishment and use of the Spit West Reserve construction support site (BL9) and the associated mooring facility east of Clive Park.

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

##### 5.4.9.3 Impact assessment

Permanent road or ancillary operational infrastructure associated with the project would avoid direct impacts to the heritage item as work would be situated outside its heritage boundary. As such, the project would respect the heritage significance of the item.

Table 5-15 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 5-15 Impact assessment – Harbour foreshores

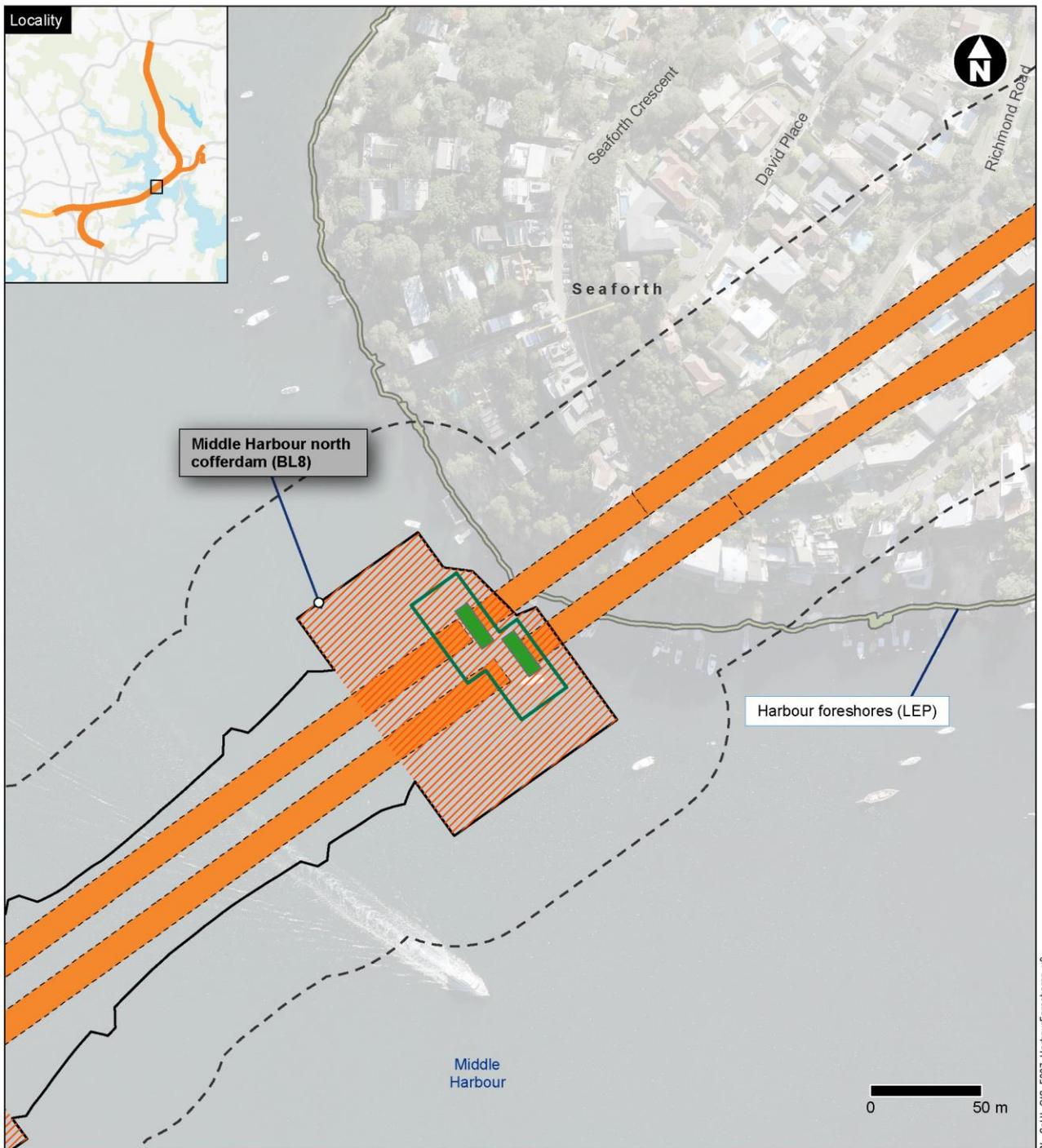
Impact type	Consideration
Direct	The project would avoid direct impact to the heritage item, as all activities at the surface would be located outside the curtilage, and the mainline tunnel would be situated well below the ground surface. It is improbable that the installation of the Middle Harbour north cofferdam (BL8) would have direct impact on the heritage item (Cosmos Archaeology 2020). The harbour foreshore would be marked as restricted zones.
Potential direct	As described in Technical working paper: Maritime heritage (Cosmos Archaeology 2020), there is potential, though improbable, for the site to be physically impacted from anchoring by construction related-vessels.
Indirect – Visual	Temporary visual impact would occur while construction works in Middle Harbour are underway, given the presence of the cofferdams, cranes and other construction-related vessels and equipment. This impact would be considerable but considered minor given the local significance of the item (Technical working paper: Maritime heritage).

Impact type	Consideration
Indirect – Vibration	<p>Vibration from mined tunnelling activities would not exceed 2.5 millimetres per second. Activities associated with the installation of cofferdam and other activities (primarily piling) would exceed 2.5 millimetres per second.</p> <p>As described in Technical working paper: Maritime heritage, this would result at most in a partial reduction in maritime heritage values intrinsic to the site through physical loss of integrity. Potential indirect impact due to vibration is considered to be minor.</p>
Indirect – Settlement	<p>Settlement and ground movement from tunnel excavation may cause damage to the contributory features of the heritage item, only where these features are located in areas impacted by settlement (being generally in proximity to the main alignment tunnels).</p> <p>The settlement modelling for this project indicates that the ground settlement levels at this heritage item would not exceed a predicted maximum surface settlement of 20-30 millimetres. As such, the degree of severity is 'slight' (Cosmos Archaeology 2020). The only structures in the heritage item that could be impacted by this settlement are sandstone retaining walls and timber wharf structures.</p> <p>To protect heritage structures and reduce exposure to settlement impact (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 structures. Any repairs required as a result of the settlement damage would be carried out under the guidance of a suitably qualified heritage professional.</p>

**5.4.9.4 Conclusion**

The construction methodology for the project has been selected to avoid direct impact on heritage items, however, indirect impacts would occur due to vibration, settlement and temporary changes to the visual setting of the item. The proposed work would be small/localised and of low intensity. Therefore, with the implementation of the management measures described, the level of impact on the heritage items would be **minor**.

Further mitigation and management measures are recommended in Technical working paper: Maritime heritage.



**Legend**

- Study area
- Construction footprint
- Construction support site
- Beaches Link
- Cofferdam
- Interface structure

**Heritage items**

- LEP Heritage Item - Landscape (DPE 2020)

Figure 5-9 Non-Aboriginal Heritage – Harbour foreshores map

#### 5.4.10 Item 10: Balgowlah Golf Course, Balgowlah

##### 5.4.10.1 Site details

Balgowlah Golf Course is located at 506 Sydney Road, Balgowlah (Lot 2684 DP752038; Lot 110 DP774196). The item is not listed. However, it has been assessed in this technical working paper as being of local significance as it meets criterion A (historical), and B (historical association). See Annexure A for full site description, photographs and significance assessment.

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

##### 5.4.10.2 Proposed works

The Balgowlah Golf Course would be significantly impacted by the project and would no longer function as a golf course once construction commences. The proposed works would be of large scale and major intensity, with portions of the golf course being modified through the construction of new and improved open space and recreation facilities.

A dedicated consultation process jointly led by Transport for NSW and Northern Beaches Council would take place to give the community an opportunity to provide input on the final layout of the new and improved open space and recreation facilities. This consultation would be separate to the consultation for the environmental impact statement. This process would start after the environmental impact statement public exhibition period and well in advance of construction starting. As part of this consultation process, a community reference group would be established, with representative stakeholder groups and the community, to support Transport for NSW and Northern Beaches Council with the development of this important public space.

Note that for the purpose of this assessment, a worst case scenario approach has been taken for the club house. As such, it has been assumed that the club house would be demolished, which is a conservative assumption so that this potential option is fully assessed. However, opportunities to retain and repurpose the club house would be investigated with relevant stakeholders during the dedicated consultation process described above and during further design development.

Key activities at the golf course and adjacent areas include:

- Demolition of existing structures (as stated above, for the purposes of this assessment it has been assumed that the club house would be demolished; however, further opportunities to retain and repurpose the building would be investigated with relevant stakeholders during further design development)
- Construction and operation of temporary construction support site facilities, including an acoustic shed, temporary noise barriers, workshops, wastewater treatment facility, air intake, staff offices and amenities, pavements and car parking and concrete batch plant
- Localised adjustment of a small section of Burnt Bridge Creek for road widening and existing culvert extension works
- Construction of the new and improved open space and recreation facilities (refer to Chapter 5 (Project description) and Chapter 6 (Construction work) in the environmental impact statement for further detail). Construction would be staged, and the final layout would subject to a dedicated consultation process with the community and jointly led by Transport for NSW and Northern Beaches Council
- Excavation of an access decline to the ramp tunnel alignment
- Excavation of the tunnels and cross passages under Seaforth between Balgowlah and Middle Harbour
- Treatment of wastewater from tunnelling activities
- Excavation, handling and stockpiling of tunnel spoil
- Support for tunnel fitout (driven and immersed tube tunnels) and finishing works

- Utility works associated with surface works, the temporary construction support site, and permanent operational infrastructure
- Support for cut and cover works, trough works, surface works and road widening works at Burnt Bridge Creek Deviation and Sydney Road
- Construction of a new access road between Burnt Bridge Creek Deviation and Sydney Road to provide connectivity between the project and Sydney Road and service future users of the new and improved open space and recreation facilities. This would include construction of new traffic lights at Sydney Road and at Burnt Bridge Creek Deviation. A carpark would also be constructed for users of the new and improved open space and recreation facilities
- Construction of retaining walls
- Construction of permanent operational facilities, including a ventilation outlet and motorway facilities
- Additional support for construction of the immersed tube tunnels at the Spit West Reserve construction support site (BL9)
- Construction of new active transport links through the new and improved open space and recreation facilities and along the widened section of Burnt Bridge Creek Deviation
- Backfill of access decline
- Testing, commissioning and site rehabilitation.

The golf course is on State of NSW owned land and would be wholly used for both the project and the new and improved open space and recreation facilities.

As discussed in Chapter 4 (Project development and alternatives) in the environmental impact statement, a range of options were considered, including an option that avoided direct impacts to the golf course. The preferred design at Balgowlah was selected as it provided constructability benefits, reduced private property impacts and environmental impacts. It also provided the opportunity to convert the golf course into new and improved public open space and recreational facilities at Balgowlah, in line with Northern Beaches Council initiatives.

The design of operational road and ancillary infrastructure at this location has been optimised to provide opportunities for the re-purposing of the residual crown land as new and improved open space and recreation facilities. However, due to the size and configuration of the residual land, the continued operation of Balgowlah Golf Course at this site would be unfeasible. The end uses of the residual land would ultimately be determined through the dedicated consultation process jointly led by Transport for NSW and Northern Beaches Council.

### 5.4.10.3 Impact assessment

There would be substantial impact to the heritage significance of Balgowlah Golf Course. To help ameliorate this, an indicative layout of permanent infrastructure and operational facilities at Balgowlah has been proposed to enable opportunities for new and improved open space and recreation facilities in residual land at Balgowlah Golf Course. Construction of the new and improved open space and recreation facilities at Balgowlah would be delivered progressively. Commencement of these staged works would be subject to completion of the dedicated consultation process described earlier.

Table 5-16 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 5-16 Impact assessment – Balgowlah Golf Course

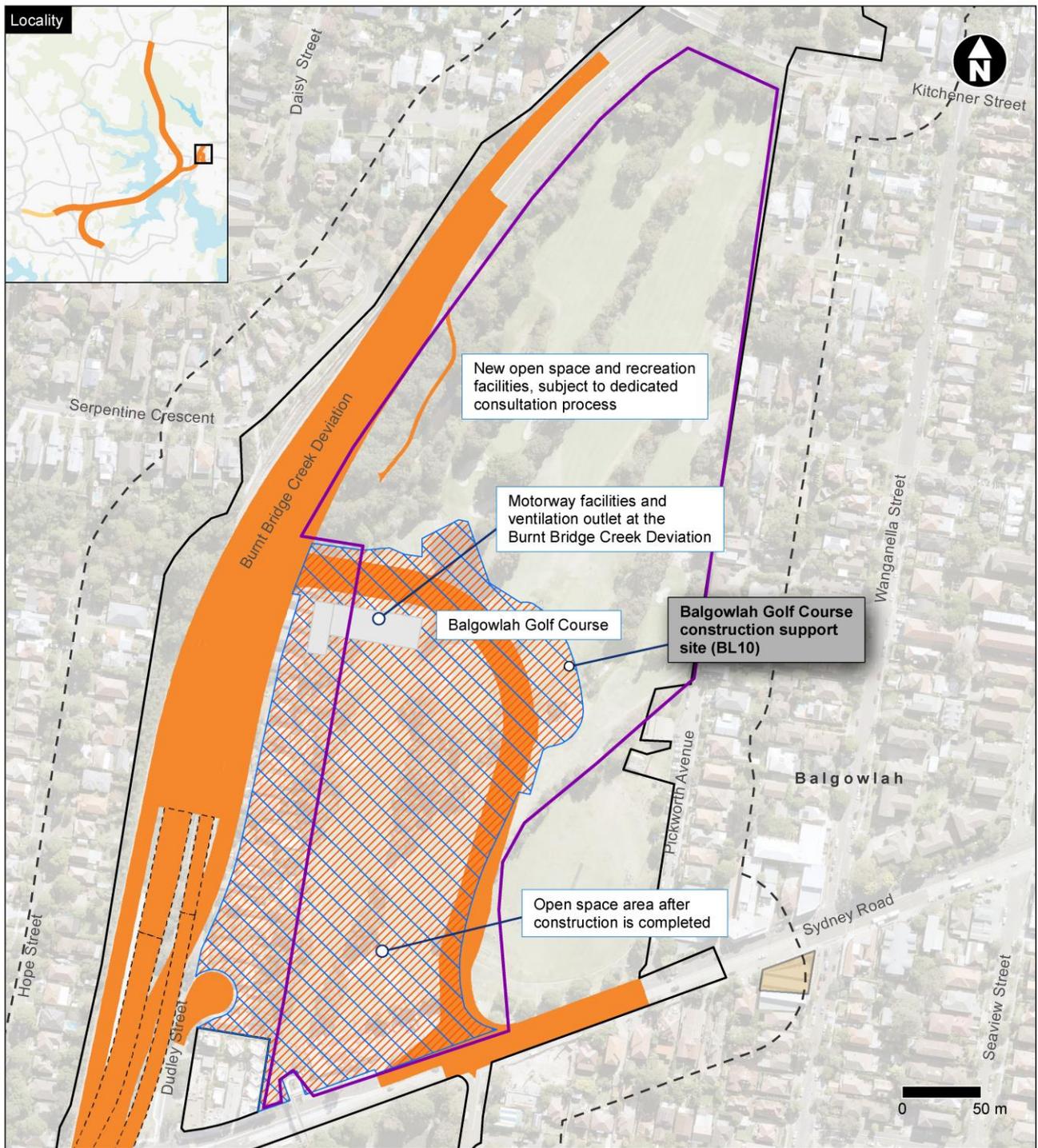
Impact type	Consideration
Direct	<p>For the purposes of this assessment, the project would result in the modification of portions of the potential heritage item (including potential demolition of the club house, which is subject to further consultation) and would result in the direct loss of heritage fabric. Note that this is a worst-case scenario approach for the club house. Further opportunities to retain and repurpose the club house would be investigated with the relevant stakeholders during the dedicated consultation process described earlier and during further design development.</p> <p>The residual crown land not impacted by the permanent infrastructure and operational facilities would be made available for new and improved open space and recreation facilities (providing for the continuation of one of the aspects of its significance). In this regard, to mitigate the impact of the project, Transport for NSW together with Northern Beaches Council and other relevant stakeholders would investigate the repurposing of the existing golf course as an area of high quality recreational open space for the community. Further discussion about urban design and landscaping works related to this park is in the Technical working paper: Urban design, landscape character and visual impact (Arup 2020).</p> <p>As the heritage item, including the golf course, would be substantially changed by these works, an archival photographic recording of the heritage item would be carried out, in accordance with the guidelines <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i>. As this project and the Western Harbour Tunnel and Warringah Freeway Upgrade project impact both the Balgowlah Golf Course and 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 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 and Balgowlah Golf Courses, therefore reducing the overall impact on that type of heritage item. The thematic study would be carried out as part of the Western Harbour Tunnel and Warringah Freeway Upgrade project.</p>
Indirect – Visual	<p>Temporary and permanent visual impacts would occur due to the change in land use, and the construction of permanent operational infrastructure (such as the new access road and the ventilation outlet and motorway facilities), as they would detract from the visual appeal of the heritage item. Due to the physical impact on the heritage item, much of the heritage significance would already be lost, and the changed nature of the heritage item from a grassed open space to partial roadway and other facilities, would visually change the heritage item. Some views to the open space from the east could also be obstructed by permanent noise barriers.</p> <p>As a mitigation measure, the operational facilities would be screened from neighbouring residences and future park users using suitable vegetation surrounding these facilities. Additionally, the operational facilities would be designed to blend into the surrounding environment and be as unobtrusive as possible. The longer-term strategy for residual land as open space and recreation facilities would further mitigate permanent indirect impacts.</p>
Indirect – Social	<p>Permanent social impact may occur due to the repurposing of the heritage item. The level of potential social impact would be reduced given that the project would return an area, equivalent to around 90 per cent of the current open space, to the community as new and improved public open space and recreation facilities.</p>

#### 5.4.10.4 Conclusion

The proposed works would be of large scale and major intensity, with large portions of the golf course being modified through the construction of the permanent access road, operational infrastructure and provision of new and improved open space and recreation facilities. The changes to the Balgowlah Golf Course would be permanent and irreversible as the heritage item would no longer demonstrate its original character as an interwar period golf course. The Balgowlah Golf Club house building may also be demolished. For the purposes of this assessment, a worst-case scenario approach for the club house has been adopted, assuming its demolition, with further opportunities to retain and repurpose the club house to be investigated with the relevant stakeholders during the dedicated consultation process jointly led by Transport for NSW and Northern Beaches Council, and during further design development. While the implementation of the management measures described would record information about the physical nature of the heritage item as it currently exists, the level of impact on the heritage item would still be **major**.

There are limited areas for construction support sites in the vicinity of the project, and limited options to physically connect the project to Sydney Road and Burnt Bridge Creek Deviation (see further discussion in Section 4.5.5 of the environmental impact statement). On balance, the project is the better performing option against the design refinement criteria, and the impacts to the heritage item cannot be avoided.

Further mitigation and management measures are recommended in Section 7 of this report, including heritage interpretation.



**Legend**

- Study area
- Construction footprint
- Construction support site
- Beaches Link
- Beaches Link surface
- Open space area after construction is completed
- Beaches Link operational facility

**Heritage items**

- Potential heritage item
- LEP Heritage Item - General (DPE 2020)

Figure 5-10 Non-Aboriginal Heritage – Balgowlah Golf Course map

### 5.4.11 Item 11: Frenchs Bullock Track, Killarney Heights

#### 5.4.11.1 Site details

Frenchs Bullock Track is located adjacent to the Wakehurst Parkway, Killarney Heights. The heritage item is listed on the Warringah Local Environmental Plan 2011, and is of local significance as it meets criterion A (historical) and C (aesthetic). See Annexure A for full site description, photographs and significance assessment.

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

The curtilage of this heritage item largely follows the walking trail known as the Engravings Track.

#### 5.4.11.2 Proposed works

Construction and permanent infrastructure would be located within the heritage curtilage for this item. The construction footprint enters the boundary of this heritage item at various points, however this may be a result of the low resolution of spatial data for the heritage curtilage.

The key activities or project components in the general vicinity of the heritage item include:

- Construction work associated with the project, including earthworks
- Minor temporary work along Kirkwood Street immediately adjacent to the heritage item, and limited to the existing road reserve
- On and off ramps to connect the mainline tunnels with the Wakehurst Parkway in Killarney Heights, and portal structures
- A ventilation outlet and motorway facilities at the Wakehurst Parkway. The ventilation facility would be located within the Wakehurst Parkway road corridor, about 500 metres north of Seaforth Oval
- Upgrade and integration works along the Wakehurst Parkway, at Killarney Heights. This includes realignment of Wakehurst Parkway in the vicinity of the connections to Beaches Link, the widening of the Wakehurst Parkway from one lane in each direction to two lanes in each direction from the portal structures to the intersection of the Wakehurst Parkway with Warringah Road
- A new active transport link located adjacent to the southbound lanes of the Wakehurst Parkway, with an underpass provided to connect to the Engravings Track
- Permanent noise barriers along part of the northbound lanes of the Wakehurst Parkway, to the north of the heritage curtilage.

For the northern sections of the Frenchs Bullock Track, the reference design road embankments would require the track to be reformed, and would largely follow the existing alignment for the track. During detailed design, there is an opportunity for road embankment designs to be adjusted to lessen the impacts on the Track. Due to the low resolution of the spatial data for the heritage curtilage, a section to the south would appear to be impacted by the existing alignment of the Wakehurst Parkway and would be further impacted by the project. The opportunity exists for road embankment designs to be adjusted to lessen the impacts on the Track. However, the Engravings Track, which largely follows the curtilage of the Frenchs Bullock Trail, in this area would not be impacted.

As discussed in Chapter 4 (Project development and alternatives) in the environmental impact statement, a range of options for the connection to and from the Wakehurst Parkway were considered. This included options further to the south and north of the preferred project design. The preferred project design was selected as it places the portal and ventilation facility at least 250 metres from the closest residents, reduces amenity impacts on adjacent properties associated with the portals and provides for a more efficient flatter grade in the connections to and from the Wakehurst Parkway.

The project would have direct impact on around 20 per cent of the heritage item (based on current spatial data). Table 5-17 outlines the following aspects of the project which could detrimentally impact on heritage significance.

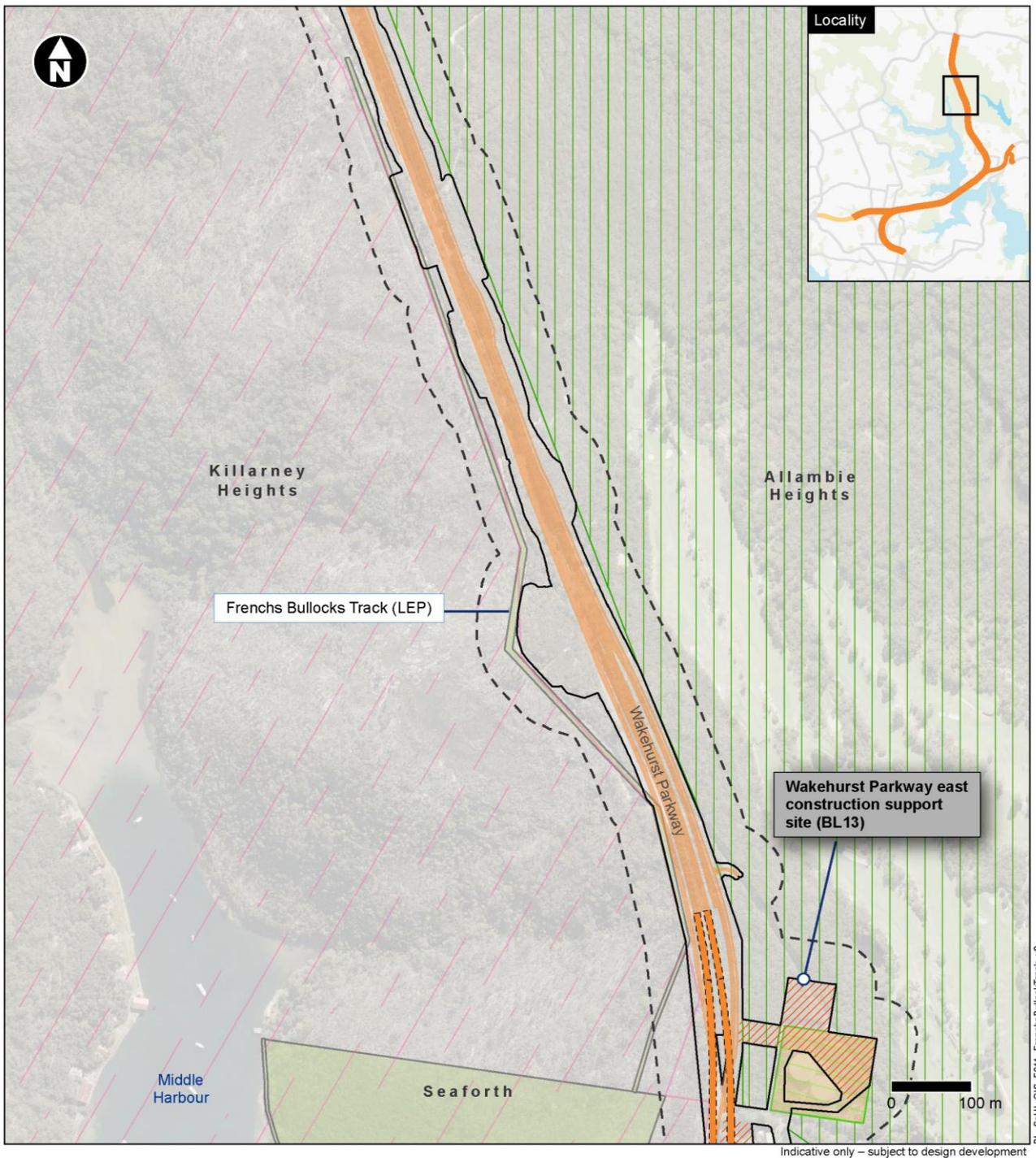
Table 5-17 Impact assessment – Frenchs Bullock Track, Killarney Heights

Impact type	Consideration
Direct	<p>Where direct impacts in the northern section of the Frenchs Bullock Track would likely occur due to permanent infrastructure, further detailed survey and design development would be completed prior to construction to confirm if impacts can be either eliminated or reduced further. Should the Track remain impacted, it would be reformed as close as possible to the existing alignment.</p> <p>Where direct impacts to the southern section are likely to occur, further detailed survey and design development would be completed prior to construction to confirm if impacts can be either eliminated or reduced further. Further design development would be used to determine if this section remains partially intact (noting the curtilage extends into the existing road corridor, based on available spatial data). However, impacts would be avoided if it is confirmed that the track in this location follows the Engravings Track, which would not be directly impacted.</p> <p>Elsewhere, where the Frenchs Bullock Track appears to be within the construction footprint (but no permanent infrastructure is proposed), the Track would be avoided where possible to minimise the total length to be disturbed. Outside of the overlapping areas, these would be protected from impact as discussed under 'Potential indirect'.</p> <p>An archival photographic recording of the Frenchs Bullock Track would be carried out, in accordance with the guidelines <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (Heritage Council of NSW 2006).</p>
Potential direct	<p>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.</p>
Indirect – Visual	<p>Changes to the landscape along Wakehurst Parkway and viewpoints from the Frenchs Bullock Track would be moderate to high during construction, and moderate once operational (reducing further as replacement plantings mature) (Arup 2020).</p> <p>Temporary and permanent aesthetic impacts would occur due to roadworks occurring immediately adjacent to, or within, the curtilage of the heritage item, as the heritage item is assessed as aesthetically significant for its high degree of technical expertise in bridges and track formation.</p> <p>Elsewhere, the prevention of access by construction vehicles where direct permanent impact might otherwise occur, would avoid visual impacts.</p> <p>A permanent noise barrier would be located to the north of the heritage item and would not have visual impact on the heritage item.</p>
Indirect – Vibration	<p>The predicted vibration levels at the heritage item would be above 2.5 millimetres per second. There is a medium risk of damage to the built elements of heritage item (drainage works, bridges and stone walling), subject to confirming the location of these features relative to the construction activities and a structural review of the heritage structures.</p> <p>The management measures outlined in Section 5.2 should be considered to control and minimise vibration impact from the construction.</p>

#### 5.4.11.3 Conclusion

The proposed work would be of small and localised scale and of low intensity, with a small section of the Frenchs Bullock Track potentially being permanently modified by a slope associated with roadworks extending into the curtilage of the item. Further detailed survey and design development would be completed prior to construction to confirm if impacts can be either eliminated or reduced further.

If required, this work would be a permanent and irreversible change to around 20 per cent of the track, and this work does not impact the significant heritage components of the item, as the majority of the track remains *in situ* and would continue to display its historical and aesthetic significance. As such, the level of impact on the heritage item would be **minor**.



**Legend**

- Study area
- Construction footprint
- Construction support site
- Beaches Link surface
- Beaches Link

**Heritage items**

- Register of the National Estate (DOE 2015)
- s170 area (compiled by Jacobs 2017)
- LEP Heritage Conservation Area - Landscape (DPE 2020)
- LEP Heritage Item - General (DPE 2020)
- LEP Heritage Item - Landscape (DPE 2020)

Figure 5-11 Non-Aboriginal Heritage – Frenchs Bullock Track map

## 5.4.12 Item 12: Bantry Bay Water Pumping Station (WPS 122), Killarney Heights

### 5.4.12.1 Site details

Bantry Bay Water Pumping Station (WPS 122) is located at Lot 1 Kirkwood Street, Killarney Heights, on Lot 1 DP 835123. The heritage item is listed on the Warringah Local Environmental Plan 2011 and the Sydney Water Section 170 Heritage and Conservation 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 Annexure A for full site description, photographs and significance assessment.

There are no known or suspected areas of archaeological potential within the area, therefore no further archaeological investigations are proposed.

### 5.4.12.2 Proposed works

Proposed works would involve the Wakehurst Parkway east construction support site (BL 13) which intersects with the heritage curtilage of Bantry Bay Water Pumping Station (WPS 122). Construction support site works would include clearing and grubbing, topsoil stripping, bulk earthworks, minor retaining structures to reshape and regrade existing site. This would be followed by construction and operation of temporary construction facilities, including an acoustic shed, temporary noise barrier, workshop, wastewater treatment facility, air intake, staff offices and amenities, pavements and car parking. The construction support site would include a tunnel access decline, a ventilation plant, and laydown area. However, the site office, ventilation plant, and tunnel access decline are outside the heritage curtilage of the heritage item.

### 5.4.12.3 Impact assessment

The project would have direct, potential direct, and indirect impacts on the heritage item, however, it would avoid direct impacts to the key heritage component of the heritage item: the 1924 reinforced concrete pumping station structure.

Table 5-18 outlines the following aspects of the project which could detrimentally impact on heritage significance.

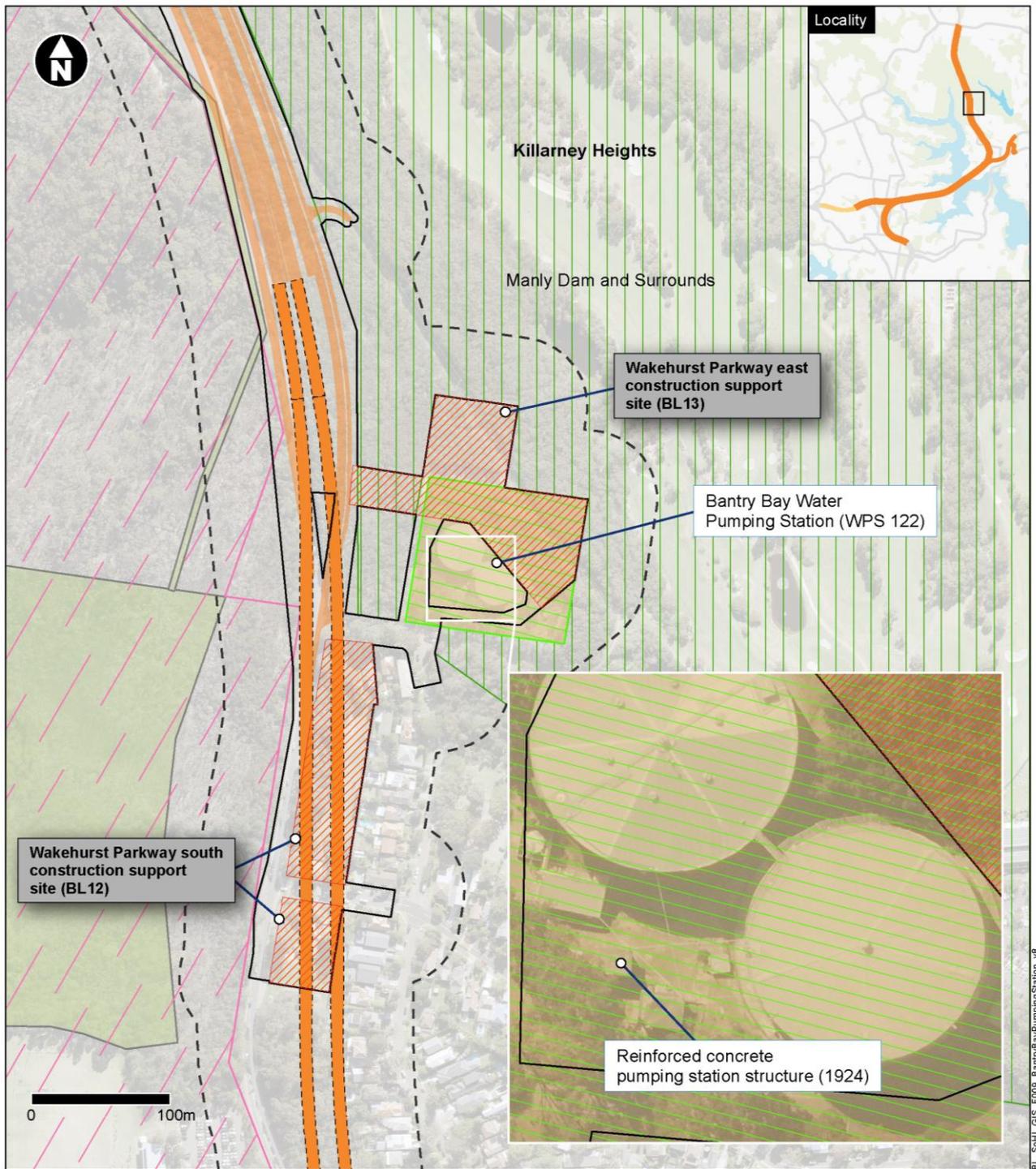
Table 5-18 Impact assessment – Bantry Bay Water Pumping Station (WPS 122), Killarney Heights

Impact type	Consideration
Direct	<p>The proposed works would encompass the majority of the heritage curtilage, excluding the location of the two water reservoirs and the lawn (including the significant pumping station building) located immediately to the southwest.</p> <p>While the construction boundary is located within the curtilage, the impacts to the heritage significance of the key heritage element of the pumping station building would be negligible.</p>
Potential direct	<p>Physical impact may occur due to the use of construction machinery and vehicles within close proximity to the pumping station building. Standard construction measures (such as fencing of active construction areas and delineation of 'no-go' areas) would also manage this risk. These measures would be applied to the pumping station building.</p>
Indirect – Visual	<p>The use of the heritage item as a construction support site would result in temporary visual impacts, as it would detract from the views of the pumping station building from Kirkwood Street, Seaforth, which is identified as one of its significant aspects.</p> <p>The project would have a temporary visual impact from the proposed works at the site, given the aesthetic significance including views from the street of the historic pumping station building.</p>

Impact type	Consideration
	<p>The design of the construction support site would be selected to minimise the visual impacts, and to blend into the surrounding environment where feasible and reasonable. Temporary structures would be removed at the completion of construction, and heritage structures would be protected. Reinstatement works at the site 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.</p> <p>As such, the impacts to the aesthetic values of this heritage item is temporary and minor.</p>

**5.4.12.4 Conclusion**

The proposed works would be restricted to avoid direct impact to the historic pumping station building. However, the works, which comprise site accesses, a carpark, laydown area, sediment pond, water treatment plant, workshop, and part of the acoustic shed cover the majority of the heritage curtilage of the item. Within the heritage curtilage, the proposed works would be of small-medium scale of low intensity, with the majority of the area being subject to works which are temporary and reversible. As such, the level of impact as a result of the works would be **minor**.



BL\_SoH\_L\_GIS\_F009\_BantryBayPumpingStation\_v8

Indicative only – subject to design development

**Legend**

- Study area
- Construction support site
- Construction footprint
- Beaches Link surface
- Beaches Link
- s170 area (compiled by Jacobs 2017)
- Register of the National Estate (DOE 2015)
- LEP Heritage Conservation Area - Landscape (DPE 2020)
- LEP Heritage Item - General (DPE 2020)
- LEP Heritage Item - Landscape (DPE 2020)

Figure 5-12 Non-Aboriginal Heritage – Bantry Bay Water Pumping Station (WPS 122) map

### 5.4.13 Item 13: Bantry Bay Reservoir (WS 0008), Killarney Heights

#### 5.4.13.1 Site details

Bantry Bay Reservoir (WS 0008) is located at Lot 1 Kirkwood Street, Killarney Heights, on Lot 1 DP 835123. The heritage item is listed on the Warringah Local Environmental Plan 2011 and the Sydney Water Section 170 Heritage and Conservation Register, and is of local significance as it meets criterion A (historical), and F (rarity). See Annexure A for full site description, photographs and significance assessment.

There are no known or suspected areas of archaeological potential within the area, therefore no further archaeological investigations are proposed.

#### 5.4.13.2 Proposed works

Proposed works would involve the Wakehurst Parkway east construction support site (BL 13) which intersects with the heritage curtilage of Bantry Bay Reservoir (WS 0008). Construction support site works including clearing and grubbing, topsoil stripping, bulk earthworks, minor retaining structures to reshape and regrade existing site. This would be followed by construction and operation of temporary construction facilities, including an acoustic shed, temporary noise barrier, workshop, wastewater treatment facility, air intake, staff offices and amenities, pavements and car parking. The construction support site would include a tunnel access decline, a ventilation plant, and laydown area. However, the site office, ventilation plant, and tunnel access decline are outside the heritage curtilage of the heritage item.

#### 5.4.13.3 Impact assessment

The project would have direct, potential direct, and indirect impacts on the heritage item, however, it would avoid direct impacts to the key heritage component of the heritage item: the 1924 cylindrical reinforced concrete reservoir.

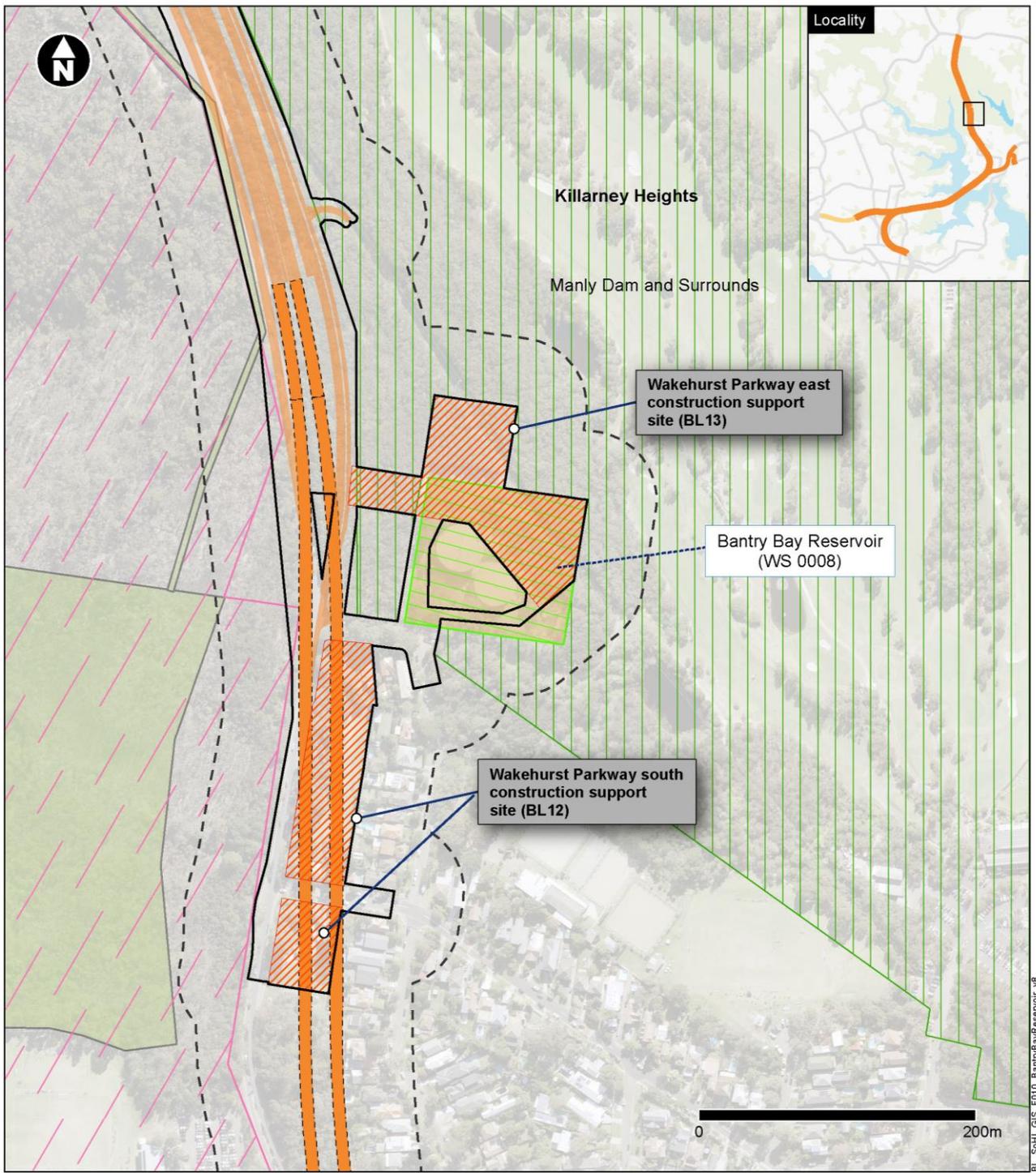
Table 5-19 outlines the following aspects of the project which could detrimentally impact on heritage significance.

Table 5-19 Impact assessment – Bantry Bay Reservoir (WS 0008), Killarney Heights

Impact type	Consideration
Direct	<p>The proposed works would encompass the majority of the heritage curtilage, excluding the location of the two water reservoirs and the lawn (including the historic reservoir) located immediately to the southwest.</p> <p>While the construction boundary is located within the curtilage, the impacts to the heritage significance of the key heritage element of the concrete reservoir would be negligible.</p>
Potential direct	<p>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 also manage this risk. These measures would be applied to the concrete reservoir.</p>

#### 5.4.13.4 Conclusion

The proposed works would be restricted to avoid direct impact to the significant concrete reservoir which is the key heritage element of the heritage item. However, the works, which comprise site accesses, a carpark, laydown area, sediment pond, water treatment plant, workshop, and part of the acoustic shed cover the majority of the heritage curtilage of the item. Within the heritage curtilage, the proposed works would be of small-medium scale of low intensity, with the majority of the area being subject to works which are temporary and reversible. As such, the level of impact as a result of the works would be **minor**.



**Legend**

- |                           |   |
|---------------------------|---|
| Study area                | s170 area (compiled by Jacobs 2017)                   |
| Construction footprint    | Register of the National Estate (DOE 2015)            |
| Construction support site | LEP Heritage Conservation Area - Landscape (DPE 2020) |
| Beaches Link surface      | LEP Heritage Item - General (DPE 2020)                |
| Beaches Link              | LEP Heritage Item - Landscape (DPE 2020)              |

Indicative only – subject to design development

Figure 5-13 Non-Aboriginal Heritage – Bantry Bay Reservoir (WS 0008) map

#### 5.4.14 Item 14: Manly Dam and Surrounds, Allambie Heights

##### 5.4.14.1 Site details

Manly Dam and Surrounds is located within Allambie Heights, comprising Manly Dam, the surrounding Manly-Warringah War Memorial Park and adjoining bushland to the north. The heritage item is listed on the Warringah Local Environmental Plan 2011 and the Register of the National Estate, and is of local significance as it meets criterion A (historical), C (aesthetic), D (social), E (research potential), F (rarity), and G (representativeness). Refer to Annexure A for full site description, photographs and significance assessment.

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

##### 5.4.14.2 Proposed works

Permanent infrastructure would be located immediately adjacent to the heritage curtilage for this item. A small section of the construction footprint, encompassing a surface roadway, enters the boundary of this heritage item at one location. Works at this location are associated with maintaining access to a maintenance track and easement.

Other key activities or project components in the general vicinity of the heritage item include:

- Construction work associated with the project, including earthworks
- The Wakehurst Parkway south construction support site (BL12). The construction support site would be located to the south-west of the heritage item on the southern side of Kirkwood Street adjacent to the Wakehurst Parkway. The construction support site would include laydown areas, car parking, workshops and site offices. A temporary noise barrier would be provided along the eastern boundary of the construction support site
- The Wakehurst Parkway east construction support site (BL13). The construction support site would be located on the eastern side of Wakehurst Parkway, on land surrounding the Bantry Bay Reservoir site. Vegetated areas would be cleared as part of the site establishment works. The construction support site would be used for the construction of Beaches Link tunnel connection to Wakehurst Parkway, to support the construction of the ramp tunnels for the Beaches Link component of the project
- Water discharge from the wastewater treatment plant at the Wakehurst Parkway east construction support site (BL13) to a drainage channel to be formed at the eastern section of the site (which would drain towards a Wakehurst Golf Course dam for reuse by the golf course)
- On and off ramps to connect the mainline tunnels with the Wakehurst Parkway in Killarney Heights, and portal structures
- A ventilation outlet and motorway facilities at the Wakehurst Parkway. The ventilation facility would be located within the Wakehurst Parkway road corridor, about 500 metres north of Seaforth Oval
- Upgrade and integration works along the Wakehurst Parkway, at Killarney Heights. This includes realignment of Wakehurst Parkway in the vicinity of the connections to Beaches Link, the widening of the Wakehurst Parkway from one lane in each direction to two lanes in each direction from the portal structures to the intersection of the Wakehurst Parkway with Warringah Road
- A new active transport link located adjacent to the southbound lanes of the Wakehurst Parkway, with underpasses provided at various locations to connect to the Engravings Track
- Permanent noise barriers along sections of the northbound lanes of the Wakehurst Parkway, in the northern section of the road corridor and to the north of the heritage curtilage.

### 5.4.14.3 Impact assessment

The vast majority of the heritage item would not be impacted by the project, beyond the single small section of the boundary along the Wakehurst Parkway. Additionally, this heritage item would not be directly or indirectly impacted by construction and operation of the project, as none of the significant built heritage elements are within close proximity to the Wakehurst Parkway east construction support site (BL 13). Table 5-20 outlines the following aspects of the project which could detrimentally impact on heritage significance.

Table 5-20 Impact assessment – Manly Dam and Surrounds, Allambie Heights

Impact type	Consideration
Direct	Direct impacts would be largely avoided, with the exception of one small area. This impact cannot be avoided as it is required to maintain access to an existing maintenance track and easement. This would represent less than one per cent of the heritage item and is considered to be negligible.
Potential direct	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.
Indirect – Visual	Temporary and permanent visual impact may occur due to the construction of the temporary construction support site, and from the permanent motorway facilities such as the ventilation facility. The widening of the Wakehurst Parkway (and associated vegetation clearance) would detract from the visual appeal of the heritage item. Changes to the landscape along Wakehurst Parkway as a result of the project would be moderate to high during construction, and moderate once operational, and would further reduce as replacement plantings mature (Arup 2020). Any visual impact would only occur at the common boundary of the heritage item with the construction footprint and impacts from operational ancillary infrastructure would be minimised through the selection of materials and landscaping. View of the dam itself would remain unaffected and the view of the heritage item from the widened roadway should be unobstructed.
Indirect – Vibration	Structural components of the heritage item are not located in the vicinity of construction work.
Indirect – Settlement	Settlement and ground movement from tunnel excavation may cause damage to the contributory features of the heritage item, only where these features are located in areas impacted by settlement (being generally in proximity to the main alignment tunnels). The settlement modelling for this project indicates that the ground settlement levels at this heritage item would not exceed a predicted maximum surface settlement of 20-25 millimetres and/or a predicted maximum surface angular distortion of 1:2000 to 1:500. As such, the degree of severity is 'slight'. However, structural components of the heritage item are not located in the vicinity of construction work.

### 5.4.14.4 Conclusion

With the implementation of the management measures described, the level of impact on the heritage item would be **negligible**, as there would be little or no physical impact on the heritage item.

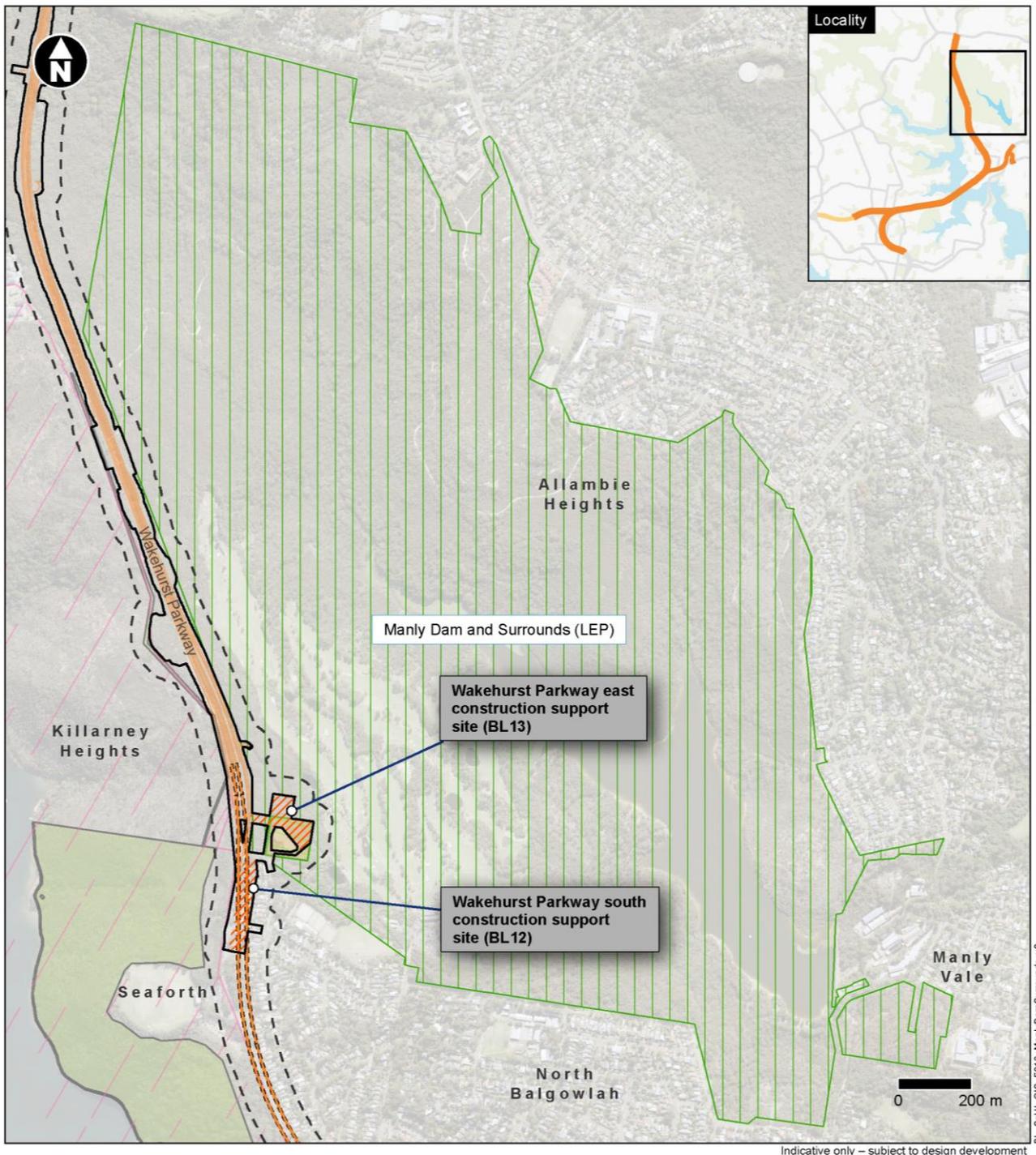


Figure 5-14 Non-Aboriginal Heritage – Manly Dam and Surrounds map

#### **5.4.15 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 5-21 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 is the same, they are assessed together as a group.

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

##### **5.4.15.1 Site details**

Site details are outlined in Table 5-21 below.

Table 5-21 Heritage items situated above the tunnel alignment with potential settlement and vibration impacts

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb	Activities within 50 metres of the project
Naremburn Central Township (Conservation Area)	Willoughby Local Environmental Plan 2012	C9	-	Local		Naremburn	Directly above the mainline tunnel alignment and within 50 metres of surface works within the Warringah Freeway road reserve.
Walter Burley Griffin Incinerator; Incinerator	State Heritage Register	00084	A (historical)	State	2 Small Street	Willoughby	Within 50 metres of the ramp tunnels.
	Willoughby Local Environmental Plan 2012	I228	B (historical association)				
	Willoughby Local Environmental Plan 1995	Schedule 6	C (aesthetic)				
	National Trust of Australia (NSW)	S8569	D (social)				
	Royal Australian Institute of Architects Register	4700895	E (research potential)				
	Register of the National Estate	2951	F (rarity)				
			G (representativeness)				
Street trees	Manly Local Environmental Plan 2013	I264	A (historical)	Local	Alan Avenue	Seaforth	Within 50 metres of the mainline tunnels.

### 5.4.15.2 Proposed works

In the vicinity of heritage items impacted by the Beaches Link project, the proposed works would involve the excavation of mainline tunnels and ramps using road headers and rock breakers.

### 5.4.15.3 Impact assessment

The project would avoid direct impacts to the heritage items listed in Table 5-22.

Table 5-22 Impact assessment – Various items

Impact type	Consideration
Indirect – Vibration	Vibration from tunnelling activities would be below 2.5 millimetres per second.
Indirect – Settlement	<p>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 ranging from less than 10 millimetres 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'.</p> <p>To protect the heritage item and reduce its exposure to settlement impact, 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.</p>

### 5.4.15.4 Conclusion

With the implementation of the management measures described, the level of impact on these heritage items would be **negligible**, as the settlement modelling indicates that impact upon structures would be 'slight', and that the vibration levels would be below the thresholds for damage.

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#### **5.4.16 Heritage item immediately adjacent to surface works**

The following heritage items (Table 5-23) are situated in a physical group along Ernest Street, and are located immediately opposite the Cammeray Golf Course. The heritage items are likely be subject to similar heritage impacts. As such, they are assessed here together as a group. While one archaeological heritage item is located adjacent to the Spit West Reserve construction support site (BL9), this site has been addressed in Section 5.3.2 and would be avoided by works. There are no suspected areas of archaeological potential within the heritage item boundary, therefore no further archaeological investigations are proposed.

##### **5.4.16.1 Site details**

The site details of the heritage items immediately adjacent to surface works of the project are outlined in Table 5-23.

## Technical working paper: Non-Aboriginal heritage

Table 5-23 Heritage items immediately adjacent to proposed surface works

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House	North Sydney Local Environmental Plan 2013	I0619	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	317 Ernest St	Neutral Bay
House	North Sydney Local Environmental Plan 2013	I0620	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	319 Ernest St	Neutral Bay
House	North Sydney Local Environmental Plan 2013	I0621	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	321 Ernest St	Neutral Bay
House	North Sydney Local Environmental Plan 2013	I0622	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	323 Ernest St	Neutral Bay
House	North Sydney Local Environmental Plan 2013	I0623	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	325 Ernest St	Neutral Bay

### 5.4.16.2 Proposed works

No works are proposed within the heritage curtilage of these heritage items. Any works along Ernest Street as part of the project would be minor, with the key activity being associated with the adjustment of the temporary traffic signals at the intersection of the Cammeray Golf Course construction support site (BL 1) access with Ernest Street, Cammeray.

Other key components of the project in the vicinity of the heritage items include:

- Fitout of the ventilation outlet at Warringah Freeway. The structure would be built by the Western Harbour Tunnel and Warringah Freeway Upgrade project
- Construction, fitout and operation of the motorway facilities at the Warringah Freeway
- Rehabilitation of residual land within the golf course (ie land outside operational requirements).

The heritage items have been identified as being eligible for at-property noise treatment for road traffic noise mitigation.

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

Key permanent features which are part of the Western Harbour Tunnel and Warringah Freeway Upgrade project and would have already occurred prior to the commencement of the Beaches Link construction include:

- Upgrade and integration works along the existing Warringah Freeway, including allowance for connections to the Beaches Link and Gore Hill Freeway Connection project
- 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.

### 5.4.16.4 Impact assessment

Permanent road or ancillary operational infrastructure associated with the project would avoid direct impacts to the heritage items as works would be situated outside its heritage boundary. As such, the project would respect the heritage significance of the items.

Table 5-24 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 5-24 Impact assessment – Heritage items close to surface works along Ernest Street

Impact type	Consideration
Direct	The properties have been identified as being eligible for at-property acoustic treatment. Eligibility would be confirmed during further design development and in consultation with the landowner. This may impact on the heritage fabric of the buildings that contribute to the values of the heritage conservation area. Any acoustic treatment required would be carried out by the Western Harbour Tunnel and Warringah Freeway Upgrade project, ahead of the Beaches Link project. Should at-property acoustic 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.

Impact type	Consideration
Potential direct	Physical impact may occur due to the use of construction machinery and vehicles in close proximity to the heritage items. Standard construction measures (such as fencing of active construction areas and delineation of 'no-go' areas) would also manage this risk.
Indirect – Visual	<p>Temporary and permanent visual impacts would occur due to the change in land use and the presence of permanent infrastructure (the motorway facilities at the Warringah Freeway) which would detract from the visual appeal of the heritage items. Landscape impacts during construction and operation have been rated as moderate to high, with the permanent impacts to the landscape character likely to reduce as replacement planting matures over time (Arup 2020).</p> <p>The motorway facilities have been developed to reduce the perceived scale of the building and enhance its integration into the surrounding context (Arup 2020). This has been achieved through a number of approaches including 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 further design development would look at further refinements, as well as opportunities to provide increased screening through landscape plantings. A landscape plan that utilises tree canopy to diminish the perceptible construction footprint within the park, where feasible, would also be developed.</p>
Indirect – Vibration	Surface works in the vicinity of the heritage items would be minor. Minimum working distances for vibration-intensive activities would be applied to avoid indirect impacts to the heritage item.

**5.4.16.5 Conclusion**

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

## 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 environmental 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 assessment

#### 6.2.1 Western Harbour Tunnel and Warringah Freeway Upgrade (Category 1)

Subject to approval, the Western Harbour Tunnel and Warringah Freeway Upgrade project would commence construction in late 2020 / early 2021 with completion of construction in 2026. The Western Harbour Tunnel and Warringah Freeway Upgrade project overlaps with the project where works related to the Warringah Freeway Upgrade are planned. Heritage items in this overlap include ANZAC Park, Cammeray Park, Cammeray Conservation Area, Tarella, St Thomas Rest Park, and Holtermann Estate A Conservation Area. Works proposed as part of the project would not create any additional heritage impacts to these places.

#### 6.2.2 Northern Beaches Hospital road upgrade project (Category 2)

This project was completed in 2020 and involved staged construction works to enhance connectivity to the new Northern Beaches Hospital and to improve the broader road network capacity.

Upgrade works were be carried out at the following locations:

- Warringah Road from its intersection with Maxwell Parade to its intersection with Courtley Road
- Naree Road/Frenchs Forest Road from its intersection with Forest Way to its intersection with Warringah Road
- Wakehurst Parkway from about 500 metres north of Frenchs Forest Road to about 500 metres south of Warringah Road
- Forest Way from around Adams Street about 750 metres south to its intersection with Warringah Road.

There was one listed heritage item within the project area, being the Former Holland's Orchard and Commemorative Grove; and one unlisted item, the former Hews brick pit. The project was assessed as impacting on the last remaining tree of the former Holland's orchard, being a pear tree, situated on the verge of Warringah Road. It was proposed that the pear tree be relocated prior to construction if possible. The Commemorative Grove comprises cuttings of the original tree and was not impacted by the project. While it was assessed that there would be some physical impact to the Hew brick pit, the area to be impacted had a low potential for archaeological relics to be uncovered.

There would be no additional impact from the project on heritage items impacted by the Northern Beaches Hospital road upgrade project, and no additional heritage items in the vicinity impacted by the project.

### 6.2.3 Sydney Metro City and Southwest – Chatswood to Sydenham (Category 2)

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. The project was approved in 2017 and is scheduled for completion in 2024. Components of the project relevant to this assessment include:

- Chatswood dive site
- Artarmon substation
- Victoria Cross station.

#### 6.2.3.1 Chatswood dive site

The Sydney Metro project would impact on eight heritage items, with minor impacts to Mowbray House due to demolition of non-original outbuildings at the site. The remainder are negligible impacts on views and vistas. The Sydney Metro project would also have minor to moderate impact on potential archaeological remains, depending on the location and extent of the proposed excavation work. These archaeological remains relate to mid-19<sup>th</sup> century to 20<sup>th</sup> century occupation, and residential and commercial development.

#### 6.2.3.2 Artarmon substation

The Sydney Metro Project would not impact on any heritage items at the Artarmon substation, located off Barton Road, adjacent to the Gore Hill Freeway. The substation location is the same as the Barton Road construction support site (BL5).

#### 6.2.3.3 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 19<sup>th</sup> century to early 20<sup>th</sup> century residential and commercial development.

#### 6.2.3.4 Overall impact

In the vicinity of the project, Sydney Metro project would have major impact on one heritage item, moderate impact on two heritage items, and the remainder being minor or negligible. There would also be minor to moderate impact on areas of archaeological potential. For the areas of overlap or proximity to the Sydney Metro project, there are no additional heritage items subject to potential settlement impacts from the current project. Management measures are able to reduce this impact to negligible.

### 6.2.4 Other relevant projects (Category 3)

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**

Relevant projects in the vicinity of the project have had an overall moderate impact on heritage items – with major impact on only one heritage item, moderate impact on two heritage items, and the remainder being minor or negligible. There would also be minor to moderate impact on areas of archaeological potential.

The current project traverses areas of Sydney with a moderate concentration of heritage items. The project would have major impact on only one heritage item, minor impact on one heritage item, and the remainder being subject to only negligible impacts. Given the length and extent of the current project, 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 is low.

## 7. Management of impacts

This section describes the recommended management measures for Non-Aboriginal heritage.

### 7.1 General management measures

#### 7.1.1 General construction management

Management measures should be implemented during construction to manage potential impact to items of heritage significance from construction work 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 should 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 should be conducted at the heritage item to determine appropriate mitigation measures or monitoring approaches that should 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 encountered, the *Standard Management Procedure: Unexpected Heritage Items* (Roads and Maritime Services 2015) should be followed.

#### 7.1.3 Discovery of human remains

In the event that construction of the project reveals possible human skeletal material (remains), *Standard Management Procedure: Unexpected Heritage Items* (Roads and Maritime Services 2015) should 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* (NSW Heritage Office 1998).

#### 7.1.4 Heritage induction training

Non-Aboriginal heritage awareness training should 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 non-Aboriginal heritage materials, features or deposits, or the discovery of human remains.

#### 7.1.5 Heritage interpretation strategy

Appropriate heritage interpretation would be incorporated into the urban design for the project in accordance with the *NSW Heritage Manual* (NSW Heritage Office and Department of Urban Affairs and Planning, 1996), *Interpreting Heritage Places and Items: Guidelines* (NSW Heritage Office, 2005), and the *Heritage Interpretation Policy* (NSW Heritage Council, 2005).

#### 7.1.6 At-property treatment

Should at-property treatment be required at a premise that is heritage listed, this should be carried out in a manner to minimise heritage impact and advice of a heritage conservation architect should be sought prior to carrying out the works. Any treatments should be sympathetic to the heritage values of the item designed with heritage architect input and be reversible where feasible.

### 7.1.7 Settlement

Building/structure condition surveys should 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). Any impacts from settlement caused by the project should 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

It is recommended that the following impact mitigation and management measures should 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 should be carried out in accordance with the *Photographic Recording of Heritage Items Using Film or Digital Capture* guideline for the following areas/items subject to change within the following items:

- Item 2: Cammeray Park (including Golf Course), Cammeray (would be completed by the Western Harbour Tunnel and Warringah Freeway Upgrade project)
- Item 3: Cammeray Conservation Area, Cammeray (would be completed by the Western Harbour Tunnel and Warringah Freeway Upgrade project)
- Item 10: Balgowlah Golf Course, Balgowlah
- Item 11: Frenchs Bullock Track, Killarney Heights (pending further detailed survey and detailed design development confirming direct impact).

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

### 7.2.2 Item 2: Cammeray Park (including Golf Course) and Item 10: Balgowlah Golf Course

As this project and the Western Harbour Tunnel and Warringah Freeway Upgrade project impact the Balgowlah Golf Course and 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 and Balgowlah Golf Courses, therefore reducing the overall impact on that type of heritage item. The study would be carried out by the Western Harbour Tunnel and Warringah Freeway Upgrade project.

### 7.2.3 Item 11: Frenchs Bullock Track

The northern section of the Frenchs Bullock Track potentially impacted directly by construction works should be reformed if impacted as close as possible to the existing alignment. Further detailed survey should be completed to confirm the heritage curtilage of the southern section of Frenchs Bullock Track prior to construction to determine if this section would be directly impacted. Where the heritage curtilage of Frenchs Bullock Track is within the construction footprint or boundary of proposed permanent infrastructure, the track should be avoided where possible through further design development.

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## **Annexure A. Heritage items descriptions and significance assessments**

# Transport for NSW

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Beaches Link and Gore Hill Freeway Connection  
Heritage item descriptions and significance assessments

December 2020

**Prepared for**

Transport for NSW

**Prepared by**

*Jacobs Group (Australia) Pty Ltd.*

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## A.1 Item 1: ANZAC Park, Cammeray

Table A.1.1 ANZAC Park details

Alternative names	Location	Register	Register ID	Significance level
ANZAC Park	Corner of Anzac Avenue and Ernest St, 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). This heritage item was identified during the field survey for this project.

### A.1.1 History

ANZAC Park was originally part of the reserve that makes up the present-day ANZAC, Cammeray and Green Parks prior to 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.1.14). 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 northwest, 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 previously, 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.1.13, Figure A.1.15), 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 southeastern corner of the park being excised from the park's original layout.

The remaining section of parkland was located adjacent 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 prior to 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.1.16). 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 Anzac 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.1.11). 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 adjacent 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.1.2 Description

An expanse of gently sloping grassed land, with the North Sydney Tramway Depot War Memorial (Figure A.1.10) 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.1.3) behind the memorial with associated plaques (Figure A.1.4-Figure A.1.7,

Figure A.1.10) 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.1.1-Figure A.1.2). The park is bound by Ernest Street (Figure A.1.9) in the south and Anzac Avenue in the west, near the intersection of which is a drinking fountain set on sandstone steps (Figure A.1.8), part of Cammeray Avenue (which is adjacent to the Warringah Expressway) in the east and northeast, and residential curtilage in the north.

### A.1.3 Curtilage information

ANZAC Park is situated on Lots 607-612 DP 752067, Lot 7096 DP 1060619; and Crown reserve.

### A.1.4 Significance assessment

Table A.1.2 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.1.1 ANZAC Park, facing southeast



Figure A.1.2 ANZAC Park, facing west



Figure A.1.3 Turpentine trees in memorial grove

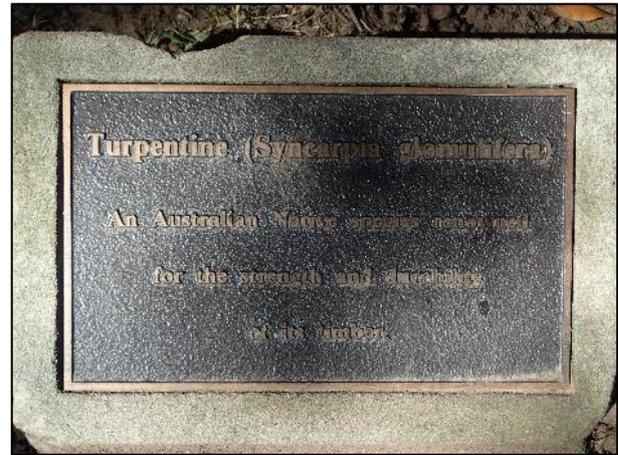


Figure A.1.4 Turpentine trees plaque



Figure A.1.5 Canary Island date palm in memorial grove



Figure A.1.6 Canary Island date palm plaque



Figure A.1.7 Japanese Maple tree plaque (tree not extant)



Figure A.1.8 Water fountain in southwest corner of ANZAC Park



Figure A.1.9 ANZAC Park, facing east along Ernest Street



Figure A.1.10 North Sydney Tramway Depot War Memorial



Figure A.1.11 North Sydney Tramway Depot War Memorial



Figure A.1.12 War Memorial at North Sydney Tramway Depot (Source: The Australian War Memorial)



Figure A.1.13 Slit air raid (zig zag) trench along the western boundary of the park in 1943 (Source: Spatial Services (2017))

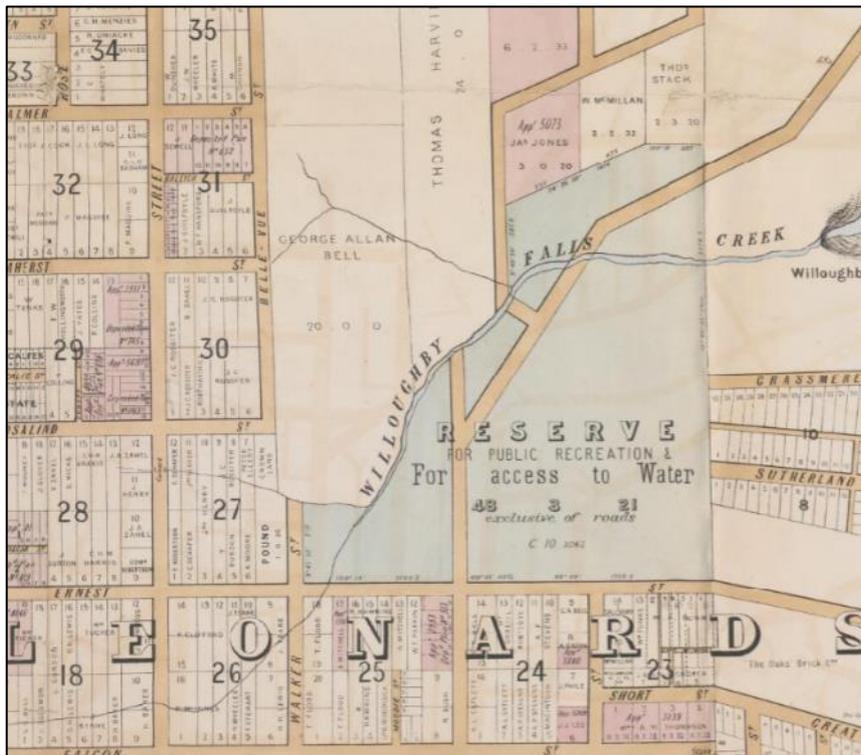


Figure A.1.14 Location of the 'Reserve for public recreation and for access to water' (Source: Higinbotham and Robinson (1887))



Figure A.1.15 Aerial imagery of Green and Cammeray Parks in 1943 (Source: Spatial Services (2017))

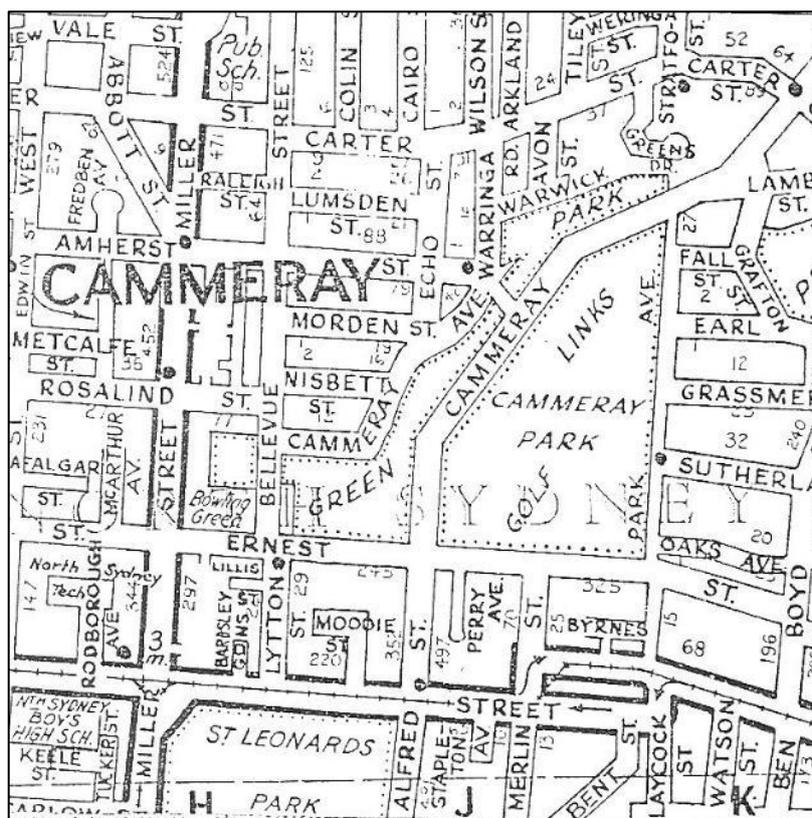


Figure A.1.16 Pre-1968 street directory detailing Green and Cammeray Parks (Source: Adrian Barnes)

### A.1.5 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, within ANZAC Park no plantings or historic items dated to the mid- to late-1800s are extant.

## A.2 Item 2: Cammeray Park (including golf course), Cammeray

Table A.2.1 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.2.1 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 twentieth 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.2.5). 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.2.2 Description

An expanse of gently sloping grassed land, with informal tree plantings, bound by Ernest Street, Park Avenue, Cammeray Road, **Warringa 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 **southeast** corner.

### A.2.3 Curtilage information

**Cammeray Park is situated on Lots 2–4 DP 244543; Closed road; Crown reserve.**

### A.2.4 Significance assessment

Table A.2.2 Cammeray Park (including golf course) significance assessment

Criterion	Local level
A – Historical significance	<b>North Sydney Local Environmental Plan 2013</b> – Of historical interest as a relatively intact early reservation to protect water supply and associated with the nearby Willoughby Falls. It is an example of early twentieth century reclamation of watercourses in urban areas.
B – Historical association significance	N/A
C – Aesthetic significance	N/A
D – Social significance	<b>North Sydney Local Environmental Plan 2013</b> – Of social value for its general recreational facilities and open space.
E – Research potential	N/A
F – Rarity	<b>North Sydney Local Environmental Plan 2013</b> – This item is assessed as historically rare locally.

Criterion	Local level
G – Representativeness	North Sydney Local Environmental Plan 2013 – This item is assessed as historically representative regionally. This item is assessed as socially representative regionally.



Figure A.2.1 Cammeray Park including Golf Course (Source: North Sydney Council)



Figure A.2.2 Cammeray Golf Course, facing south



Figure A.2.3 Green Park, formerly part of Cammeray Park, facing northeast from corner of Cammeray and Warringa Roads



Figure A.2.4 View of Cammeray Golf Course from Ernest Street, facing northwest



Figure A.2.5 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.2.5 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 twentieth century reclamation of watercourses in urban areas.

### A.3 Item 3: Cammeray Conservation Area, Cammeray

Table A.3.1 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.3.1 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 **southwestern** 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.3.2 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 roof 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 northwest 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.3.3 Curtilage information

The Cammeray Conservation Area is bounded **to the north** by Carter Street, the Freeway to the south, Warringa 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.

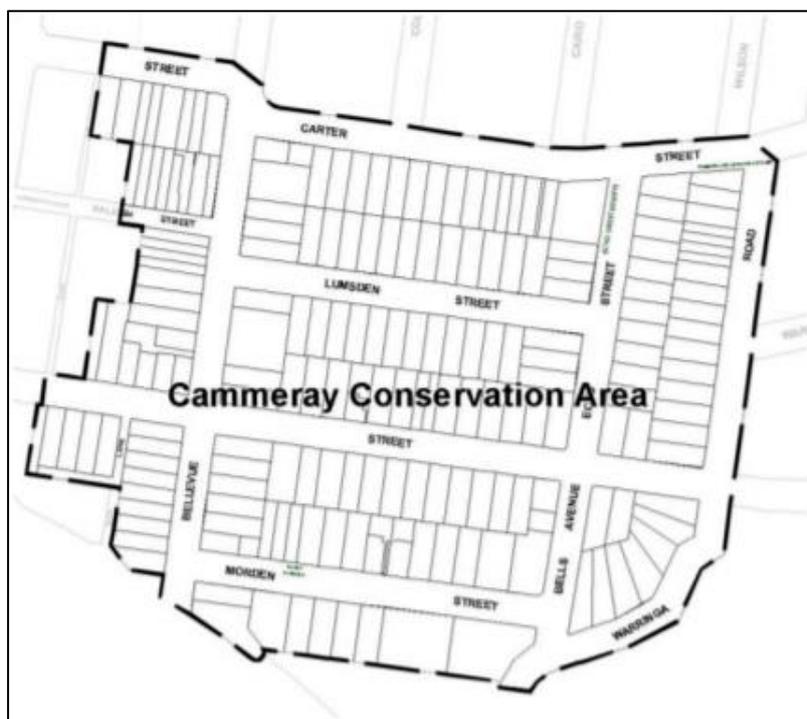


Figure A.3.1 Cammeray Conservation Area maps (Source: North Sydney Council)

#### A.3.4 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 **overlies** 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.

## A.4 Item 4: Tarella, Cammeray

Table A.4.1 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.4.1 History

Amherst Street is named after Lord William Pitt Amherst who was Governor General of India 1823-1828. 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 New South Wales Legislative Assembly from 1880-1900. 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, 1897-98. From 1891-1900 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 were 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. Brenham P/L in 2015 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 has been 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.4.2 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 date (*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 twentieth century, possibly during the Hawkins ownership era (ibid).

Fine garden and entry to house (LEP).

**House:** Residence of an important public figure of the nineteenth 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 1872-1893 (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.4.3 Curtilage information

Tarella is situated on Lot 101 DP 618220.

#### A.4.4 Significance assessment

Table A.4.2 Tarella significance assessment

Criterion	Local level
A – Historical significance	<b>North Sydney Local Environmental Plan 2013</b> – One of the earliest buildings established in the vicinity and one of the earliest still in existence.
B – Historical association significance	<b>Associated with Sir Joseph Palmer Abbott, K.C.M.G., a former speaker of the New South Wales Legislative Assembly from 1880-1900, and a member of the Conventions formed to frame a Constitution for the Commonwealth of Australia. Abbott built Tarella.</b>
C – Aesthetic significance	<b>North Sydney Local Environmental Plan 2013</b> – Fine example of a grand Victorian mansion.
D – Social significance	N/A
E – Research potential	N/A
F – Rarity	<b>North Sydney Local Environmental Plan 2013</b> – This item is assessed as historically rare locally.
G – Representativeness	<b>North Sydney Local Environmental Plan 2013</b> – This item is assessed as aesthetically representative regionally. This item is assessed as socially representative regionally.



Figure A.4.1 PCO Plan Number 270 (Source: Heritage Council of NSW)



Figure A.4.2 View of Tarella from the front gate, facing south



Figure A.4.3 View of Tarella's two-storey bay windows and side of house from Tarella Place, facing west

Figure A.4.4 View of Tarella's sympathetic modern outbuilding from Tarella Place, facing west

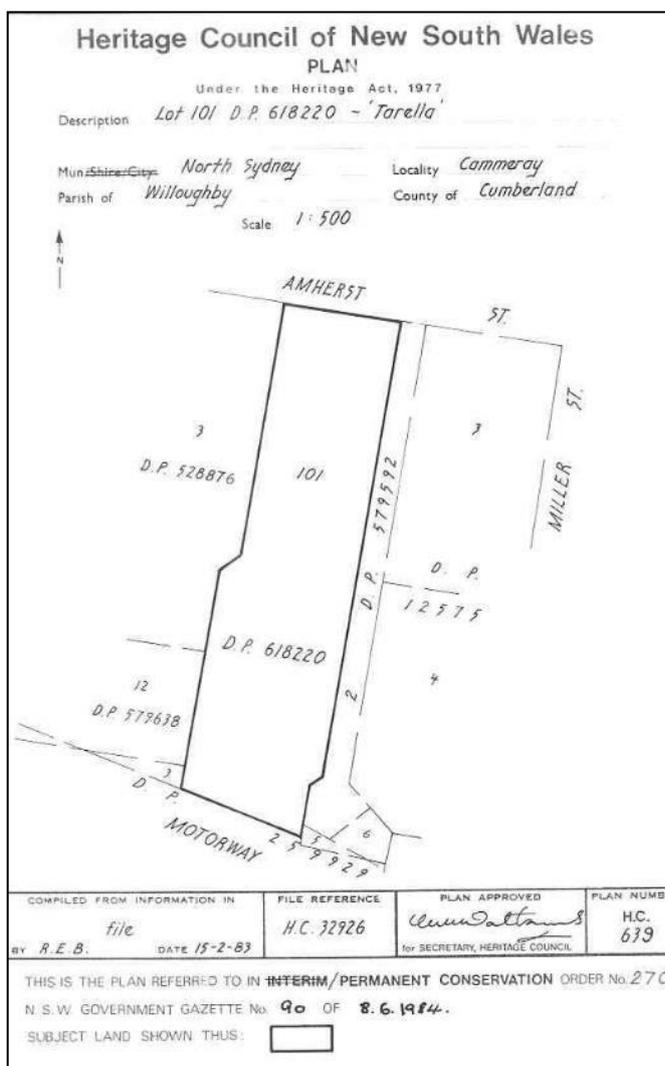


Figure A.4.5 PCO Plan Number 270 (Source: Heritage Council of NSW)

**A.4.5 Statement of significance**

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.

## A.5 Item 5: St Thomas Rest Park, Crows Nest

Table A.5.1 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.5.1 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.5.2 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 **Brigade** Major John Ovens 1825 share a combined monument which was moved from the George Street cemetery and later from Garden Island. Others include: **Lieutenant Colonel** George Barney 1878, **Captain** Owen Stanley 1850, **Reverend** W.B. Clarke 1878, **Captain** John Vine Hall 1932, and his wife Alice 1934 (daughter of E.T. Blackett); **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 **tree** 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 circa 1850. Its interior and landscape setting are also of significance. It is used by North Sydney Council as a house museum.

### A.5.3 Curtilage information

**St Thomas Rest Park is situated on** Lot 100 DP 790953; Lot 104 DP 790981.

#### A.5.4 Significance assessment

Table A.5.2 St Thomas Rest Park significance assessment

Criterion	Local level
A – Historical significance	N/A
B – Historical association significance	<b>North Sydney Local Environmental Plan 2013</b> – This item is assessed as significant for its <b>association</b> with significant early residents of Sydney.
C – Aesthetic significance	<b>North Sydney Local Environmental Plan 2013</b> – This item is assessed as aesthetically representative locally.
D – Social significance	<b>North Sydney Local Environmental Plan 2013</b> – This item is assessed as socially representative locally.
E – Research potential	N/A
F – Rarity	N/A
G – Representativeness	<b>North Sydney Local Environmental Plan 2013</b> – This item is assessed as historically representative regionally. This item is assessed as aesthetically representative locally. This item is assessed as socially representative locally.

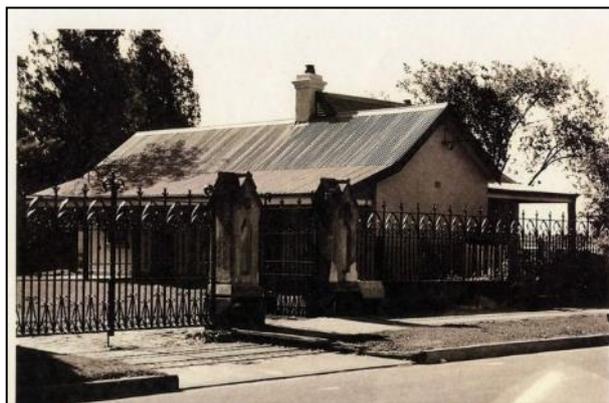


Figure A.5.1 Sexton's Cottage (Source: Stanton Library)



Figure A.5.2 St Thomas Rest Park 1987- Moriarty family tomb in foreground (Source: Stanton Library)



Figure A.5.3 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.5.4 St. Thomas Rest Park (Source: North Sydney Council)



Figure A.5.5 Frontage of Sexton's Cottage



Figure A.5.6 Tomb of Alexander and Elizabeth Berry

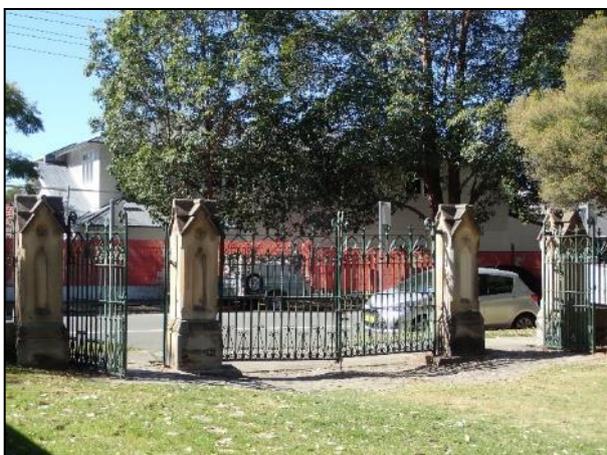


Figure A.5.7 Gateway to St Thomas Rest Park



Figure A.5.8 Fence line along Warringah Freeway

**A.5.5 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.6 Item 6: Holtermann Estate A Conservation Area, Crows Nest

Table A.6.1 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 Register of the National Estate	CA07 100845	Local

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, with any amendments or further additions included in **bold**.

### A.6.1 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 **Bernhardt Otto** 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.

Main period of construction was 1884 to 1915.

### A.6.2 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 twentieth 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 3.5m 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.6.3 Curtilage information

About 9 ha 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 Huntingdon 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.



Figure A.6.1 Holtermann Estate A Conservation Area map (Source: North Sydney Council)

- 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.

### **A.6.4 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 adjacent Holtermann Estate areas, to the east by St Thomas Rest Park, and **by** 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.7 Item 7: Artarmon Conservation Area, Artarmon

Table A.7.1 Artarmon Conservation Area details

Alternative names	Location	Register	Register ID	Significance level
Artarmon Heritage Conservation Area	Artarmon/Willoughby	Willoughby Local Environmental Plan 2012	C1	Local

The information provided below is replicated verbatim from the State Heritage Inventory, the Willoughby Local Environmental Plan 2012, and the Willoughby Development Control Plan, with any amendments or further additions included in **bold**.

### A.7.1 History

The earliest land grants in the Artarmon area were made in 1793-4, by Major Francis Grose of the NSW Corps. These grants were intended for farming, but were used only for grazing. In 1810, Governor Macquarie granted 150 acres to the General- Provost Arthur Gore. Gore then bought out his neighbours and by 1815, he owned most of the land as far west as the Pacific Highway. Gore named his farm "Ardthelmon" after his home in Ireland. This period of prosperity was short lived and by 1818, Gore had lost all but a small portion of land on which he built Artarmon House (the site of the current TAFE and Institute of Technology).

The Artarmon Heritage Conservation Area was developed in two stages. The major streets, such as Artarmon Road and the western precinct closest to the station, such as Muttama Road, were partially developed prior to World War I and consequently are characterised to a greater degree than other streets by development from the Federation era. There are also some grand villas and houses of this period on the eastern edge along early transport routes, such as Sydney Road. The remainder and bulk of the area was developed in the 1920s and 1930s and is predominantly bungalow development with a few semi-detached cottages on the eastern edge. Some two-storey flat buildings, dating from the 1930s, are located closer to the station.

The National Trust of Australia (NSW) recognised the importance of the area by classifying it as an Urban Conservation Area in 1989.

### A.7.2 Description

A rectilinear subdivision pattern has been superimposed on a hilly area of moderate slopes. The regularity of the lot layout is interrupted by several well-vegetated drainage reserves flowing across to the remnant bushland of Artarmon Reserve.

The original subdivision pattern of narrow carriageways and wide grassy verges (usually planted with mature street trees, such as brush box and jacaranda) prevails, except for Artarmon and Sydney Roads, which have wider carriageways taking the main traffic volumes to and from Artarmon Station and shopping centre.

The combination of undulating landform, well established street trees and other vegetation (including mature trees behind houses, remnant bushland in the drainage reserves and the pattern of usually generous lot sizes) creates vistas of leafy ridges and valleys and a wide range of interesting streetscapes with houses stepped down the terrain.

Houses are either unpainted red-brown brick and unglazed terracotta tile Federation styles or a rich variety of 1920s to 1930s bungalows. The latter range from typical California Bungalow styles to the transitional 1930s Interwar bungalows of unpainted brown to liver brick with red or brown tiled roofs. The character is predominantly single storey other than the small number of Interwar flats and relatively few second storey additions. Good individual examples including some of the older flat buildings, with Art Deco or Spanish Mission characteristics, also occur.

The denser pattern of settlement near Artarmon Station is a good example of Interwar flat development providing comfortable housing that is well integrated with nearby public transport and commercial opportunities. The well-proportioned flat buildings form a cohesive residential precinct of generally consistent two-storey scale, of similar materials and with shared modest embellishments, including decorative brickwork. Such characteristics enhance their unity with the earlier group of Edwardian commercial buildings at Wilkes Plaza.

### A.7.3 Curtilage information

The Heritage Conservation Area includes residential houses, part of the North Shore Rail, and Artarmon Reserve, predominantly within the suburb of Artarmon, although some of the houses on the eastern boundary are located within the suburb Willoughby (Figure A.7.1).

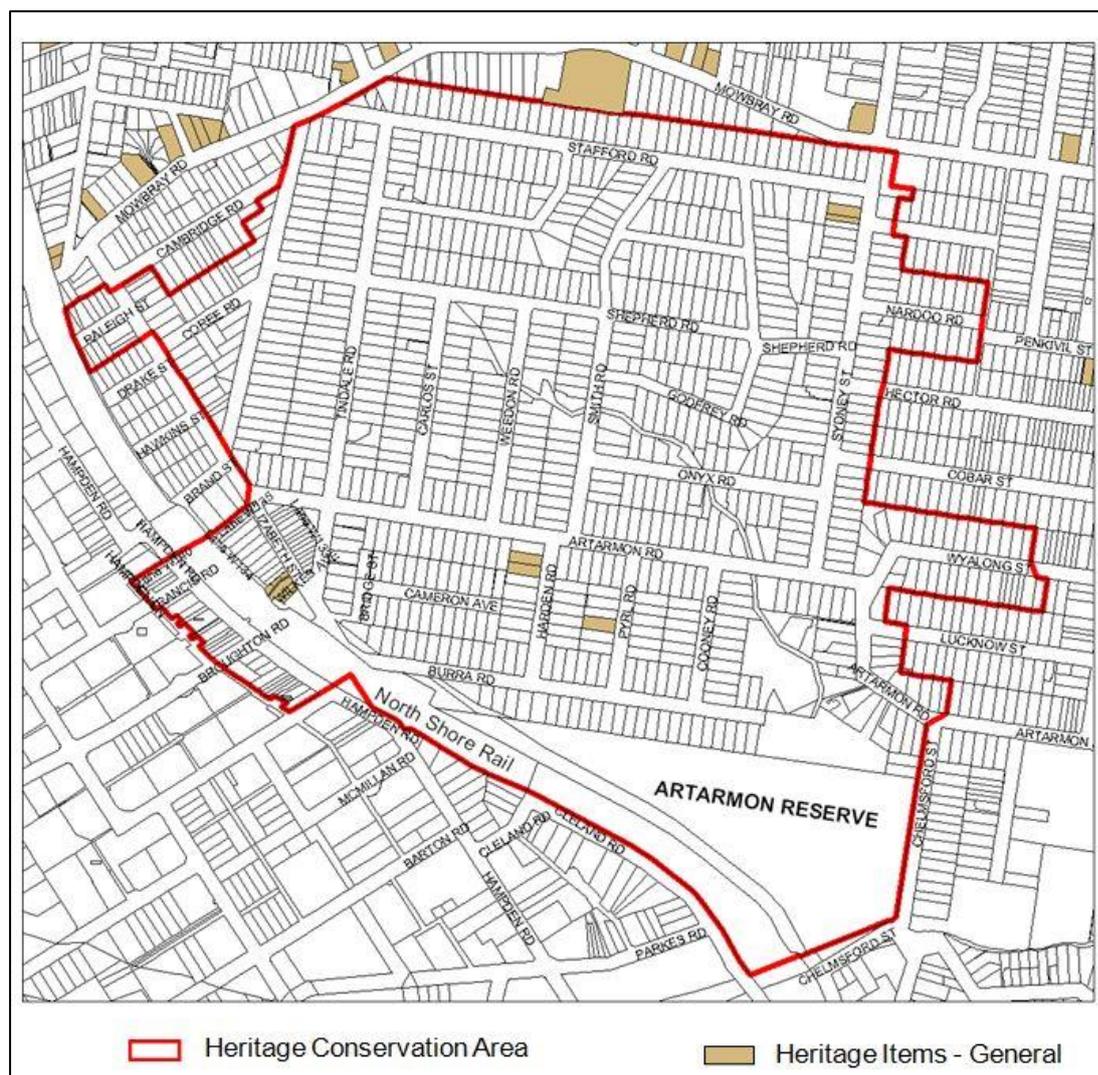


Figure A.7.1 Artarmon Conservation Area maps (Source: Willoughby City Council)

### A.7.4 Statement of significance

The Heritage Conservation Area is outstanding for its intactness, with few unsympathetic intrusions occurring. The wide range of largely intact California and Interwar bungalows as well as Federation housing in generally good condition, occur in either groupings of consistent styles or subtle blends of successive periods to produce a mix of interesting and varied streetscapes. The area is significant as a harmonious and unified

1910 – 1920s lower North Shore residential area whose development relates to the development of the railway.

## A.8 Item 8: Clive Park and Tidal Pool, Northbridge

Table A.8.1 Clive Park and Tidal Pool details

Alternative names	Location	Register	Register ID	Significance level
Clive Park and Tidal Pool	Sailors Bay Road, Northbridge, NSW 2063	Willoughby Local Environmental Plan 2012	I179	Local

The information provided below is replicated verbatim from the State Heritage Inventory, and the Willoughby Local Environmental Plan 2012, with any amendments or further additions included in **bold**.

### A.8.1 History

Clive Park occupies part of the first land grant in Northbridge in 1837 to solicitor John Lewis Spencer. It was sold the following year and was later incorporated into the Albert Town estate. On 16 December 1884 part of the land was dedicated for recreation, wharf and access to the water. In 1913 Willoughby Council named the area Clive Park to commemorate Clive Norman Backhouse, the mayor of Willoughby from 1911 to 1914. The land was proclaimed a park on 1 August 1933. The tidal pool was constructed in the late 1940s by the Northbridge Volunteer Defence Force. Large rocks were laid to form two sea walls and topped with concrete. They are connected by a screen made of galvanised pipe and steel mesh. Repairs to the screens were undertaken in 1961 and 1972. Clive Park also contains three boatsheds and the Northbridge Sailing Club. (See inventory sheets for items 26 and 53) Public toilets in Clive Park were built in 1971. The tidal pool remains one of Sydney's smallest public tidal rock pools and enjoys an isolated, picturesque setting with access via a path passing through native vegetation.

### A.8.2 Description

Clive Park is an important remnant of natural bushland with rocky outcrops on the Northbridge headland through which are planned paths to the water's edge. Grassed clearings are furnished with picnic tables and barbeques. The parking bay closest to Sailor's Bay Road contains a clump of *Strelitzia nicolai* and a small grassed area off Minimbah Road has a planting of *Brachychiton sp.* and a commemorative seat. A series of concrete and sandstone rubble steps lead down to the tidal pool. The park contains Aboriginal sites, two previously identified in the Willoughby Heritage study 1986 NPWS Nos 45-6-654 and 45-6-271. One of these, a fish is slowly fading and its tail is no longer readily discernible. The shoreline is used for recreation with a tidal pool, sailing club and boatsheds which house a boat-building business and one which is leased to the Scout Association. The Clive Park tidal pool is approximately 15m by 30m and is constructed on a rock outcrop in Middle Harbour. Large rocks, laid to form two walls are interconnected at their ends by a steel screen fixed to concrete uprights. The wall is topped with concrete to provide greater stability and improve safety. One of the walls has been damaged in recent times and is slowly collapsing. Date: Dedicated for open space in 1884, proclaimed as a park in 1933.

### A.8.3 Curtilage information

**Clive Park and Tidal Pool is situated on Lot 7093 DP 93909; Lot 347 DP 1130320.**

### A.8.4 Significance assessment

Table A.8.2 Clive Park and Tidal Pool significance assessment

Criterion	Local level
A – Historical significance	<b>Willoughby Local Environmental Plan 2012</b> – Clive Park is of historical significance at a local level as an example of the 19th century community recognition of the value in setting aside areas of the harbour foreshore for public recreation and use.

Criterion	Local level
B – Historical association significance	<b>Willoughby Local Environmental Plan 2012</b> – Clive Park was named after Clive Norman Backhouse, mayor of Willoughby from 1911 to 1914.
C – Aesthetic significance	<b>Willoughby Local Environmental Plan 2012</b> – Clive Park is of aesthetic significance for its picturesque combination of natural and modified bushland, rocky outcrops and viewing points and for its tidal pool, one of the smallest pools in a harbour location, the rustic appearance and isolated scenic location of which has considerable visual appeal. The park is of considerable aesthetic appeal for its sense of seclusion in an urban environment, mature angophoras, rocky outcrops and views over Middle Harbour.
D – Social significance	<b>Willoughby Local Environmental Plan 2012</b> – Clive Park has social significance for local Willoughby residents as a popular foreshore bushland park and as the location of the Northbridge Sailing Club and the Northbridge Sea Scouts.
E – Research potential	<b>Willoughby Local Environmental Plan 2012</b> – Clive Park is important for its Aboriginal archaeological sites. The Northbridge Sailing Club does display some <b>research potential</b> .
F – Rarity	<b>Willoughby Local Environmental Plan 2012</b> – Clive Park contains the smallest tidal pool within the Sydney region. The three boatsheds are also good examples of increasingly rare <b>foreshore</b> boating structures.
G – Representativeness	<b>Willoughby Local Environmental Plan 2012</b> – Clive Park is representative of the bushland parks around Sydney Harbour.



Figure A.8.1 View of Clive Park at the corner of Sailors Bay Road and Coolawin Road

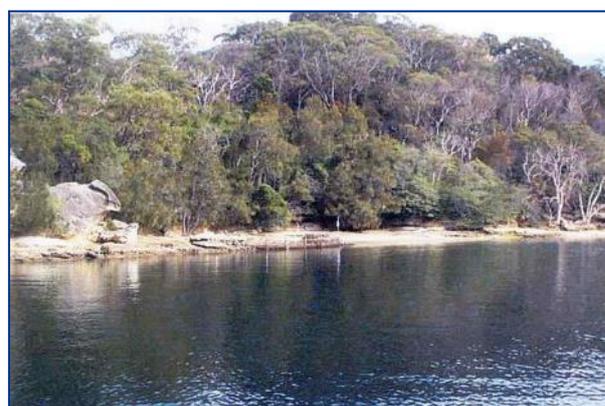


Figure A.8.3 Clive Park Tidal Pool, Northbridge  
(Source: Colleen Morris)



Figure A.8.4 Clive Park Tidal Pool, Northbridge  
(Willoughby City Council)



Figure A.8.5 View of the Clive Park Tidal Pool ruins,  
facing northeast

Figure A.8.6 Clive Park typical rock outcrop,  
Northbridge (Source: Colleen Morris)

#### A.8.5 Statement of significance

Clive Park is of historical significance at a local level as an example of the 19th century community recognition of the value in setting aside areas of the harbour foreshore for public recreation and use. Clive Park is of aesthetic significance for its picturesque combination of natural and modified bushland, rocky outcrops and viewing points and for its tidal pool, one of the smallest pools in a harbour location, the rustic appearance and isolated scenic location of which has considerable visual appeal. Clive Park is also important for its Aboriginal archaeological sites. NB The three boatsheds in Clive Park and Northbridge Sailing Club are also of considerable significance and are dealt with separately as items 54 and 31 respectively.

## Item 9: Harbour foreshores

Table A.8.1 Harbour foreshores details

Alternative names	Location	Register	Register ID	Significance level
Harbour foreshores	Extent of Municipal boundary adjacent to the Harbour	Manly Local Environmental Plan 2013	I1	Local

The information provided below is replicated verbatim from the State Heritage Inventory, and the Manly Local Environmental Plan 2013, with any amendments or further additions included in **bold**.

**A.8.6 History**

N/A

**A.8.7 Description**

Length of foreshore including natural and built elements of the landscape. Rocky sandstone ledges, beaches, mud flats and sandstone retaining walls and timber structures.

**A.8.8 Curtilage information**

Extent of Municipal boundary adjacent to the Harbour.

**A.8.9 Significance assessment**

Table A.8.2 Harbour foreshores significance assessment

Criterion	Local level
A – Historical significance	<b>Manly Local Environmental Plan 2013</b> – Landscape, Isolation, Splendid isolation, Permanent Settlement, Villas.
B – Historical association significance	N/A
C – Aesthetic significance	N/A
D – Social significance	N/A
E – Research potential	N/A
F – Rarity	N/A
G – Representativeness	N/A



Figure A.8.1 Harbour foreshore 1986 (Source: Manly Council)

**A.8.10 Statement of significance**

Natural landscape type – Aesthetic.

## A.9 Item 10: Balgowlah Golf Club, Balgowlah

Table A.9.1 Balgowlah Golf Club details

Alternative names	Location	Register	Register ID	Significance level
Balgowlah Golf Club	506 Sydney Road, Balgowlah NSW 2093	-	-	Local

The information provided below is sourced from Ashton (2008); Balgowlah Golf Club (2017); Bloomfield (1926); Cromer Golf Club (2015); Golf Architecture Magazine (2004); Golf NSW (2016); Inside Golf (2015); InvoCare (2016); iseekgolf.com (2011); Jobling (1996); Legge (1977); Manly Library (n.d.); Patterson (2016); Rieth (2010); Seaton (2017); Sharpe (1983); Surveyor General (1890). This heritage item was identified during the field survey for this project.

### A.9.1 History

The Balgowlah Golf Club was formed on 8 August 1925. The course was laid out under the direction of William Whytock, the club president. It was located on land had been 'dedicated for recreation and access to water' since at least 1876. During 1925, the clubhouse was a shed given to the club by the Council. Tenders for the construction of a new clubhouse were called for by architect Frank L'Anson Bloomfield in March 1926, the Chief Architect of the NSW Branch of the War Services Homes Commission between 1920-1922. He later designed the Rookwood Memorial Gardens and Crematorium, the Northern Suburbs Memorial Gardens and Crematorium, and the Redleaf Chambers in Wahroonga. He was awarded the 1950 Sulman Prize for the Top Dog Factory in Brookvale. The clubhouse, built by H McBurney, cost £1,874 to construct, and was officially opened by Mayor Alderman Keirle on 6 November 1926. Membership had reached capacity at 250 members by 1926. (The old clubhouse was given to the Balgowlah Scouts, who used it until it was destroyed in a fire in 1956.) The club's first open tournament was held in May 1929, despite the derailment of a double set of trams which came to rest on the golf course on 14 February 1929.

The club held its 60<sup>th</sup> anniversary in 1985, when it held a total of 367 full members and 190 associate members. The club took top honours in the Sydney-wide Metropolitan Mixed Pennants in 2015, prior to its 90<sup>th</sup> anniversary celebrations on 7 August 2015. The club had a total membership of 576 in 2006, and the numbers dropped to its lowest point of 303 in 2012. Numbers have since risen, from 311 in 2015 up to 316 in 2016. Despite this trend, the Northern Beaches Council selected Balgowlah in 2016 as one of two golf courses to potentially be converted to a sports ground at the behest of the Manly Warringah Pittwater Sporting Union. The Balgowlah Golf Club continues to operate today, offering various membership types and a 'user pays' option for visitors.

Prominent club members included:

- William Whytock, Club President, an English golfer who worked with surveyor Wright in 1926 to designed and lay out the 18-hole Cromer Golf Course, and who had previously designed the Long Reef Golf Course in Collaroy
- Daniel Gordon Soutar, founding Captain of the Balgowlah Golf Club in 1925, Scottish golfer who won both the Australian Open Championship and the Australian PGA Championship in 1905
- James (Jim) Sydney Wallace Eve, the Honorary Secretary, an Olympic swimmer, Australian sports administrator, and former Honorary Secretary-Treasurer of the Australian Olympic Federation who also managed the Australian team at the 1932 Los Angeles Olympics
- Archibald Duncan Denholm, the club's professional golfer, who had been assistant to professional golfer Fred Popplewell at the Australian Golf Club in 1924 and was appointed the Balgowlah Golf Club's professional golfer in 1925

- James Eve was the son of Albert Sydney Eve and English-born Freda Maude, daughter of Frederick Cavill. He was an Olympic swimmer who won a gold medal for his swallow dive in the plain diving event in 1924. He was also a keen golfer and was honorary secretary of the Balgowlah Golf Club from 1926, full-time secretary of the Oaklands Golf Club from 1946-1956, and secretary of the State branch of the Professional Golfers' Association of Australia from 1956. He was also the manager, secretary, and member of teams and associations relating to the Olympic Games, the British Empire Games, and the Commonwealth Games from 1932 until the 1960s. He was awarded Member of the Most Excellent Order of the British Empire (MBE) in 1951.

### A.9.2 Description

Balgowlah Golf Club comprises a 9-hole course, with bunkers and putting greens, designed and laid out by William Whytock across 11.5 hectares of land in 1925, and a clubhouse, built in red brick with hipped tiled roofing, designed by Frank L'Anson Bloomfield (Associate of the Royal Institute of British Architects) in 1926. Aerial photography shows significant changes post-1943, with new rows of trees delineating the fairways, and flat-roofed expansions added to the east and west sides of the original clubhouse building (dating to the clubhouse alterations and additions in 1936 and 1956). A water trap was added in 2011. The club features function rooms, a pro shop, a café and a boardroom. The clubhouse is situated at the top of the hill. Its function centre, which includes a small outdoor entertaining area, offers views down over the golf course below, which is situated on an undulating landscape. The course slopes downwards to the north from the clubhouse. The course is bounded by residential housing to the west, Burnt Bridge Creek Deviation to the northwest, Kitchener Street to the north, residential housing and Balgowlah Oval to the east, and Sydney Road to the south.

### A.9.3 Curtilage information

Balgowlah Golf Club is situated on Lot 2684 DP752038; Lot 110 DP774196.

### A.9.4 Significance assessment

Table A.9.2 Balgowlah Golf Club significance assessment

Criterion	Local level
A – Historical significance	This golf course was created during Sydney's post-World War I suburban expansion in the 1920s, one of approximately 15 set up in the North Shore area. It reflects the growth of the middle-class in the local community, and their desire for recreational activities as membership reached capacity in the year following the club's 1925 formation. The golf course is set upon land formerly used for public recreation.
B – Historical association significance	One of the founders of the Balgowlah golf club was James (Jim) Sydney Wallace Eve (1899-1978), an important sporting identity in swimming, golfing and later in the management and administration of Olympic, British Empire and Commonwealth Games. It is also associated with Frank L'Anson Bloomfield (1879-1949), who designed the clubhouse. Bloomfield was Chief Architect of the NSW Branch of the War Services Homes Commission between 1920-1922, and was known for designing the Rookwood Memorial Gardens and Crematorium, the Northern Suburbs Memorial Gardens and Crematorium, and the Redleaf Chambers in Wahroonga. He was awarded the 1950 Sulman Prize for the Top Dog Factory in Brookvale.
C – Aesthetic significance	The original clubhouse was designed by Frank L'Anson Bloomfield (Associate of the Royal Institute of British Architects) in 1926.
D – Social significance	N/A
E – Research potential	N/A
F – Rarity	N/A
G – Representativeness	N/A

### A.9.5 Archaeological assessment

Prior to the establishment of the golf course in 1925, the land was used for recreation purposes and for access to water. These activities are unlikely to have left much substantial or robust physical evidence. Subsequent ground disturbance due to the construction of the golf course in the 1920s, and subsequent further disturbance and development after 1943, is also likely to have disturbed any archaeological evidence of early use of the site. As such, it is assessed that the Balgowlah Golf Club is unlikely to be of archaeological potential.

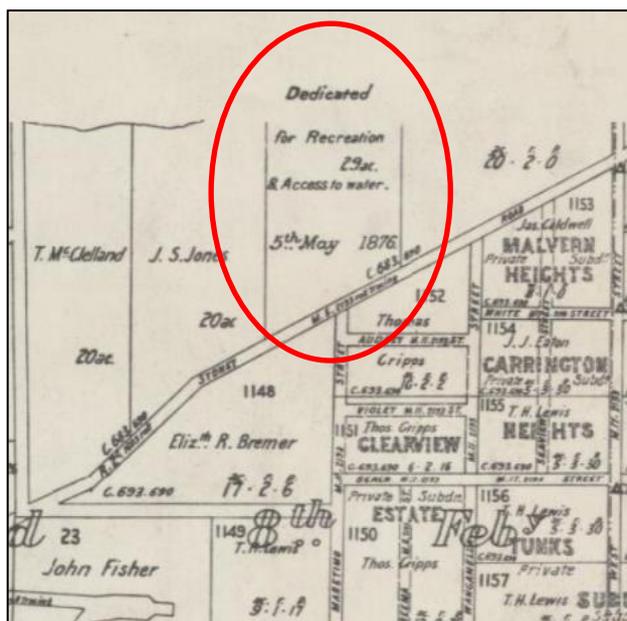


Figure A.9.1 Location of present-day Balgowlah Golf Club marked as 'Dedicated for Recreation and Access to water 5<sup>th</sup> May 1876', 1890 (Source: National Library of Australia)



Figure A.9.2 View of Balgowlah golf course and clubhouse 1957 (Source: Northern Beaches Council)



Figure A.9.3 View of a Balgowlah golf course fairway (Source: Balgowlah Golf Club)



Figure A.9.4 View of Balgowlah clubhouse from the green (Source: Inside Golf)



Figure A.9.5 View of Balgowlah clubhouse eastern extension, facing west



Figure A.9.6 View of the Balgowlah golf clubhouse and part of the course from Balgowlah Oval, facing west



Figure A.9.7 View of Balgowlah golf course, facing west



Figure A.9.8 View of Balgowlah clubhouse from Sydney Road (Source: Yelp)

**A.9.6 Statement of significance**

Balgowlah Golf Club is of historical significance as it represents an example of Sydney's post-World War I suburban expansion in the 1920s. This reflects the growth of the middle-class of the Balgowlah community prior to the Great Depression, and the community's desire for recreational activities – membership reached capacity in 1926, the year following the club's 1925 formation. The course was laid out on land formerly used for public recreation, dating to the late 1800s. It also holds historical association significance in relation to one of its founders, James (Jim) Sydney Wallace Eve (1899-1978) – Parramatta-born Olympic swimmer and Australian sports administrator.

## A.10 Item 11: Frenchs Bullock Track, Killarney Heights

Table A.10.1 Frenchs Bullock Track details

Alternative names	Location	Register	Register ID	Significance level
Frenchs Bullock Track	Wakehurst Parkway, Killarney Heights, NSW 2087	Warringah Local Environmental Plan 2011	I63	Local

The information provided below is replicated verbatim from the State Heritage Inventory, and the Warringah Local Environmental Plan 2011, with any amendments or further additions included in **bold**.

### A.10.1 History

Built about 1856 by James Harris French and used as a bullock track to Bantry Bay. French bought 41 acres adjacent to the Rodborough Estate in 1856, then bought the Rodborough Estate and established a timber industry. Track used to transport timber.

### A.10.2 Description

Track approximately six metres wide of stone quarried from the site with evidence of drainage works, small timber bridges and stone walling supporting the track. Goes down to Bantry Bay. Fairly intact.

### A.10.3 Curtilage information

Frenchs Bullock Track is situated adjacent to Wakehurst Parkway.

### A.10.4 Significance assessment

Table A.10.2 Frenchs Bullock Track significance assessment

Criterion	Local level
A – Historical significance	<b>Warringah Local Environmental Plan 2011</b> – Historically significant due to association with James French, an early pioneer of the area, early land grants and early establishment of a timber industry.
B – Historical association significance	N/A
C – Aesthetic significance	<b>Warringah Local Environmental Plan 2011</b> – Aesthetically significant as evidence of the high degree of technical expertise in track and bridges.
D – Social significance	N/A
E – Research potential	N/A
F – Rarity	N/A
G – Representativeness	N/A



Figure A.10.1 Frenchs Bullock Track (Source: Warringah Council)



Figure A.10.2 Frenchs Forest end of Frenchs Bullock Track, facing south-southeast

#### A.10.5 Statement of significance

Historically significant due to association with James French, an early pioneer of the area, early land grants and early establishment of a timber industry. Aesthetically significant as evidence of the high degree of technical expertise in track and bridges.

## A.11 Item 12: Bantry Bay Water Pumping Station (WPS 122), Killarney Heights

Table A.11.1 Bantry Bay Water Pumping Station (WPS 122) details

Alternative names	Location	Register	Register ID	Significance level
Bantry Bay Water Pumping Station (WPS 122)	Lot 1 Kirkwood Street, Killarney Heights, NSW 2087	Sydney Water Section 170 Heritage and Conservation Registers	4574709	Local
		Warringah Local Environmental Plan 2011	1148	

The information provided below is replicated verbatim from the State Heritage Inventory, and the Warringah Local Environmental Plan 2011, with any amendments or further additions included in **bold**.

### A.11.1 History

The Bantry Bay circular reinforced concrete reservoir with a capacity of 1 1/2 million gallons was completed in May 1924. The reservoir was constructed to improve service to the higher levels of the Manly dam water delivery system. Prior to completion of the Bantry Bay reservoir, supply to this area was heavily dependent on the Manly (Red Hill) reservoir.

The Bantry Bay reservoir was supplied initially by pumping from Manly Dam pumping station. This arrangement continued until 1933 when a 15-in. steel main was laid to connect the Bantry Bay reservoir with the main from Pymble, thus obviating the need to pump from Manly Dam. A second steel reservoir was completed in the 1970s. The current water source is drawn from the Warringah reservoirs.

The small water pumping station was erected in 1924 adjacent the concrete reservoir. This station was replaced in 1975 by a new hydro-pneumatic station constructed about 6 m. to the north of the 1924 structure. Pumps, etc. were removed at this time. The past and present station served/serves as a booster unit to supply a small local area.

### A.11.2 Description

The 1924 pumping station is a small reinforced concrete structure. The building has a flat roof, also of reinforced concrete construction. There are no windows. The entrance door is on the west elevation. The door is timber framed, with ledged and sheeted door leaves. The pumping station is located south of the main reservoirs adjacent the entry to the property from Kirkwood Street.

### A.11.3 Curtilage information

Bantry Bay Water Pumping Station (WPS 122) is situated on Lot 1 DP 835123.

### A.11.4 Significance assessment

Table A.11.2 Bantry Bay Water Pumping Station (WPS 122) significance assessment

Criterion	Local level
A – Historical significance	<b>Warringah Local Environmental Plan 2011</b> – The original North Seaforth pumping station is associated with the construction of the Bantry Bay reservoir in 1924 and its former use as hydro-pneumatic pumping station which was built to improve water supply to the high areas north of the Manly reservoir. The reservoir and pumping station therefore have strong historical associations with the development of the suburbs of the Manly/Warringah area.
B – Historical association significance	N/A
C – Aesthetic significance	<b>Warringah Local Environmental Plan 2011</b> – The original pumping station is an example of a hydro pneumatic small booster water pumping constructed by the Water Board in the 1920s demonstrating the design of such structures in reinforced concrete.
D – Social significance	<b>Warringah Local Environmental Plan 2011</b> – The original pumping station (in association with the reservoir) is a major item of the historic built environment of the Seaforth area of the Warringah local government area, and its past use provides a focus for an understanding of the development of the local area.
E – Research potential	<b>Warringah Local Environmental Plan 2011</b> – The original pumping station is constructed of reinforced concrete and demonstrates the widespread advocacy of this construction technique by the 1920s, particularly for public works infrastructure. The original hydro-pneumatic equipment has been removed.
F – Rarity	<b>Warringah Local Environmental Plan 2011</b> – Rare in consideration of its original hydro-pneumatic use.
G – Representativeness	<b>Warringah Local Environmental Plan 2011</b> – Representative in its function which is seen at a number of localities across Sydney.



Figure A.11.3 View of the Bantry Bay Water Pumping Station (WPS 122) with the modern pumping station on the right, facing east

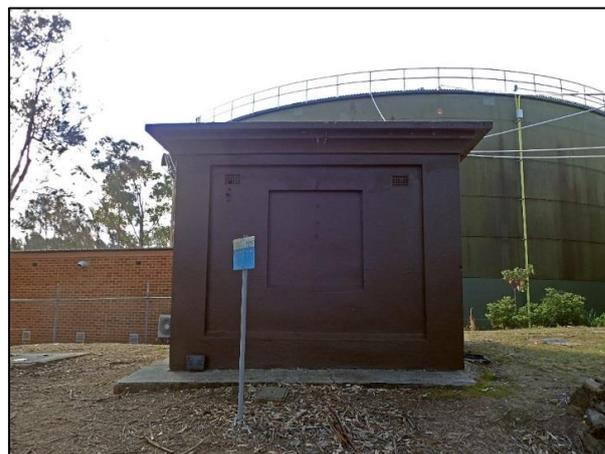


Figure A.11.4 View of the Bantry Bay Water Pumping Station (WPS 122) and Sydney Water Heritage Item sign, facing north

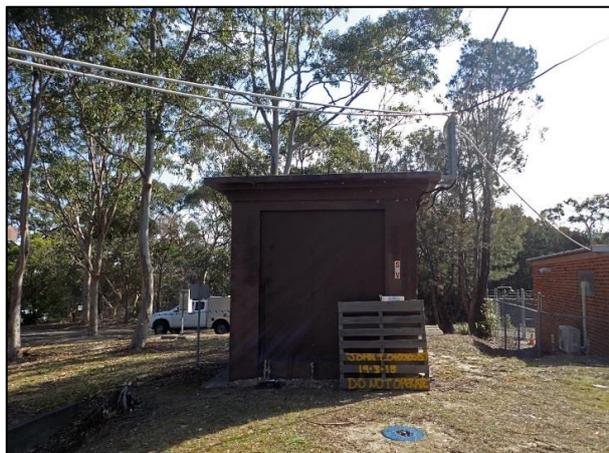


Figure A.11.5 View of the Bantry Bay Water Pumping Station (WPS 122), facing west



Figure A.11.6 View of the Bantry Bay Water Pumping Station (WPS 122), facing south



Figure A.11.7 Former Venturi Meter House, now meter house (Source: Edward Higginbotham)



Figure A.11.8 The original meter house at Bantry Bay Reservoir, now brown



Figure A.11.1 The original pumping station at Bantry Bay (Source: Warringah Council)

### A.11.5 Statement of significance

The former Bantry Bay water pumping station was constructed in 1924, and is an example of hydro pneumatic pumping station constructed of reinforced concrete in Sydney in the 1920s. The construction of

the station is associated with the development of water supply to the local area, which (in association with the reservoir) is a major element of the historic built environment of the local government area of Warringah. The former use and age of the station provides a focus for an understanding of the suburban development of the area. The significant elements are the location near the original reservoir (inclusive of views from the street) and fabric of the pumping station superstructure.

## A.12 Item 13: Bantry Bay Reservoir (WS 0008), Killarney Heights

Table A.12.1 Bantry Bay Reservoir (WS 0008) details

Alternative names	Location	Register	Register ID	Significance level
Bantry Bay Reservoir (WS 0008)	Lot 1 Kirkwood Street, Killarney Heights, NSW 2087	Section 170 Heritage and Conservation Registers	4575790	Local
		Warringah Local Environmental Plan 2011	1147	

The information provided below is replicated verbatim from the State Heritage Inventory, and the Warringah Local Environmental Plan 2011, with any amendments or further additions included in **bold**.

### A.12.1 History

Manly Reservoir (WS 64) was constructed in 1892 and was supplied from Manly Dam (1892), by pump located just below the dam wall. Manly water supply was independent of the Metropolitan supply from the Upper Nepean Scheme until 1906, when a gravity main was completed from Mosman Reservoir.

An elevated tank was erected beside the Manly Reservoir in 1916, but was made redundant and demolished in 1924, when Bantry Bay Reservoir (WS 8) was completed.

Supply from the Manly Dam was phased out by 1933 when Bantry Bay Reservoir (WS 8) was connected by main to Pymble Reservoir.

Manly Reservoir was built by the NSW Department of Public Works and owned by Manly Council, until it was transferred in 1902. Bantry Bay Reservoir (WS 8) was built by the MWS and DB.

Manly water supply was integrated into the Metropolitan supply in 1933, when Bantry Bay Reservoir (WS 8) was connected by main to Pymble, thus making Manly Dam redundant for supply needs.

### A.12.2 Description

Bantry Bay Reservoir (WS 8) is a cylindrical reinforced concrete reservoir, with slightly tapering sides. It is connected by overhead walkway to the adjacent Bantry Bay Reservoir (WS 221).

Standard features include: concrete apron, davit, depth gauge board, access stairway, handrails and inlet and outlet valve chambers.

Bantry Bay Reservoir (WS 221) is a welded steel reservoir and is not significant. Within the grounds is a small meter house, originally housing a Venturi meter, but only with the pipework remaining (the meter has been removed). A skid hut has also been reused as a meter house.

Full Service Level: 133 m. Capacity: 6.9 ML.

### A.12.3 Curtilage information

Bantry Bay Reservoir (WS 0008) is situated on Lot 1 DP 835123.

#### A.12.4 Significance assessment

Table A.12.2 Bantry Bay Reservoir (WS 0008) significance assessment

Criterion	Local level
A – Historical significance	<p><b>Warringah Local Environmental Plan 2011</b> – This reservoir or site demonstrates the amplification in demand due to growing population.</p> <p>This reservoir has an historical association with an independent water supply. It is one of the 3 main structures of the Manly Water Supply Scheme, which was independent of the Metropolitan Supply, the other structures being Manly Dam and Manly Reservoir (WS 64).</p>
B – Historical association significance	N/A
C – Aesthetic significance	N/A
D – Social significance	N/A
E – Research potential	N/A
F – Rarity	<p><b>Warringah Local Environmental Plan 2011</b> – One of a small group of concrete reservoirs with stepped or tapered sides.</p>
G – Representativeness	N/A

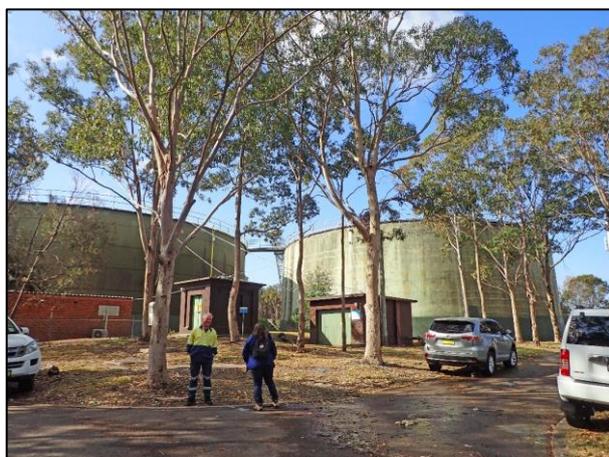


Figure A.12.2 View northeast towards the concrete Bantry Bay Reservoir (WS 0008), located on the right



Figure A.12.3 Detail of earth cutting between Bantry Bay Reservoir (WS 0008) and the 1970s steel reservoir



Figure A.12.4 Detail of the concrete ring surrounding Bantry Bay Reservoir (WS 0008), facing northeast



Figure A.12.5 Detail of the water level measure and fuse box attached to the Bantry Bay Reservoir (WS 0008)



Figure A.12.6 Metal staircase attached to Bantry Bay Reservoir (WS 0008), and catwalk connecting the two reservoirs



Figure A.12.7 View northwest towards Bantry Bay Reservoir (WS 0008) with an inspection point in the foreground



Figure A.12.8 View of the concrete staircase behind Bantry Bay Reservoir (WS 0008), facing north



Figure A.12.9 Detail of the rusted metal embedded at the top of the concrete staircase, facing north towards the Bantry Bay Reservoir (WS 0008)



Figure A.12.1 WS 0008 (Source: Edward Higginbotham)



Figure A.12.2 Original WS 0008 on the right



Figure A.12.3 Manly Reservoir, viewed from the dam wall (Source: Sydney Water)

### A.12.5 Statement of significance

Bantry Bay Reservoir (WS 8). One of a small group of cylindrical concrete reservoirs, serving the needs of suburban communities, and demonstrating the growth of demand. It is one of the 3 main structures of the Manly Water Supply Scheme, which was independent of the Metropolitan Supply, the other structures being Manly Dam and Manly Reservoir (WS 64).

The listing includes the reservoir and all associated pipework, valves and valve houses to the property boundary, as well as other structures described in this listing.

## A.13 Item 14: Manly Dam and Surrounds, Allambie Heights

Table A.13.1 Manly Dam and Surrounds details

Alternative names	Location	Register	Register ID	Significance level
Manly Dam and Surrounds	King Street, Manly Vale	<i>Warringah Local Environmental Plan 2011</i>	C9	Local
Manly Dam and Old Water Treatment Works		National Trust of Australia (NSW)	S11603	

The information provided below is replicated verbatim from the State Heritage Inventory, and the *Warringah Local Environmental Plan 2011*, with any amendments or further additions included in **bold**.

### A.13.1 History

Manly Dam was built in 1892 by the Public Department Works as a water supply dam for the Manly area, which was progressively called on to supply neighbouring suburbs such as Balgowlah and Seaforth and eventually the coastal strip of Warringah Shire to as far north as Mona Vale. The dam was constructed as a mass concrete, gravity structure with a maximum height of 19 metres and length of 250 metres. Its catchment area extended 520 hectares to Frenchs Forest.

The dam was constructed by the NSW Government's Department of Public Works for the local council under a special Act of Parliament as part of a complete water supply scheme for Manly. Operated by Manly Council until 1902 when taken over by the Metropolitan Water Sewerage and Drainage Board. It consisted of a dam, pumping station, rising main, service reservoir and reticulation. It was operated by the council for ten years until it was resumed by the Metropolitan Water Sewerage (**MWS**) and Drainage Board (**DB**) in January 1902, at its original cost (37 820 pounds), less the amount the council had paid off already.

The concrete dam was designed to hold 68,216,000 gallons but was upgraded in 1909 with an enlarged by-wash being excavated on the eastern side and the old by-wash built up, thus enabling the top level of the reservoir to be raised and the storage capacity increased to 84,000,000 gallons. In 1914, the capacity was raised further to 90.5 million gallons and then in 1922 to 441 million gallons with the top water level being 115 feet above sea level.

In 1920, a filtration plant was installed, consisting of a settling and coagulating basin, gravel and sand filter beds, inspection chambers and a clear water basin.

By 1928, increasing demand for water had overtaken the dam's capacity and in 1929, it was phased out, with supply for Warringah and Manly being provided by pipeline from the main metropolitan system at Pymble Reservoir. Water supply use ceased in 1933 except in **the** 1942 drought. In 1936, the pumping installation was dismantled, following the commissioning of an amplified connection to the main metropolitan system, the completion of a 10-million-gallon reservoir at Rocky Hill and the progressive development of the Upper Nepean Scheme. Despite this, during an extensive drought period from 1934-1942, the dam was again brought into service, with pumps transferred from Engadine. During a nine-and-a-half-month period up to October 1942, 975 megalitres of water were drawn to supplement Sydney's supply.

From 1942, parts of the former water treatment plant downstream of the dam were reused in association with a hydraulics laboratory set up by the Department of Water Conservation and Irrigation. The Department of Public Works set up similar facilities in 1944. The MWS and DB also established water hydraulics experimental facilities and in 1955, the University of Technology (now the University of NSW) also established hydraulics laboratories. These facilities remain in use, although ownership and administration has varied between departments at times.

The dam wall was strengthened in 1979-81 to bring the dam up to current safety standards. The methods used involved the sinking of long, vertical, steel tendons into the rock foundations but free in the dam wall itself, to permit future load monitoring and adjustment, and then anchored in heads specially designed for these tests on the crest of the dam. This technique was considered revolutionary at the time and gained world recognition when a paper was presented by Sydney Water Board engineers to the 14th Congress of the International Commission on Large Dams in Rio de Janeiro in 1982.

### A.13.2 Description

Manly Dam and its surrounds including the dam and walls, former treatment **plant**, pumping station buildings, remaining dam infrastructure and picturesque setting including the surrounding natural bushland of the Manly Warringah War Memorial Park and Wakehurst Golf Course. It is a mass concrete gravity structure with a maximum height of 19 metres and a length of 250 metres. It is located on Curl Curl Creek (and therefore dams Curl Curl Creek) some 3 kilometres northwest of Manly with a catchment area of about 520 hectares extending to Frenchs Forest in the North. The Catchment area and stored water of the **dam** are now used primarily for public recreation. The stored water is also utilised as a supply for the adjoining hydraulic investigation laboratories of Sydney Water, the Public Works Department, and the University of New South Wales.

### A.13.3 Curtilage information

Manly Dam and Surrounds is located in Allambie Heights, comprising Manly Dam, the surrounding Manly Warringah War Memorial Park and adjoining bushland to the north.

### A.13.4 Significance assessment

Table A.13.2 Manly Dam and Surrounds significance assessment

Criterion	Local level
A – Historical significance	<p><b>State Heritage Register</b> – The dam is the largest example of an independent water supply system within the Sydney Metropolitan Area.</p> <ul style="list-style-type: none"> <li>- The dam played an important role as an independent water supply scheme for the northern beaches area of Sydney.</li> <li>- The dam is a relic of the period when the northern beaches were remote from the major areas of settlement in Sydney, prior to the opening of the Sydney Harbour Bridge.</li> <li>- The dam was designed and built by the NSW Department of Public Works and is associated with the prominent engineers in this department at this time, particularly, E.O. Moriarty and C.W. Darley.</li> <li>- The dam is an early example of the government initiative of the early 1890s, allowing local councils to raise loans for water supply purposes.</li> <li>- The dam is one of the last of its size and type designed by the NSW Dept of Public Works as a gravity wall, prior to the general adoption of curved concrete walls for small dams.</li> </ul>
B – Historical association significance	N/A
C – Aesthetic significance	<p><b>State Heritage Register</b> – The Manly Dam is a simple and attractive construction, located in a picturesque setting.</p> <ul style="list-style-type: none"> <li>- The dam is a good example of a basic concrete-walled gravity dam.</li> </ul>

Criterion	Local level
	- The dam is an impressive structure, with its relatively thin wall standing between the water body of the reservoir on the west and the void and valley floor on the east.
D – Social significance	<b>State Heritage Register</b> – The Manly Dam is highly regarded by the public as represented by the National Trust of Australia (NSW), as evidenced by its identification in the National Trust Register.
E – Research potential	<b>State Heritage Register</b> – Manly Dam is a century-old, mass-concrete gravity dam which has no operational imperative, making it an ideal facility for a range of experimental and research activities. - Manly Dam is of technical significance for its association with the Hydraulics Laboratories in the former water treatment plant and its continuing role in the provision of experimental facilities. - The dam is the site of <b>ongoing</b> testing and monitoring of the wall-strengthening methodology pioneered at this dam.
F – Rarity	<b>State Heritage Register</b> – Manly Dam is the largest and most developed of the surviving Sydney regional independent water supply schemes. - Manly Dam is one of the very few substantial dam structures located within the suburbs of Sydney. - Manly Dam was the site of a dam-strengthening program which pioneered a world-first technology <b>that</b> has subsequently become an accepted procedure for this purpose.
G – Representativeness	<b>State Heritage Register</b> – The Manly Dam is a representative example of a small concrete gravity dam structure of the late nineteenth century. - Manly Dam is representative of a range of small dams erected for water supply purposes in NSW by the NSW Department of Public Works between the 1890s and 1930s.



Figure A.13.4 Manly Dam and its surrounds (Source: Warringah Council)



Figure A.13.5 Manly Reservoir, viewed from the dam wall (Source: Sydney Water)



Figure A.13.6 Manly Dam and surrounds (Source: Warringah Council)



Figure A.13.7 Manly Dam and surrounds (Source: Warringah Council)



Figure A.13.8 View of an entry into the Manly Warringah War Memorial Park from the Wakehurst Parkway, facing north



Figure A.13.9 Location of Manly Dam and surrounds (Source: Heritage Council)

## A.13.5 Statement of significance

### A.13.5.1 State Heritage Register

Manly Dam is a representative example of a medium-sized, concrete gravity dam of the late nineteenth century, as regards both design and construction. It has historical significance for its role in the historical development of Sydney's water supply, in particular as being an independent scheme, built despite the fact that the renowned first stage of the Upper Nepean Water Supply, a comprehensive, long-term scheme with capacity for progressive augmentation by the successive construction of major dams on the contributing rivers, had recently been completed. It has technical significance as a representative example of its type and for the pioneering strengthening methodology which was developed for this dam. The dam is a rare remnant of an independent water supply system within the Sydney Metropolitan Area, providing evidence of the progressive and independent development of Sydney's suburbs, and has local aesthetic value. The former treatment plant and pumping station buildings are also significant but are not owned by the Sydney Water Corporation.

#### A.13.5.2 Warringah Local Environmental Plan 2011

A rare example of a water supply system which was erected prior to 1900. One of only **two** independent water supply schemes built in the Sydney region. Historically significant in the **development** of Sydney's water supply and the provision of services for early development.

## A.14 Item 15: Henry Lawson's Cave, Willoughby

Table A.14.1 Henry Lawson's Cave details

Alternative names	Location	Register	Register ID	Significance level
Henry Lawson's Cave	Bicentennial Reserve, Small Street, Willoughby, NSW 2068	-	-	Local

The information provided below is sourced from the State Heritage Inventory for Flat Rock Creek Bridge, and from Australia For Everyone (2017); Clouston (1995); Evans (2008); Willoughby City Council (2012; n.d.-a; n.d.-b; n.d.-c; n.d.-d); Willoughby District Historical Society Inc (2011). This heritage item was identified during the field survey for this project.

### A.14.1 History

Henry Lawson's Cave is situated within Flat Rock Gully, and is part of Bicentennial Reserve. Flat Rock Gully was inhabited by the local Camaraigal clan of the Guringai nation prior to European settlement, with evidence found in caves dating back at least 5,850 years. The last known encampment of Indigenous Australians within Flat Rock Gully is dated between the 1870s-1880s, and was situated near the Flat Rock Bridge (built in 1888 to allow for the continuation of Willoughby Road, linking suburbs in the south, such as Wollstonecraft and Crows Nest, with those in the north, such as Middle Harbour, after the original 1869 bridge was destroyed in a flash flood during 1870). The quarrying of sandstone within the gully commenced in the 1880s, and some of the sandstone was used to build the terraced gardens and dry stone walls found near Henry Lawson's Cave.

Local residents began using the gully as a rubbish tip during the 1930s, prompting the opening of the nearby Walter Burley Griffin Incinerator in 1934. Despite this, dumping of rubbish continued into the 1940s, and did not cease until an order was issued by the Environmental Protection Authority in 1985 (Willoughby City Council 2012). Willoughby City Council then commenced a plan to reclaim the tip site and turn it into a modern sporting complex. The area was re-landscaped and Bicentennial Reserve was opened in 1988, as part of the Council's Bicentennial Project. The regeneration of the bushland within the gully along Flat Rock Creek from the reserve to Tunks Park, Cammeray, resulted in the opening of the Wilksch Walk in 1996. Henry Lawson's Cave is near the base of stairs from the car park of the current Willoughby Leisure Centre, which opened in Bicentennial Reserve in 1990, to the walking track in the gully below.

Henry Lawson (1867-1922), the New South Wales poet and writer, lived in Naremburn between 1906-1907 with a widow named Mrs Isabel Byers, and for a short period after the end of World War I. 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). It was during these periods that he would spend his evenings at local taverns, exchanging a poem for alcohol, and would 'sleep it off in a little cave in Flat Rock Gully, listening to the cascade of the Naremburn Falls' (Willoughby City Council n.d.-c) rather than return home for the night.

Naremburn Falls, known as the highest waterfall in the Sydney region, was located between Flat Rock Creek Bridge and The Devil's Hole to the east of Willoughby Road. Naremburn Falls is no longer extant, having vanished underneath the rubbish tip by 1946. It is reputed that this rock shelter is the present location known as Henry Lawson's Cave, situated just below the former Naremburn Falls (Figure A.14.1). However, according to Clouston (1995), the evidence that this was the cave in which Henry Lawson stayed is anecdotal. Nevertheless, the Council organised the clean-up of the rock shelter, and it is marked with a stone bas-relief of Lawson's profile by Chris Bennett, owner of Ishi Buki Sandstone Sculptures (Chris Bennetts Landscapes n.d.). While there is no date of the sculpture's installation, it was extant in 2004 (Willoughby City Council 2004). There is also no date for an official opening of Henry Lawson's Cave, but it was likely restored by the Bushcare group as part of the Bicentennial Reserve project, and its opening to the public would thus likely have been between 1998 and 2000 (Bennell 2000).

Today, the rock shelter is a venue for community events which include poetry readings, especially those of Henry Lawson and Banjo Patterson. The audience sits in the mini-amphitheatre while the poetry recital happens within the setting of the cave. Official poetry readings, including the popular 'Bush Poetry at Dusk' organised by Don Swonnell, have been held at Henry Lawson's Cave since at least 2001. The latest poetry event held at the site was in February 2017 (Northbridge Progress Association 2017; Swonnell 2001). Henry Lawson's Cave is also a stopping point along the Willoughby City Council's Artarmon to Middle Harbour Interpretive Walk (Figure A.14.1).

#### A.14.2 Description

Henry Lawson's Cave comprises a sandstone rock shelter (Figure A.14.2 - Figure A.14.6) on the southern side of a bicycle and walking track situated in Flat Rock Gully. A sandstone bas-relief of Henry Lawson's profile and the words, 'Henry Lawson Cave' (Figure A.14.4), and a wooden picnic table have been installed to the west of the cave, and a fire pit made of a circle of small sandstone blocks has been set up to the east of the cave, on the large sandstone slab upon which the cave is situated. There is a small set of steps leading up to the cave from the track (Figure A.14.5). A six-course sandstone mini-amphitheatre (Figure A.14.3) is installed in the northern side of the track, from which an audience can view performances held at the rock shelter. The area is surrounded by regenerated bushland.

#### A.14.3 Curtilage information

Henry Lawson's Cave is situated on Crown reserve.

#### A.14.4 Significance assessment

Table A.14.2 Henry Lawson's Cave significance assessment

Criterion	Local level
A – Historical significance	N/A
B – Historical association significance	Henry Lawson's Cave has been anecdotally connected with poet Henry Lawson (1867-1922). It is believed he used the rock shelter after drinking at local taverns whilst he lived in Naremburn.
C – Aesthetic significance	N/A
D – Social significance	The local community has used the location, both the cave area itself and the mini-amphitheatre, since at least 2001 for poetry readings, especially the poetry of Henry Lawson. Such events at the cave are regularly held by the Willoughby City Council, with bush poetry recitals being held in February to honour the birthdays of both Banjo Patterson and Henry Lawson. The cave area is a stopping point on the Artarmon to Middle Harbour Interpretive Walk prepared by the Willoughby City Council. The use and identification of the cave in these ways, demonstrates its importance to the local community.
E – Research potential	N/A
F – Rarity	N/A
G – Representativeness	N/A

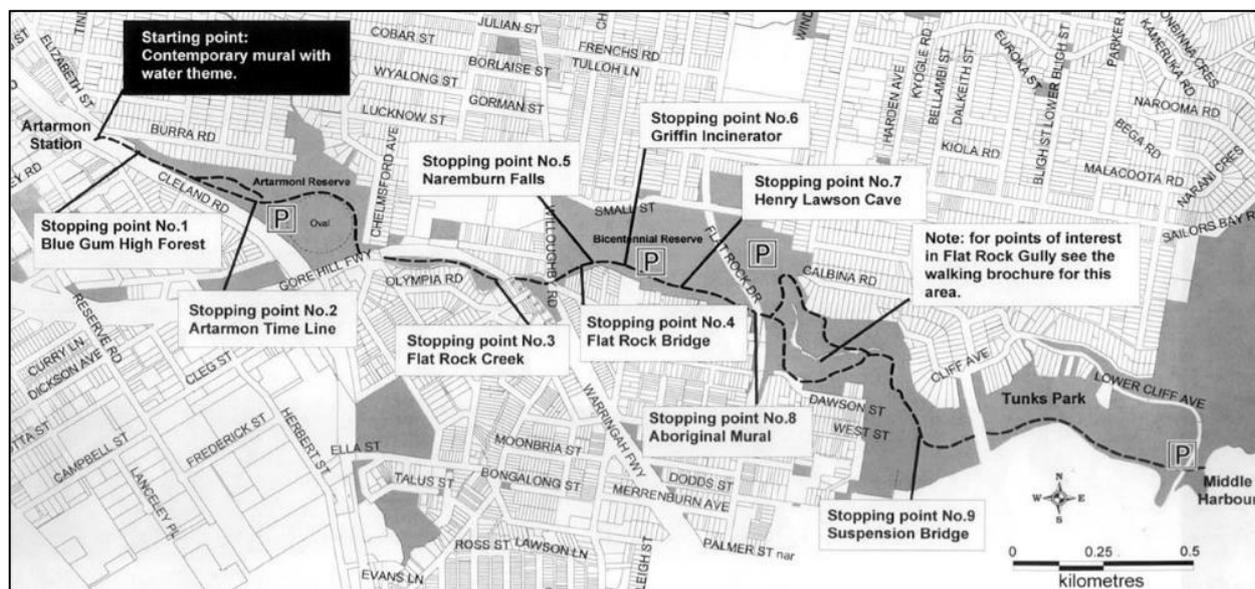


Figure A.14.1 Location of Naremburn Falls, Flat Rock Bridge, Henry Lawson’s Cave (Source: Willoughby City Council (2017))

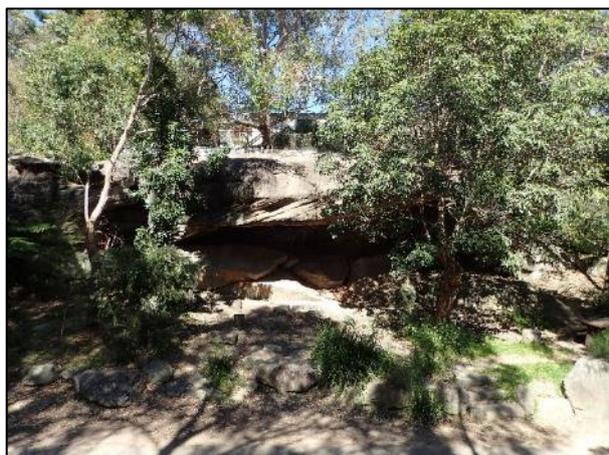


Figure A.14.2 Henry Lawson’s Cave, facing south



Figure A.14.3 Amphitheatre, facing east

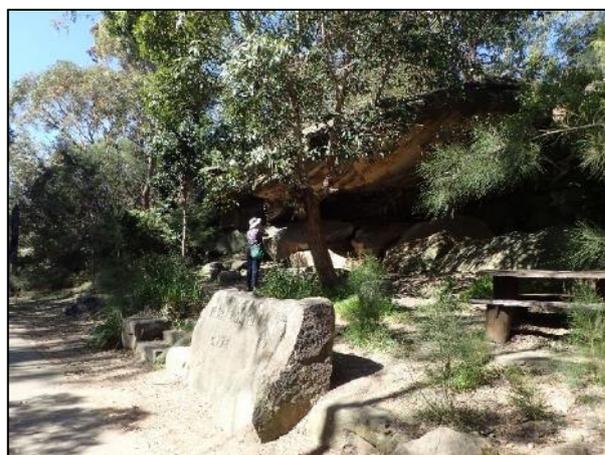
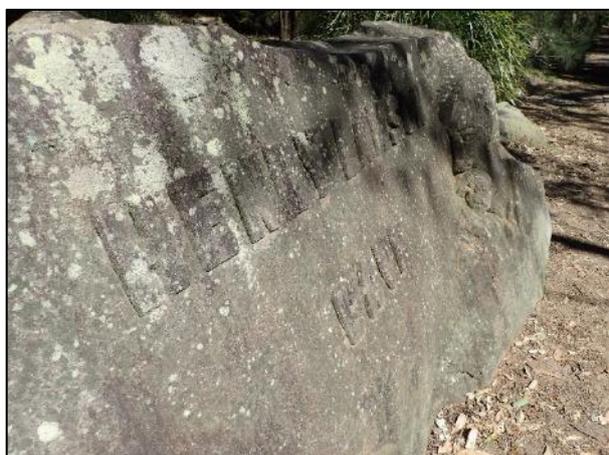


Figure A.14.4 Bas-relief sculpture by sculptor Chris Bennett



Figure A.14.5 View of sculpture, picnic table, steps and rock shelter, facing southeast

Figure A.14.6 Interior of sandstone rock shelter

#### A.14.5 Statement of significance

Henry Lawson's Cave is important for its historical association with Henry Lawson. Anecdotal evidence suggests that Henry Lawson spent time in the Flat Rock Gully rock shelter whilst he lived in Naremburn (between 1906-1907 and for a short time after the end of World War I). It is believed that he wrote poetry during the time he spent within the shelter. It is also of social significance to the local community due to the Willoughby City Council's restoration of Henry Lawson's Cave, including the installation of an amphitheatre for the purposes of seating an audience for the bush poetry events they have regularly held there since the turn of the twenty-first century. It is also identified as a stopping point on the Council's Artarmon to Middle Harbour Interpretive Walk.

## A.15 Other Heritage Items

Table A.15.1 Other Heritage Items details

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House	North Sydney Local Environmental Plan 2013	I0988	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	185 Walker street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0994	A (historical) C (aesthetic) G (representativeness)	Local	207 Walker street	North Sydney
North Sydney Sewer Vent	State Heritage Register	01641	A (historical) C (aesthetic) D (social) E (research potential) F (rarity) G (representativeness)	State	Falcon Street and Freeway	North Sydney
	s.170 NSW State agency heritage register	285047				
	North Sydney Local Environmental Plan 2013	I0839		Local	Falcon Street (south-west of Warringah Freeway)	
	Register of the National Estate	101165			Falcon Street	
House	North Sydney Local Environmental Plan 2013	I0633	A (historical) C (aesthetic) D (social) G (representativeness)	Local	2 Kurraba Road	North Sydney
House	North Sydney Local Environmental Plan 2013	I0634	G (representativeness)	Local	4 Kurraba Road	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

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
'St Malo'	North Sydney Local Environmental Plan 2013	I0982	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	95 Ridge Street	North Sydney
House, sandstone rock wall and cliff face	North Sydney Local Environmental Plan 2013	I0735	A (historical) C (aesthetic) F (rarity)	Local	2 Winter Avenue	Neutral Bay
Flat building	North Sydney Local Environmental Plan 2013	I0542	B (historical association) C (aesthetic)	Local	439 Alfred Street North	Neutral Bay
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

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
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
St Leonards Park; North Sydney Oval	State Heritage Register	01941	A (historical) B (historical association) C (aesthetic) D (social) F (rarity) G (representativeness)	State	283A Miller Street	North Sydney
	North Sydney Local Environmental Plan 2013	I0916		Local	Miller Street	
	Register of the National Estate	19563				
	National Trust of Australia (NSW)	S9878				
	North Sydney Local Environmental Plan 2013	I1125	F (rarity)			
W. Tunks Memorial Fountain	North Sydney Local Environmental Plan 2013	I1124	A (historical) F (rarity)			
War memorial	North Sydney Local Environmental Plan 2013	I1123	C (aesthetic) D (social)		Ridge Street	
Walker and Ridge Streets heritage conservation area	North Sydney Local Environmental Plan 2013	CA20	-	Local	Walker and Ridge Streets	North Sydney
	Register of the National Estate	100852				
Whaling Road heritage conservation area	North Sydney Local Environmental Plan 2013	CA21	-	Local	Whaling Road	North Sydney
	Register of the National Estate	100858				
House	North Sydney Local Environmental Plan 2013	I0582	F (rarity) G (representativeness)	Local	1 Byrnes Avenue	North Sydney
House	North Sydney Local Environmental Plan 2013	I0583	F (rarity) G (representativeness)	Local	2 Byrnes Avenue	North Sydney
House	North Sydney Local Environmental Plan 2013	I0584	F (rarity) G (representativeness)	Local	3 Byrnes Avenue	North Sydney

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House	North Sydney Local Environmental Plan 2013	I0585	F (rarity) G (representativeness)	Local	4 Byrnes Avenue	North Sydney

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House	North Sydney Local Environmental Plan 2013	I0586	F (rarity) G (representativeness)	Local	5 Byrnes Avenue	North Sydney
House	North Sydney Local Environmental Plan 2013	I0587	F (rarity) G (representativeness)	Local	6 Byrnes Avenue	North Sydney
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	North Sydney
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	North Sydney
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	North Sydney
House	North Sydney Local Environmental Plan 2013	I0591	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	10 Byrnes Avenue	North Sydney

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House	North Sydney Local Environmental Plan 2013	I0595	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	5 Darley Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0596	A (historical) B (historical association) C (aesthetic) E (research potential) G (representativeness)	Local	6 Darley Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0619	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	317 Ernest Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0620	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	319 Ernest Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0621	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	321 Ernest Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0622	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	323 Ernest Street	North Sydney
House	North Sydney Local Environmental Plan 2013	I0623	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	325 Ernest Street	North Sydney
Northern Beaches Ocean Outfall	Sydney Water Section 170 Heritage and Conservation Registers	4570286	A (historical) C (aesthetic) D (social) E (research potential) F (rarity)	Local	Flushcombe Road, Blacktown to Ocean Outfall at North Head (runs through Anzac Park)	North Sydney

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
			G (representativeness)			
Commercial building	Manly Local Environmental Plan 2013	I25	-	Local	463 Sydney Rd	Balgowlah
House	North Sydney Local Environmental Plan 2013	I0023	A (historical) B (historical association) C (aesthetic) E (research potential) F (rarity) G (representativeness)	Local	280 West St	Cammeray
Upper Middle Harbour Area	Register of the National Estate	15000	-	Local	~800 ha area west of Wakehurst Pkwy	Killarney Heights
Grant's Wharf (remains); Remains of former Grant Wharf	Mosman Local Environmental Plan 2012	A492	F (rarity)	Local	Parriwi Road	Mosman
	Sydney Regional Environmental Plan No 23—Sydney and Middle Harbours 2005	Schedule 5			Spit Road	
House (including original interiors) - Romatrapa	Willoughby Local Environmental Plan 2012	I161	A (historical) C (aesthetic) F (rarity) G (representativeness)	Local	33 Market St	Naremburn
House (including original interiors)	Willoughby Local Environmental Plan 2012	I162	B (historical association) C (aesthetic) D (social) F (rarity)	Local	38 Market St	Naremburn
House (including original interiors) - Dangog (1914)	Willoughby Local Environmental Plan 2012	I163	B (historical association) C (aesthetic) D (social) F (rarity)	Local	40 Market St	Naremburn

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House (including original interiors)	Willoughby Local Environmental Plan 2012	I169	A (historical) C (aesthetic) D (social)	Local	40 Slade St	Naremburn
House (including original interiors)	Willoughby Local Environmental Plan 2012	I170	A (historical) C (aesthetic) D (social) F (rarity)	Local	42 Slade St	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) F (rarity) G (representativeness)	Local	284 and 284A Willoughby Rd	Naremburn
Naremburn Central Township (Conservation Area)	Willoughby Local Environmental Plan 2012	C9	-	Local	Naremburn	Naremburn
Narrabeen Lagoon Catchment	Register of the National Estate	15880	-	-	~5,000 ha area north of Wakehurst Pkwy	Narrabeen
Street trees	Manly Local Environmental Plan 2013	I264	A (historical)	Local	Alan Ave	Seaforth
House	Manly Local Environmental Plan 2013	I271	A (historical) C (aesthetic) G (representativeness)	Local	18 Edgecliffe Esplanade	Seaforth
Stone library (former school house)	Manly Local Environmental Plan 2013	I273	A (historical) C (aesthetic) D (social) F (rarity) G (representativeness)	Local	Frenchs Forest Road (corner Sydney Road and Frenchs Forest Road)	Seaforth
House	Manly Local Environmental Plan 2013	I274	C (aesthetic) G (representativeness)	Local	14 Palmerston Place	Seaforth
Street trees	Manly Local Environmental Plan 2013	I275	A (historical)	Local	Panorama Parade (from Edgecliffe Esplanade to Ponsonby Parade)	Seaforth

Heritage item name	Heritage register	Listing	Criterion	Significance	Address	Suburb
House	Manly Local Environmental Plan 2013	I278	A (historical)	Local	14 Ross Street (corner Panorama Parade)	Seaforth
Reserved track for trams	Manly Local Environmental Plan 2013	I280	-	Local	The Spit (from Whittle Avenue to The Spit Bridge)	Balgowlah
House	Manly Local Environmental Plan 2013	I285	A (historical) C (aesthetic) G (representativeness)	Local	1 Whittle Avenue	Balgowlah
Bantry Bluff	Manly Local Environmental Plan 2013	I268	A (historical)	Local	Wakehurst Parkway	Seaforth
Walter Burley Griffin Incinerator; Incinerator	State Heritage Register	00084	A (historical) B (historical association) C (aesthetic) D (social) E (research potential) F (rarity) G (representativeness)	State	2 Small St	Willoughby
	Willoughby Local Environmental Plan 2012	I228				
	Willoughby Local Environmental Plan 1995	Schedule 6				
	National Trust of Australia (NSW)	S8569				
	Royal Australian Institute of Architects Register	4700895				
Register of the National Estate	2951					
Artarmon (Conservation Area)	Willoughby Local Environmental Plan 2012	C1	-	Local	Artarmon/Willoughby	Artarmon/Willoughby
	National Trust of Australia (NSW)	S6655				

## A.16 Burnie (House)

Table A.16.1 Burnie (House) details

Alternative names	Location	Register	Register ID	Significance level
Burnie (House)	16 Dudley Street, Balgowlah	-	-	-

The historical information provided below is sourced from Griffin (1909); William Brooks and Co Limited (1912), and from contemporary newspaper sources.

### A.16.1 History

The allotment in which Burnie (House) is situated, lot 83, was originally owned by J.S. Jones. Jones owned the land between Burnt Bridge Creek in the north and Sydney Road in the south. Today's Hope and Dudley Streets are situated within this section of land. The allotment immediately to its east was 'dedicated for recreation and access to water', which now comprises the Balgowlah Golf Club (Figure A.16.7).

According to the *Sydney Morning Herald* (8 August 1908, p. 23), Spit Heights Estate, in which Dudley Street is situated, was first mentioned in 1908, as part of Arthur Rickard and Co Limited's spring auction sales campaign. The *Evening News* (31 October 1908, p. 8), states that building allotments would be put up for auction on 9 November by the same company. The *Sydney Morning Herald* (10 November 1908, p. 9) stated that 'many of the interior lots were disposed of, the prices being from 6s 6d to 13s 6d per foot'. A total of 25 allotments were sold (*Weekly Supplement to Building*, 11 November 1908, p. 4). A further eight Spit Heights Estate allotments were put up by Arthur Rickard and Co Limited for auction in December (*Weekly Supplement to Building*, 1 December 1908, p. 4).

In February 1909, Arthur Rickard and Co Limited advertised that a second subdivision of Spit Heights Estate would be opened for auction, near the Spit to Manly tramline (*Daily Telegraph*, 10 February 1909, p. 6). Burnie (House) was built on this second Spit Heights Estate subdivision (Figure A.16.8), which was opened for sale on Saturday 6 March 1909. The allotment on which the house is situated, lot 38, backed onto land assigned as 'reserve for recreation'. On 9 March 1909, the *Weekly Supplement to Building* (9 March 1909, p. 6) stated that 31 allotments were sold from the 49 put up for auction. A second auction was arranged for the left-over allotments on 10 March 1909 (*Daily Telegraph*, 9 March 1909, p. 2), from which two allotments were sold (*Daily Telegraph*, 13 March 1909, p. 13). By the Saturday 3 February 1912 auction, run by Richardson and Wrench Limited, both adjacent allotments (37 and 39) being put up for sale. This suggests that allotment 38 had already been sold prior to this date.

The extant house, which comprises three bedrooms and one bathroom, and was likely built after World War I, possibly in c.1920 (PropertyValue 2014). This interwar Bungalow-style house appears to be common in the Manly area, along with flats built in the early 1900s, as earlier buildings were demolished 'on a grand scale' to make way for such residences (Kate Blackmore and Associated Consultants 1986, p. 12). Burnie (House) was last sold on 18 November 1982 (PropertyValue 2014).

### A.16.2 Description

Burnie (House) is a brick interwar bungalow-style house with sandstone footings and base wall and projecting square bay windows. The roof line comprises a hip roof with a projecting gabled front and a skillion roof over the front verandah, clad with Marseilles terracotta tiles and topped with decorative finials. The verandah piers and balustrading are of masonry, supporting timber posts. The house incorporates a single chimney (Figure A.16.9-Figure A.16.10).

In Sydney, bungalows would use liver-coloured bricks over traditional red clinkers, due to the poor repute of the latter, and tended to use sandstone (dressed and rough) as base walls. French terracotta tile, which had been adopted for Queen Anne and Federation housing, was also used for bungalows across Australia, with the Marseille pattern tile being used as early as 1888 in Melbourne. Finials were also occasionally used on bungalow roofing in Australia (Butler 2010, pp. 51-59).

Burnie (House) appears to be similar to the simple 'bank bungalow' style found in Victoria, whereby state governments led the way in providing cheap post-World War I financing for house construction, continuing throughout the 1920s (Butler 2010, p. 42). This led architects to produce design books for State banks, with standard templates for cheap land and housing packages, including for the State Bank of South Australia and the Victorian State Savings Bank. Early bank bungalow-style had either corrugated iron or terracotta roofing and a one-fire stove, and were relatively spartan in design but well built (Butler 2010, p. 44). This bungalow style continued to be built well into the 1930s (Butler 2010, p. 46). Numerous architect-published bungalow designs were readily available during the interwar period, and the Burnie (House) appears to have been built from one of the more common designs for small suburban bungalows.

### A.16.3 Curtilage information

Burnie (House) is situated on Lot DP 792748.

### A.16.4 Significance assessment

Table A.16.2 Burnie (House) significance assessment

Criterion	Local level
A – Historical significance	While it appears that this house was built in c.1920, and demonstrates the development of cheap interwar residential housing, as an individual building it is not sufficient for it to meet the significance criteria threshold for local or State significance.
B – Historical association significance	Burnie (House) is not associated with any particularly important person or group of persons in Balgowlah's history, and therefore does not demonstrate any historical association significance.
C – Aesthetic significance	While this house has some interesting architectural features, it is a common example of interwar Sydney suburban small bungalow design and does not demonstrate a high degree of aesthetic or architectural characteristics.
D – Social significance	There is no information to support that Burnie (House) is of particular importance to any community group.
E – Research potential	Burnie (House) does not demonstrate any research potential.
F – Rarity	N/A
G – Representativeness	While the façade of the house does not appear to have undergone significant renovations, it is a common example of the interwar Sydney suburban small bungalow design, and given it is not otherwise significant, it does not meet this criterion.

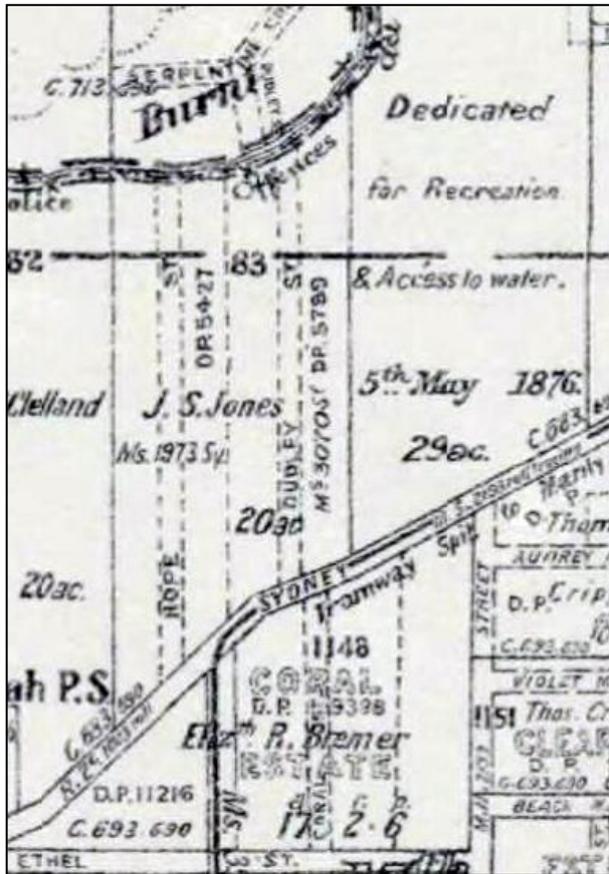


Figure A.16.7 Allotment 83 on the Parish of Manly Cove (Department of Lands 1923)

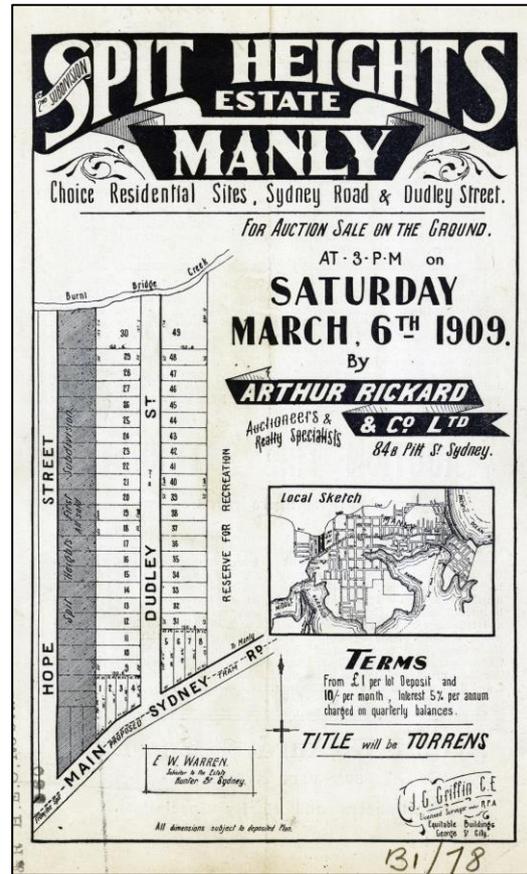


Figure A.16.8 Spit Heights Estate second subdivision advertisement (Griffin 1909)



Figure A.16.9 Burnie (House), facing east



Figure A.16.10 Burnie (House), facing northeast

### A.16.5 Statement of significance

Burnie (House) was built in c.1920, in a small interwar bungalow-style common across Sydney suburbs. While it was built as part of the post-World War I housing boom, the house is not historically significant and is not associated with any particularly important individual or group. Further it does not demonstrate any aesthetic or architectural features at a high degree, and is not of social significance to any particular community group. This item **does not meet the significance criterion thresholds** for local or state listing.

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