Appendix B5

SGWPW-JHSW-NWW-PM-PLN-000517

Non-Aboriginal Heritage Management Sub Plan (State)

Sydney Gateway Road Project

June 2021

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Contents

Document control

Approval and authorisation

Title	Sydney Gateway Non-Aboriginal Heritage Management Sub Plan
Endorsed by Environment Representative	Cameron Weller Hutchison Weller Pty Ltd
Signed	
Dated	
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Dated	
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Document status

The below document status table is for tracking the revisions of the NAHMP

Revision	Date	Description	Approval
A	22/02/2021	Draft for internal JHSWJV review	
B	03/03/2021	Internal review. Issued to TfNSW, ER and IV for review.	
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Distribution of controlled copies

This NAHMP as part of the CEMP is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website.

The document is uncontrolled when printed. One controlled hard copy of the NAHMP as part of the CEMP and supporting documentation will be maintained by the Quality Manager at the Project office (and on the Project website).

Copy number	Issued to	Version
1	Transport for New South Wales	
2	Independent Verifier	
3	Environmental Representative	
4	Project Director	
5	Environment and Sustainability Manager	
6	Quality Manager	

Glossary/ Abbreviations

Abbreviations	Expanded text
CEMP	Construction Environmental Management Plan
CoA	Condition of approval
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
Environmental heritage	Places, buildings, works, relics, movable objects, and precincts, of State or local heritage significance as outlined in Section 4 of the Heritage Act
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
EWMS	Environmental Work Method Statements
Heritage Act	*Heritage Act 1997*
Heritage NSW	Heritage NSW, Department of Premier and Cabinet
NAHMP	Non-Aboriginal Heritage Management Sub Plan
NPW Act	*National Parks and Wildlife Act 1974*
OEH	Office of Environment and Heritage (now Heritage NSW)
Project, the	Sydney Gateway Road Project
RAP	Registered Aboriginal Parties
Secretary	Secretary of the NSW Department of Planning, Industryand Environment (or delegate)
TfNSW	Transport for New South Wales (formerly RMS, or Roads and Maritime Services)
UMM	Updated mitigation measure

1 Introduction

1.1 Context

The Sydney Gateway Road Project provides a direct high capacity road connection linking the Sydney motorway network at the St Peters Interchange with Sydney Kingsford Smith Airport. The Project was approved by the Minster for Planning and Public Spaces, Rob Stokes, on 27 August, 2020 subject to a number of Conditions set out in Critical State Significant Infrastructure (CSSI) Application No. SSI 97-37.

This Non-Aboriginal Heritage Management Sub Plan (NAHMP) forms part of the Construction Environmental Management Plan (CEMP) for the Sydney Gateway Road Project (the Project).

This NAHMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA), the environmental management measures listed in the Sydney Gateway Environmental Impact Statement/Major Development Plan (EIS/MDP), and the updated mitigation measures (UMMs) in the Response to Submissions Report (May 2020), and all applicable legislation.

1.2 Background

1.2.1 Background

Transport for NSW (TfNSW) have gained approval to deliver a high capacity road connection linking the Sydney motorway network at St Peters interchange with Sydney Airport's domestic and international terminals and the Port Botany Precinct. The Project is located on both State and Commonwealth land.

For areas on State land, the Project was declared to be critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) and was approved by the NSW Minister for Planning and Public Spaces on 27 August 2020.

Commonwealth approval under the *Airports Act 1996* (the *Airports Act*) was granted by the Australian Minister for Infrastructure, Transport and Regional Development on 23 September 2020.

John Holland Seymour White Joint Venture (JHSWJV) have been contracted by Transport for New South Wales (TfNSW) for the Design and Construction of Sydney Gateway Road Project Stage 1 & Stage 3 (the Project).

1.2.2 Project Objectives

The primary objective of the Project is to support sustainable growth in the economy and cater for projected increases in passengers and freight demand. This will be achieved by improving connectivity between the regional growth and freight distribution centres in western Sydney and the Sydney Airport and Port Botany area. The objectives of the Project are to:

- Improve connectivity to Sydney Airport terminals by providing high capacity direct road connections that cater for forecast growth in passenger and air freight volumes.
- Support the efficient distribution of freight to and from Sydney Airport and Port Botany to logistic centres in Western Sydney.
- Improve the liveability of Mascot town centre by reducing congestion and heavy vehicle movements on the local road network.

1.2.3 Detailed Description

The Project is located about eight kilometres south of the Sydney Central Business District, in the suburbs of Tempe, St Peters and Mascot. It sits within the boundaries of the Inner West, City of Sydney and Bayside local government areas.

The key features of the Project are illustrated in Figure 1-1, which include:

- Road links to provide access between the Sydney motorway network and Sydney Airport's terminals, consisting of the following components:
    - St Peters interchange connection – a new elevated section of road extending from St Peters interchange to the Botany Rail Line, including an overpass over Canal Road.
    - Terminal 1 connection – a new section of road connecting Terminal 1 with the St Peters interchange connection, including a bridge over Alexandra Canal and an overpass over the Botany Rail Line.
    - Qantas Drive upgrade and extension – widening and upgrading Qantas Drive to connect Terminals 2/3 with the St Peters interchange connection, including a high-level bridge over Alexandra Canal.
- Terminal links – two new sections of road connecting Terminal 1 and Terminals 2/3, including a bridge over Alexandra Canal.
- Terminals 2/3 access – a new elevated viaduct and overpass connecting Terminals 2/3 with the upgraded Qantas Drive.
- Road links to provide access to Sydney Airport land:
    - A new section of road and an overpass connecting Sydney Airport's northern lands on either side of the Botany Rail line (the northern lands access)
    - A new section of road, including a signalised intersection with the Terminal 1 connection and a bridge, connecting Sydney Airport's existing and proposed freight facilities on either side of Alexandra Canal (the freight terminal access)
- An active transport link, about 3 kilometres long and located along the western side of Alexandra Canal and section along Qantas Drive, to maintain connections between Sydney Airport, Mascot and the Sydney central business district.
- Intersection upgrades and/or modifications.
- Construction of operational ancillary infrastructure including maintenance bays, new and upgraded drainage infrastructure, signage and lighting, retaining walls, noise barriers, flood mitigation basin, emplacement mounds, utility works and landscaping.

1.3 Scope of the Sub-Plan

The scope of this sub plan is to define appropriate controls and procedures to be implemented during construction activities to avoid or minimise impacts on areas of heritage significance and archaeological potential.

The scope required for this plan is identified within the Conditions of Approval (CoA), EIS/MDP (Chapter 27, Table 27.8), Updated Management Measures (UMM's) and Project specifications as described in this sub plan.

1.4 Environmental management systems overview

The Environmental Management System (EMS) overview is described in Section 1.5 of the CEMP. The EMS also incorporates the Project specific CEMP and sub-plans, strategies, procedures and environmental work method statements (EWMS). The EMS form management guides that clearly identify required environmental management actions for implementation by JHSWJV personnel and contractors.

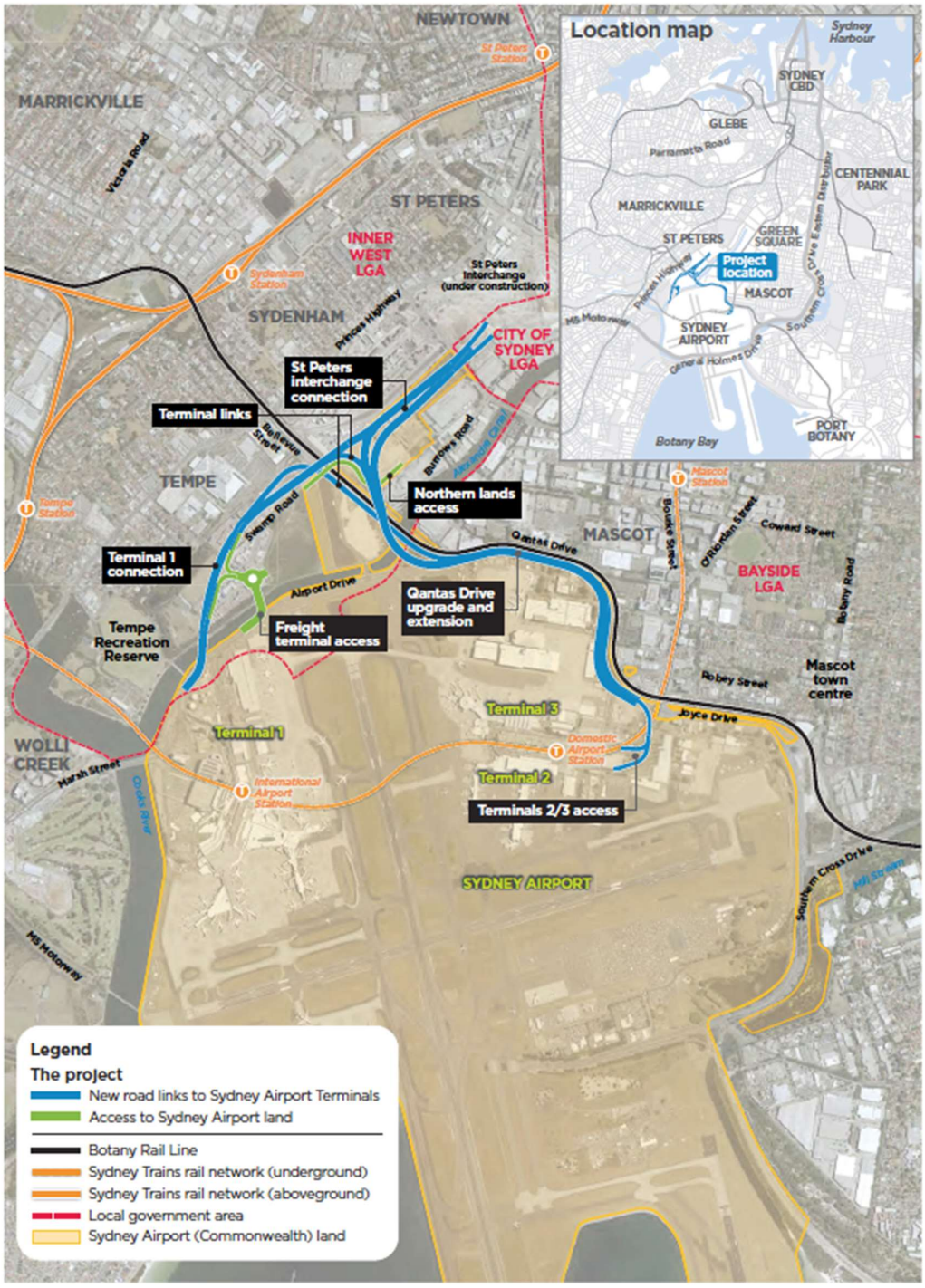

Figure 1-1 Project overview

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how potential impacts to non-Aboriginal heritage will be managed and minimised during construction of the Project.

2.2 Objectives

The key objective of the NAHMP is to ensure all CoA, environmental management measures and licence/permit requirements relevant to Non-Aboriginal heritage are described, scheduled, and assigned responsibility as outlined in:

- The environmental impact assessment prepared for the Sydney Gateway Road Project
- Conditions of Approval granted to the Project on 27th August 2020
- Response to Submissions Report for the Sydney Gateway Road Project (May 2020)
- Roads and Maritime specification G36
- All relevant legislation and other requirements described in Section 3.1 of this Plan.

2.3 Targets and performance outcomes

The desired environmental performance outcome for non-Aboriginal heritage is to design, construct and operate the Project to the greatest extent possible while ensuring the long-term protection, conservation, and management of items of heritage significance.

The targets outlined below have been established to achieve this environmental performance outcome, as related to the management of non-Aboriginal heritage items, during the delivery of the Project:

- Ensure full compliance with the relevant legislative requirements, CoA and UMM's.
- Implement measures to minimise adverse impacts to heritage during construction.
- Implement monitoring of heritage at appropriate intervals during construction.

The following performance outcomes relevant to Non Aboriginal Heritage (as identified in Chapter 27.4 Compilation of performance outcomes of the EIS/MDP) are detailed in Table 2-1 below.

Table 2-1: Non Aboriginal Heritage Performance Outcomes

No.	Performance outcome	Where Addressed
1	Heritage • The design is sympathetic to the historic significance of Sydney Airport and the heritage significance of surrounding listed heritage items, and where practicable, avoids and minimises impacts on heritage. • Visual impacts on heritage items are mitigated through individually tailored landscape treatments. • Impacts on heritage are managed in accordance with relevant legislation, including the EP&A Act, the Heritage Act 1977 (NSW), Airports (Environment Protection) Regulation 1997 and relevant guidelines	The Place, Design and Landscape Plan (PDLP) must include qualified cultural heritage practitioners to ensure the design is sympathetic to the heritage significance of the area. Implement the monitoring of potential archaeological sites as detailed in Section 6.

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this NAHMP is included in Appendix A1 of the CEMP.

Table 3.1: Legislation relevant to this document

Act	Requirement	Reference	Applicability
Heritage Act 1977	Do not disturb or excavate land with knowledge or reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed; or do not disturb or excavate land on where a relic has been discovered or exposed.	S139	No - Under the EP&A Act the Project is exempt from this requirement
	Do not undertake an activity that will affect a place, building, work, relic, moveable object or precinct which is subject to an Interim Heritage Order or is listed on the State Heritage Register without approval from the Heritage Council.	S56-57	No - Under the EP&A Act the Project is exempt from this requirement
	Notify the Heritage Council on discovery of a relic	S146	Yes

3.1.2 Additional approvals, licences, permits and requirements

Relevant approvals, licences and permits are included in Appendix A1 of the CEMP.

3.1.3 Guidelines

The main guidelines, specifications, and policy documents relevant to this Plan include:

- Roads and Maritime Services Specification G36 – Environmental Protection (Management System).
- Altering Heritage Assets (Heritage Office and Department of Urban Affairs and Planning 1996).
- Roads and Maritime Cultural Heritage Guidelines (November 2015)
- Roads and Maritime Standard Management Procedure: Unexpected Heritage Items (November 2015)- hereafter referred to as Unexpected Heritage Items Procedure
- Archaeological Assessment Guidelines (NSW Heritage Office and NSW Department of Urban Affairs and Planning 1996).

- Assessing Heritage Significance for Historical Archaeological Sites and ‘Relics’ (Heritage Branch of NSW Department of Planning 2009)
- How to prepare Archival Recordings of Heritage Items (NSW Heritage Office 1998)
- Photographic Recording of Heritage Items Using Film or Digital capture (NSW Heritage Office 2006)
- Historical Archaeology Code of Practice (NSW Heritage Office 2006)
- Skeletal Remains: Guidelines for Management of Human Remains (NSW Heritage Office 1998)
- Criteria for the assessment of excavation directors (NSW Heritage Council 2011)
- NSW Heritage Manual (Heritage Office and Department of Urban Affairs and Planning 1994)
- Assessing Heritage Significance (NSW Heritage Council 2002)
- Statement of Heritage Impact (NSW Heritage Council 2002)
- Alexandra Canal Conservation Management Plan
- Assessing significance for historical archaeological sites and 'relics'. Parramatta: NSW Heritage Branch, NSW Dept. of Planning, 2009 (Lavelle, S. (2009)).
- NSW Department of Planning and Heritage Council of New South Wales (2006) Historical archaeology code of practice. Parramatta: NSW: Heritage Office, 2006.
- Historical research for heritage. Sydney, N.S.W.: Sydney: NSW Heritage Office, 2000 (NSW Heritage Office (2000))
- Assessing heritage significance. NSW heritage manual update. Sydney: NSW Heritage Office, 2001 (NSW Heritage Office (2001)).
- Stabilising Stuff: A Guide for Conserving Archaeological Finds in the Field. Parramatta: NSW Heritage Council 2012 (NSW Office of Environment & Heritage (2012).
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3.2 Conditions of Approval – SSI 9737

The Conditions of Approval (CoA) relevant to this Plan are listed in Table 3-2 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3.2 Conditions of Approval Relevant to this Plan

Source	Requirement	Document Reference
Condition of Approval- C5	The following CEMP Sub-plans must be prepared in consultation with the relevant agencies identified for each CEMP Sub-plan. Details of all information requested by an agency during consultation must be included in the relevant CEMP Sub-plan, including copies of all correspondence from those agencies. Required CEMP Sub Plan — Relevant agencies to be consulted for each CEMP sub-plan (e) Heritage — Heritage Council, Sydney Water and relevant councils	This Plan. Section 3.4
Condition of Approval C6	The **CEMP Sub-plans** must state how: (a) the environmental performance outcomes identified in the documents listed in **Condition A1** will be achieved; (b) the mitigation measures identified in the documents listed in **Condition A1** will be implemented; (c) the relevant terms of this approval will be complied with; and (d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.	Section 2.3 detailed performance outcomes relevant to this Plan. Section 3.2 and 3.3 outlines the relevant terms of the approval to be complied with Section 5 outlines potential impacts during construction and Section 6 details management measures to manage the identified risks.

Source	Requirement	Document Reference
Conditions of Approval – E7	An Archival Recording must be undertaken of those parts of Alexandra Canal that will be affected by the Works. The archival recording must be prepared in accordance with NSW Heritage Office's How to prepare Archival Recordings of Heritage Items (1998) and Photographic Recording of Heritage Items Using Film or Digital capture (2006). The recordings must capture those parts of the Canal impacted by the Works, and the immediate surrounds, before, during and after the Works.	Archival Recording as detailed in Section 6.1. All archival recording will be completed in accordance with How to prepare Archival Recordings of Heritage Items (NSW Heritage Office 1998) and Photographic Recording of Heritage Items Using Film or Digital capture (NSW Heritage Office 2006).
Conditions of Approval – E8	Following completion of all Work described in relation to: (a) Alexandra Canal; (b) archaeological deposits discovered within areas identified as having a potential to contain archaeological remains; and (c) any unexpected heritage finds discovered during construction; a Heritage Report including the details of archival recordings, further historical research either undertaken or to be carried out and archaeological excavations (with artefact analysis and identification of a final repository for finds), must be prepared in accordance with any guidelines and standards required by the Heritage Council of NSW and Heritage NSW, DPC.	Heritage Report (includes Archival Recording) as detailed in Section 6.4.2.
Conditions of Approval – E9	The Heritage Report must be submitted to the Planning Secretary, the Heritage Council of NSW and Heritage DPC for information no later than nine (9) months after the completion of the work referred to in Condition E7.	Heritage Report as detailed in Section 6.4.2
Conditions of Approval – E10	An Unexpected Heritage Finds and Human Remains Procedure must be prepared to manage unexpected heritage finds in accordance with any guidelines and standards prepared by the Heritage Council of NSW or Heritage DPC.	Unexpected Heritage Items Procedure is provided in Appendix A. This Procedure will be implemented as outlined in Section 6.3 of this Plan.
Conditions of Approval – E11	The Unexpected Heritage Finds and Human Remains Procedure must be prepared and submitted to the Planning Secretary for information no later than one month before the commencement of construction.	Unexpected Heritage Items Procedure is provided in Appendix A. This Procedure will be implemented as outlined in Section 6.3 of this Plan.

Source	Requirement	Document Reference
Conditions of Approval – E12	The Unexpected Heritage Finds and Human Remains Procedure, as submitted to the Planning Secretary, must be implemented for the duration of construction. *Note: Human remains that are found unexpectedly during the carrying out of Work may be under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately.*	Unexpected Heritage Items Procedure is provided in Appendix A. This Procedure will be implemented as outlined in Section 6.3 of this Plan.
Condition of Approval- E27	The Proponent must conduct vibration testing before and during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic and structural damage. In the event that the vibration testing and monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, amend the methodology and/or implement additional mitigation measures to prevent damage.	Vibration testing is detailed in the Noise and Vibration Management Plan.
Condition of Approval- E28	The Proponent must seek and implement the advice of a heritage specialist on impacts to heritage listed structures from installing equipment used for vibration, movement and noise monitoring before its installation.	Section 7.3 of this Plan. Note that this advice will only be required if installation of monitoring equipment is required in /on heritage listed structures.

3.3 Other Requirements Relevant to the Development of this Plan

Other requirements detailed in the EIS/MDP, Submissions Report and relevant TfNSW Specifications (G36, 38 and 40) are detailed in Table 3-3 below. This includes reference to required outcomes, the timing of when the commitment applies and relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table 3.3 Other environmental requirements relevant to this Plan

Source	Requirement	Document Reference
Updated Mitigation Measure (UMM) NAH7	A Heritage Management Plan will be prepared prior to construction and implemented as part of the CEMP. It will include measures to manage non-Aboriginal heritage and minimise the potential for impacts during construction. The plan will take into account relevant conservation and heritage management policies in the Alexandra Canal Conservation Management Plan and the Sydney Airport Heritage Management Plan.	This Plan
UMM NAH9	Photographic archival recording will be carried out for affected sections of the following items: - Alexandra Canal - Sydney (Kingsford Smith) Airport Group - Cooks River Container Terminal - Mascot (Shea's Ck) Underbridge - Botany Rail Line Photographic archival recording will be carried out prior to works commencing in the vicinity of the item, and in accordance with How to Prepare Archival Records of Heritage Items (NSW Heritage Office, 1998) and Photographic Recording of Heritage Items Using Film or Digital Capture (Heritage Office, 2006b). Once complete, a report will be prepared detailing the history and significance of the item, relevant findings from the archival recording and an overview of the project. This document would subsequently be held by the appropriate local council(s), local library, local historical society and the owner of the asset.	Archival Recording as detailed in Section 6.1
UMM NAH 8	A Historical Archaeological Assessment and Research Design and Excavation Methodology will be prepared for, and implemented at, the following locations within the project site: - Intact sections of Alexandra Canal along the western bank of the canal on either side of the existing pedestrian and rail bridges - Vacant land at 30 Canal Road (Lot 4 DP 555771 and Lot 3 DP825649) - Land located north of Canal Road that is currently used for the construction (stockpiling) of the New M5 (Lot A DP 391775, Lot BDP 394647 and Lot 2 DP1168612) - Sydney Airport land considered to contain low or moderate archaeological potential - Land along Qantas Drive considered to contain low or moderate archaeological potential - Sydney Airport land located east of Sydney Airport northern lands carpark and west of Botany Rail Line (Lot 1 DP 826101) - Land to the west of Boral's St Peters facility and east of the Botany Rail Line. The Historical Archaeological Assessment and Research Design and Excavation Methodology will identify the specific features of archaeological significance that could be present at these locations, provide a scope for further investigations to confirm and specify appropriate archaeological management for any remains identified.	The Historical Archaeological Assessment and Research Design and Excavation Methodology is provided in Appendix B

Source	Requirement	Document Reference
UMM NAH 10	Heritage items and landscaping located outside the project site and associated with the following items will be marked on site plans contained within the CEMP as areas to be avoided during construction, where works are proposed within 10 metres of: - Alexandra Canal (significant fabric and gazetted curtilage as detailed in the conservation management plan for Alexandra Canal) - Sydney (Kingsford Smith) Airport Group – fabric of high significance (as identified in the Sydney Airport Heritage Management Plan), trees and plantings - Cooks River Container Terminal – fabric of high significance, trees and plantings - Mascot (Shea's Ck) Underbridge – fabric associated with the bridge. Protective barriers will be established prior to works at these locations.	Sensitive Area Plans (CEMP) EWMS Site inspections (verification of installation)
UMM NAH 11	Potential vibration impacts on features of heritage significance will be managed in accordance with the Construction Noise and Vibration Management Plan (measure NV5) and noise and vibration mitigation measure NV12.	Vibration management is detailed Construction Noise and Vibration Management Plan
UMM NAH12	Any items of potential heritage conservation significance or human remains discovered during construction will be managed in accordance with the Standard Management Procedure Unexpected Heritage Items (Roads and Maritime, 2015e).	Unexpected Heritage Items Procedure is provided in Appendix A. This Procedure will be implemented as outlined in Section 6.3 of this Plan.
TfNSW G36 – Section 4.10	Provide for all personnel working on the Site training on their responsibilities under the Heritage Act 1977 (NSW). Make the personnel aware of all non-Aboriginal heritage sites/areas, including cultural plantings, and areas of archaeological potential, which are identified in the Environment Assessment documents listed in Annexure G36/A3.	Training on heritage requirements is detailed in Section 6.1.1 of this Plan
TfNSW G36 – Section 4.10	An Unexpected Heritage Finds and Human Remains Procedure must be prepared to manage unexpected heritage finds in accordance with any guidelines and standards prepared by the Heritage Council of NSW or Heritage DPC.	Unexpected Heritage Items Procedure is provided in Appendix A. This Procedure will be implemented as outlined in Section 6.3 of this Plan.)

Source	Requirement	Document Reference
UMM NAH 1	The design will avoid impacts on non-Aboriginal heritage items, significant heritage fabric, locally and State significant archaeological remains and landscapes (including mature trees) as far as reasonably practicable. This includes significant fabric associated with Alexandra Canal and the Sydney (Kingsford Smith) Airport Group.	The design of the Project minimises impact to significant fabric of Alexandra Canal as detailed in Section 6 of this Plan.
UMM NAH 2	The design will be prepared in accordance with the urban design and landscape plan and Statement of Heritage Impact for the project. The design will minimise the potential for visual impacts on heritage items by incorporating sympathetic fabric, colour and form in the design.	Place, Design and Landscape Plan
UMM NAH 3	The bridges over Alexandra Canal will be designed to: • Be sympathetic to the heritage sensitivity and industrial landscape of the canal. • …… • Have regard to the Alexandra Canal Conservation Management Plan. Appropriately qualified and experienced heritage design professionals will be involved in the development of the designs for the bridges over Alexandra Canal. The proposed designs, including the elements of heritage interpretation incorporated into the designs, will be presented to the Heritage Council of NSW and Sydney Water. Feedback from the Heritage Council of NSW and Sydney Water will be considered and adopted in the designs where reasonable and feasible.	Place, Design and Landscape Plan Consultation will be undertaken on Design Packages for Bridges 51,21, 31, 61 and 91 with the Heritage Council and Sydney Water.
UMM NAH 4	The drainage outlets at Alexandra Canal will be designed to: • Minimise impacts on significant original fabric and highly visible areas • Be sympathetic to the industrial landscape of the canal and its existing fabric\ • Use suitable material and forms • Have regard to the Alexandra Canal Conservation Management Plan. An appropriately qualified and experienced heritage architect or engineer will provide independent review of the designs, and the Heritage Council of NSW and Sydney Water will be consulted.	Place, Design and Landscape Plan Consultation will be undertaken on Design Packages for Bridges 51,21, 31, 61 and 91 with the Heritage Council and Sydney Water.
UMM NAH 5	Where significant fabric is to be removed, consideration will be given to reusing the fabric for interpretation or repair and maintenance of other sections of the canal, in consultation with Sydney Water.	Section 6.1.2 of this Plan. Consultation with Sydney Water is detailed in Section 3.5 of this Plan.

Source	Requirement	Document Reference
UMM NAH 6	Appropriate heritage interpretation will be incorporated into the design 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 NSW Heritage Council's Heritage Interpretation Policy. This will focus on recognising the historical significance of the following items: • Alexandra Canal • Sydney (Kingsford Smith) Airport Group • Cooks River Container Terminal • Mascot (Shea's Ck) Underbridge • Botany Rail Line Elements of heritage interpretation that will be incorporated into the design will be described in the urban design and landscape plan.	Place, Design and Landscape Plan Section 6.4.2

3.4 Consultation

This Plan will be provided to the Heritage Council of NSW (NSW Heritage Council), Sydney Water and relevant Councils (ie Bayside Council, Inner West Council and City of Sydney) for review and comment. Ongoing consultation with relevant councils and other stakeholders may be undertaken for particular issues pertaining to the Project's impact on non-Aboriginal heritage if required.

It is also noted that there are a number of design related UMMs which require consultation with the Heritage Council and Sydney Water, specifically relating to the bridge designs over and adjacent to the Alexandra Canal. UMMs NAH 1 to NAH6 are included in Table 3.3 for completeness notwithstanding that majority of these commitments will be detailed in the Place, Design and Landscape Plan as required by CoA E76.

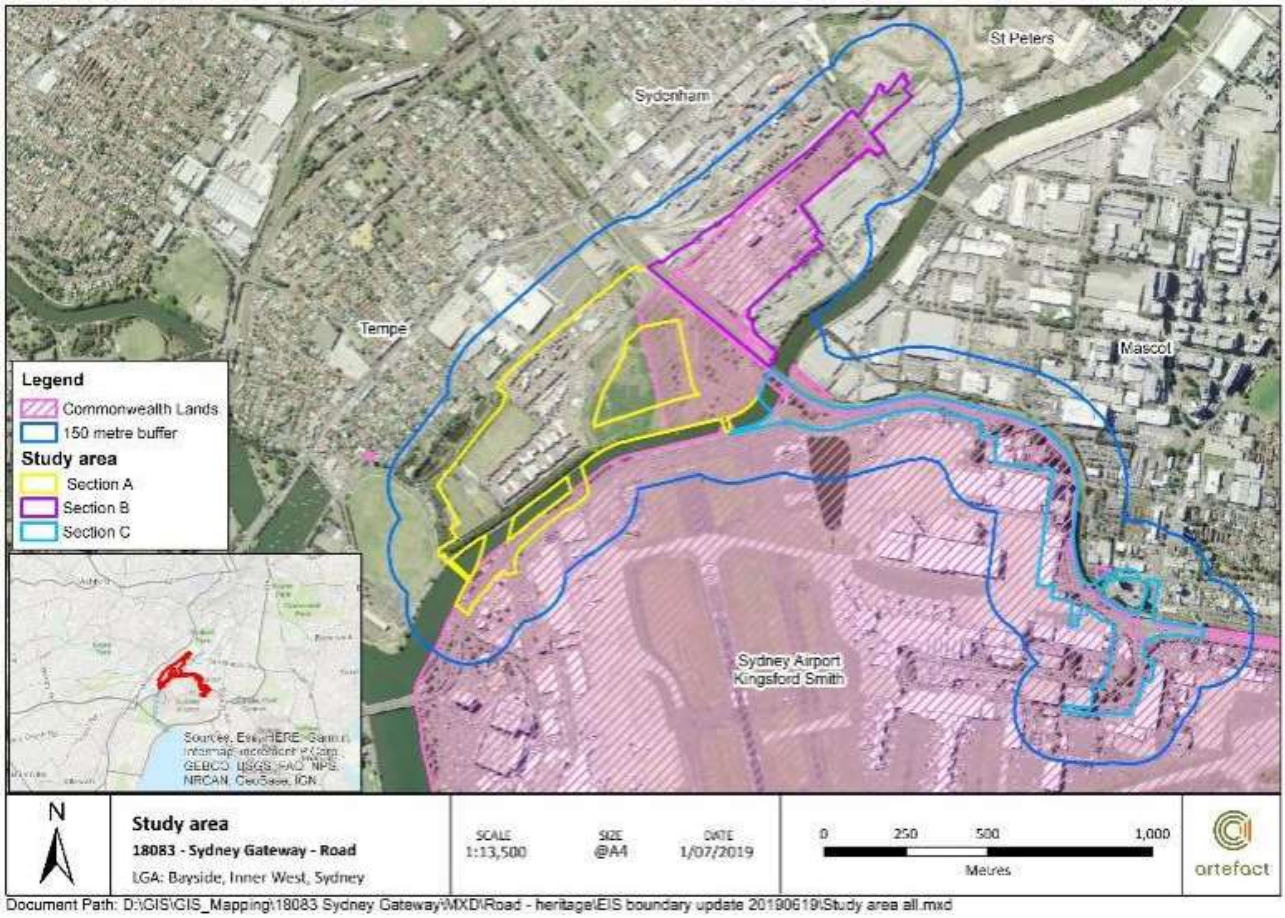
4 Existing environment

The following sections summarise the existing environment in terms of non-Aboriginal heritage within and adjacent to the Project corridor.

The Project is located on State and Commonwealth land. The divisions between State and Commonwealth land and the relative locations of heritage items is shown in Figure 4-1 and in greater detail in Figures 4-2, 4-3, and 4-4. Details on both State and Commonwealth non- Aboriginal heritage items within the Project are included in this section for completeness, noting however that management and approvals relating to Commonwealth land is under the jurisdiction of Sydney Airport Corporation and the Airport Environment Officer.

The assessment of potential impacts in the EIS also included consideration of a 150 metre-wide buffer from the Project site in relation to the potential for indirect impacts on heritage items as a result of works undertaken within the Project site.

Figure 4-1 Location of the Project Area and 150 metre buffer



4.1 Non-Aboriginal heritage items (State administered land)

The non-Aboriginal heritage items on State administered land that have been identified within the Project area are listed in Table 4-1 below. Table 4-2 provides a list of the identified heritage items within 150m of the Project area, which is used to identify heritage items with the potential to experience indirect impacts as a result of the Project. The locations of these items are identified in Figures 4.1 to 4.4 below.

Table 4.1 Non-Aboriginal heritage items on State administered land within the study area

Name	Location	Significance
Mascot (O'Riordan Street) Underbridge	ARTC s170 register SHI no. 4801830 Extends over O'Riordan Street, Mascot	Local The original 1925 O'Riordan St Underbridge is significant as part of the original infrastructure of the Botany Line. The O'Riordan St Underbridge is a rare example of reinforced concrete girder railway bridge construction within the NSW rail network.
Mascot (Robey Street) Underbridge	ARTC s170 register SHI no. 4801848 Extends over Robey Street, Mascot	Local The Robey Street Underbridge is of local significance as the first welded steel railway bridge on the NSW rail network. The bridge is a landmark structure over Robey Street; however the significant fabric has been covered by signage, reducing its aesthetic quality.
Mascot (Sheas Ck) Underbridge	ARTC s170 register SHI no. 4805743 Extends over Alexandra Canal, Mascot	Local The Shea's Creek Underbridge is of local significance as part of the original infrastructure for the Botany Line. The bridge is of bascule construction. The bascule towers were removed in the 1990s; however, some mechanical components remain to exhibit the technique of the bascule mechanism.
Cooks River Container Terminal	NSW Ports s170 register SHI no. 4560046 Marrickville LEP 2011 LEP no. I366 20 Canal Road, St Peters	Local and State The Cooks River Container Terminal is of local historic signifiance as an integral part of the Sydney Goods Rail system. The Terminal was the first of its kind in Sydney containing a number of parallel, dead end sidings.

Name	Location	Significance
Alexandra Canal Alexandra Canal No.89AZ	SHR no. 01621 Lot 3, DP 878489/ Part Lot 13, DP 1050464 Marrickville LEP 2011 LEP no. I270 Canal Road, St Peters – Part Lot 13, DP 1050464 Sydney Water s170 register SHI no. 4571712 Adjacent to Burrows Road Alexandria, St. Peters, Mascot, Tempe – Lot 13, DP 1050464 RNE interim list Item no. 103889 Airport Drive, Sydney Airport	State Alexandra Canal is state significant with identified historic, aesthetic and technical/research significance. Historically, it is a rare example of 19th century navigational canal construction in Australia. It has the ability to demonstrate the NSW Governments initiative to create water transport as a means of developing an industrial complex in the Alexandria and Botany areas and exploiting the use of unemployed labour to achieve its scheme. Aesthetically, intact original sections of the canal, comprising pitched dry packed ashlar sandstone, provides a textured and coloured finish which is aesthetically valuable in the cultural landscape. It is a major landmark and dramatic component of the industrial landscape of the area, particularly as viewed from the Ricketty Street Bridge and along Airport Drive. The upper reaches of the Canal are quite intact, with some localised failures of sandstone ashlar masonry. Lower reaches have been rebuilt in a variety of 20th century materials including concrete block, shotcrete over rubble and fabricon and range from good to poor condition. Scientifically, the excavation of the canal provided a valuable contribution to the understanding of the changing sea-levels along the eastern seaboard and the antiquity of the aboriginal presence in the area. Intact original sections of the fascine dyke sandstone construction are rare examples of late 19th century coastal engineering works.

Table 4.2 Non-Aboriginal heritage items on State administered land within the study area's 150 metre buffer zone

Name	Location	Significance
Alexandra Canal (including sandstone embankment)	Botany Bay LEP 2013 LEP no. I1 Alexandra Canal, Mascot	State Aesthetically, intact original sections of the canal, comprising pitched dry packed ashlar sandstone, provides a textured and coloured finish which is aesthetically valuable in the cultural landscape. It is a major landmark and dramatic component of the industrial landscape of the area, particularly as viewed from the Ricketty Street Bridge and along Airport Drive. The upper reaches of the Canal are quite intact, with some localised failures of sandstone ashlar masonry. Lower reaches have been rebuilt in a variety of 20th century materials including concrete block, shotcrete over rubble and fabricon and range from good to poor condition.
House – "Daktari"	Botany Bay LEP 2013 LEP no. I131 114 High Street, Mascot	Local The property 114 High Street, Mascot is of local historic and aesthetic heritage significance as a substantially intact example of a traditional 19th century double-fronted weatherboard cottage. It is one of the few surviving 19th century dwellings on the western side of Botany Road; despite this area being the first part settled in the early 19th century. The integrity of the cottage, and its siting close to the front boundary, allow the property's heritage values to be interpreted by the casual viewer. The property is a distinctive element in this rapidly changing streetscape near O-Riordan Street.
Mature Ficus	Botany Bay LEP 2013 LEP no. I130 112 High Street, Mascot	Local A mature, single trunked specimen approximately 22 metres in height with a canopy spread of 27 x 31 metres and a diameter at breast height (DBH) of 2980mm. In good health and of significant landscape value.
Moreton Bay Fig Tree	Marrickville LEP 2013 LEP no. I303 South Street, Tempe	Local Planted late 19th century/ early 20th century, a prominent feature of the landscape and probably planted shortly after the subdivision of this part of Tempe.
Cooks River Container Terminal: Electrical Overhead Travelling Crane	NSW Ports s170 register SHI no. 4560052 20 Canal Road, St Peters	Local Of little significance but contributes to an understanding of freight handling systems at Cooks River Terminal prior to containerisation.

Name	Location	Significance
Cooks River Container Terminal: Lay Down Points Lever	NSW Ports s170 register SHI no.4560051 20 Canal Road, St Peters	Local A spiked down and now redundant relatively rare points lever that is specific to special locations such as ports and goods yards such as Cooks River Container Terminal
Cooks River Container Terminal: Precast Concrete Hut 1	NSW Ports s170 register SHI no. 4560047 20 Canal Road, St Peters	Local This single panelled pre- cast concrete Hut 1 is of moderate locac significance. It is representative of intact Department of NSW Railways signal relay huts from around 1950. It was utilised at Cooks River Container Terminal to house communications and electrical equipment.

Table 4.3: Non-Aboriginal heritage items on Commonwealth administered land within the study area

Name	Location	Significance
Sydney (Kingsford Smith) Airport Group	Botany Bay LEP 2013 LEP no. I170 Commonwealth Heritage List Indicative Place item no. 105542 RNE Item no. 102669 Part Lot 8, DP 1050923	Local
Alexandra Canal, Airport Dr, Sydney Airport, NSW, Australia	Commonwealth Heritage Interim List item no. 103889	State

There are no heritage items on Commonwealth administered land within the 150m buffer zone outside the study area.

Figure 4-2 Heritage listed items in Section A of the study area

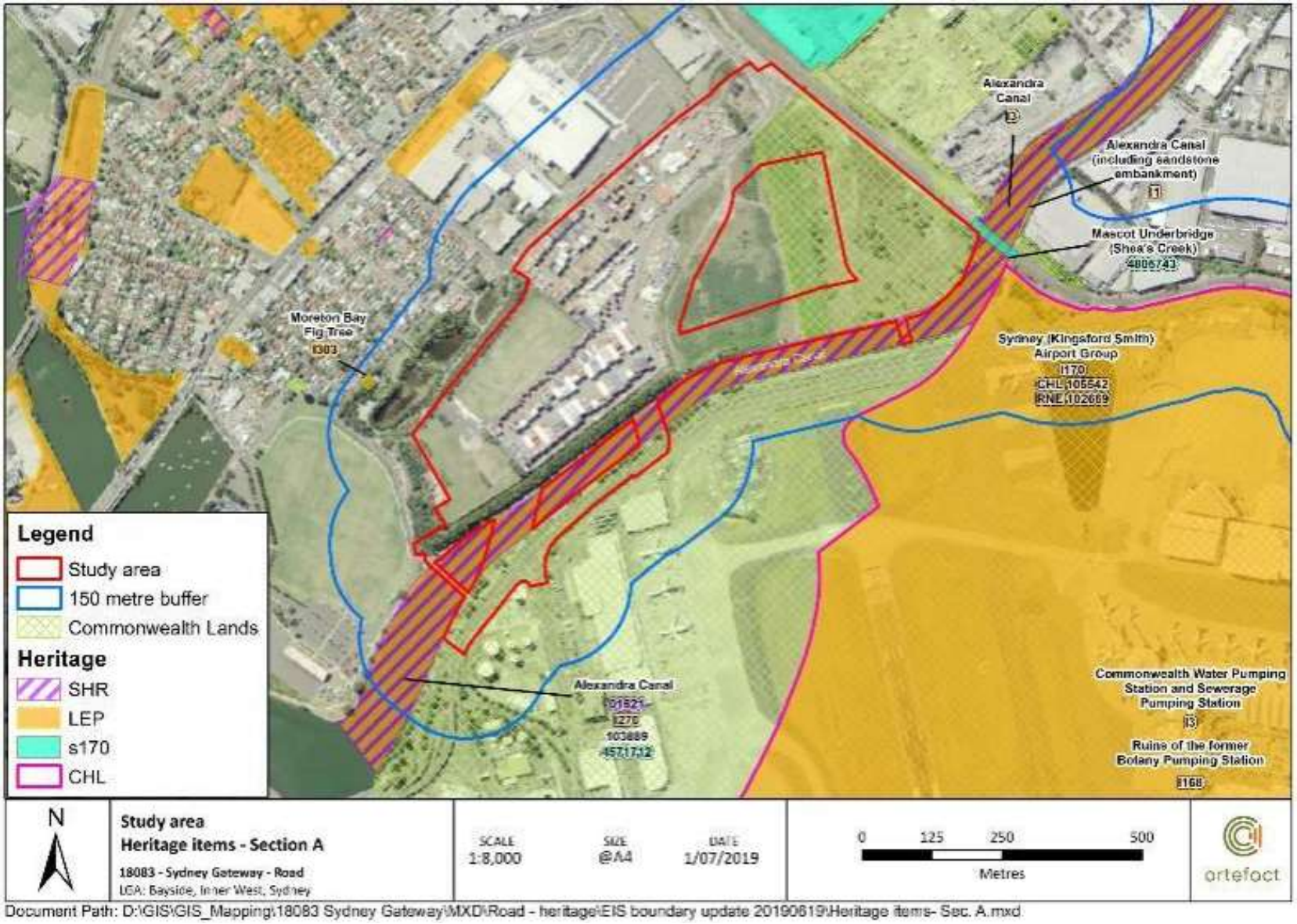


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Figure 4-3 Heritage listed items in Section B of the study area

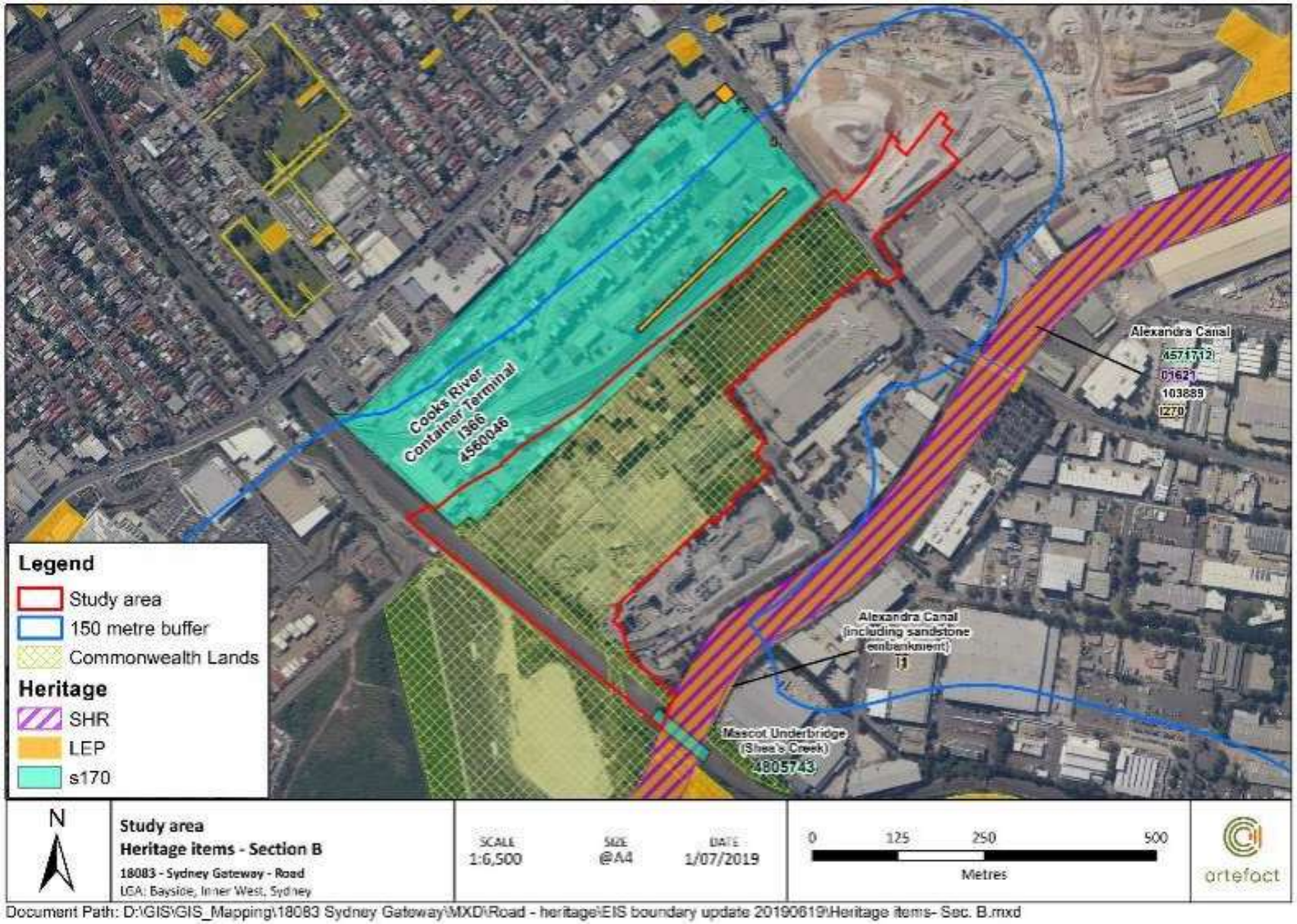
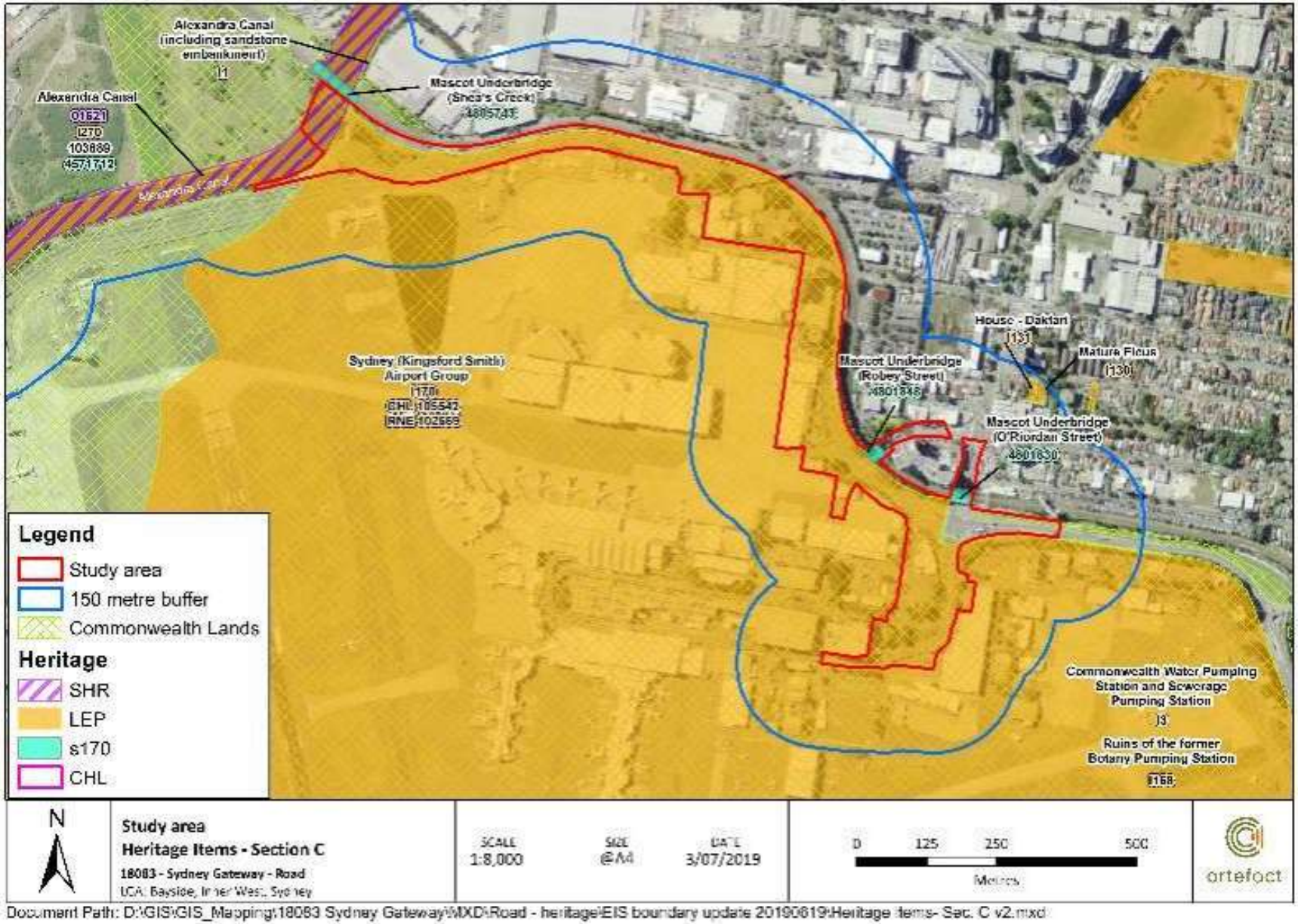


Figure 4-4 Heritage listed items in Cooks River Terminal (Section B)

Figure 4-5 Heritage listed items in Section C of the study area



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4.2 Non-Aboriginal archaeological potential

Non-Aboriginal archaeological potential at the site was the subject of a preliminary assessment in Technical Working Paper 9 of the EIS/MDP. The archaeological potential at the site has been the subject of additional research to ensure the construction risks have been appropriately considered and has been revised in the Historical Archaeological Assessment and Research Design (HAARD) and is shown in Figure 4.5.

The HAARD is included in full in Appendix B.

As part of the Statement of Heritage Impact (Artefact Heritage, 2019) in Technical Working Paper 9 of the EIS/MDP, the study area was divided into three key sections, as shown in Figure 4-5:

- Section A – Western portion encompassed by the suburb of Tempe, Alexandra Canal and part of Airport Drive
- Section B – Northern portion encompassed by the suburbs Sydenham and St Peters
- Section C – Eastern portion encompassed by Sydney Airport and the suburbs of Mascot and Botany.

Figure 4-6: Sections A, B and C.

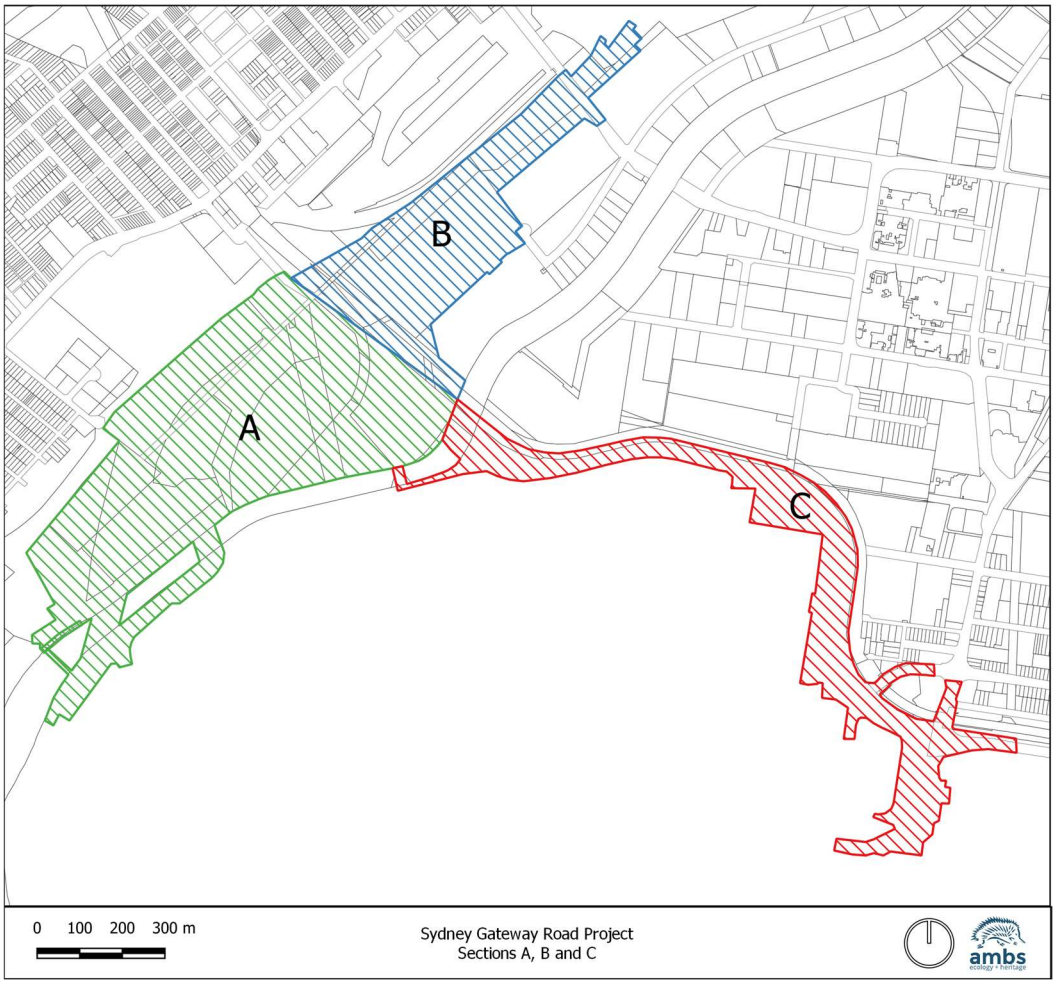
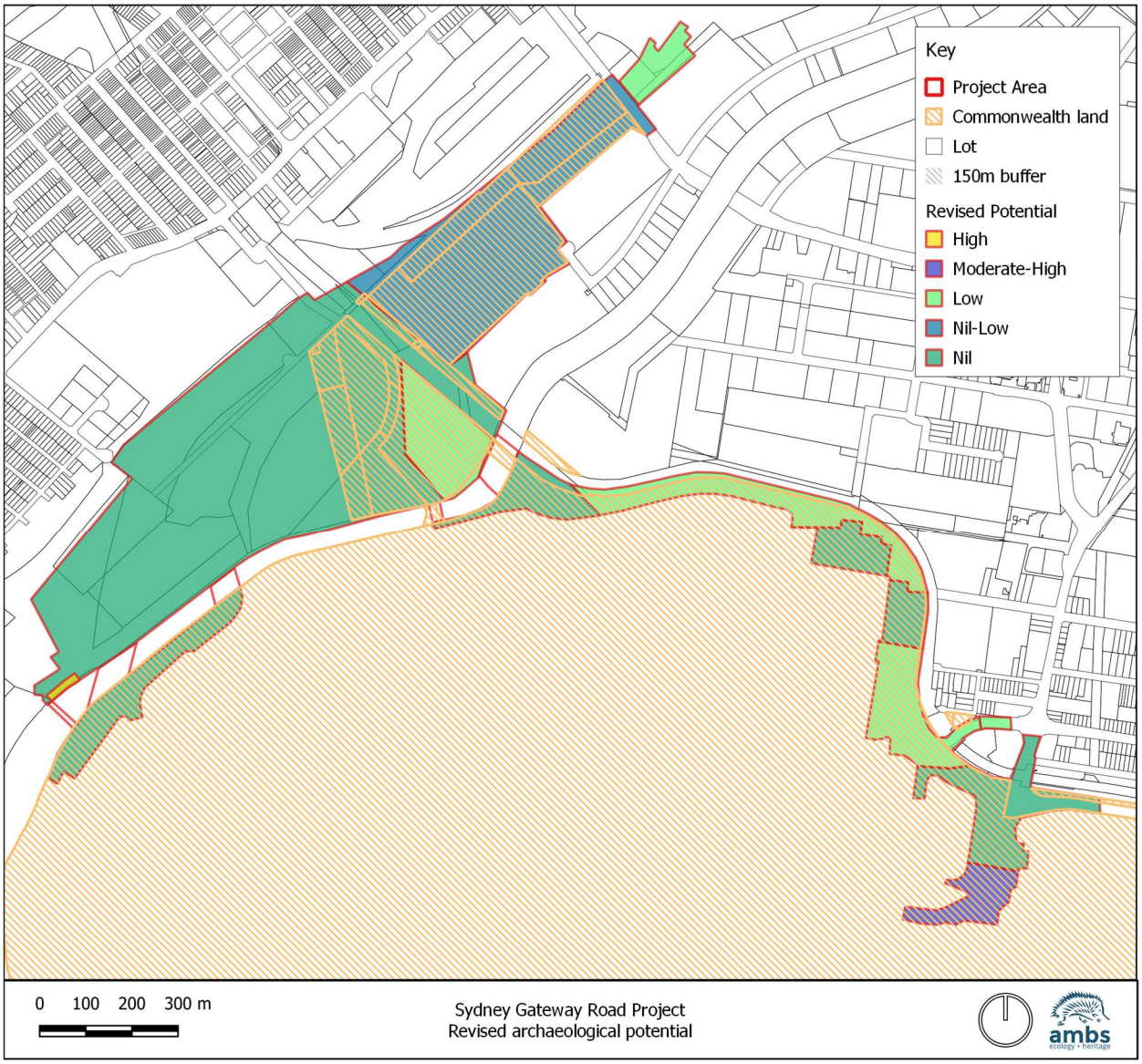


Figure 4-7: Non-Aboriginal archaeological potential at the site



4.2.1 Summary of the revision of archaeological potential

A review of the historic context led to the revision of four areas of Moderate potential as identified by Artefact Heritage:

1. The location of Sleigh's Shea's Creek Depot (Section A)
2. The location of Warnes Shell Lime Company (Section B)
3. The location of Government Wool Sheds and adjacent warehouses (Section B)
4. The location of the Lauriston Park Estate (Section C)

The revised archaeological potential of these four sites is detailed below.

Revised Archaeological Potential Section A

Sleigh's Shea's Creek Depot

The function of the depot was limited to storage and distribution, and the structures (except for the large fuel tanks) were lightweight in nature. As such, the archaeological potential of the depot overall has been revised to Low. Although the foundations of the tanks, and the pads or posts relating to the timber structures may remain, the function of the site as a transit point for a single product means it is unlikely to leave behind substantive evidence of a non-structural nature. In addition, the limited structural remains are unlikely to provide any meaningful information about the depot that is not already available from the photographic resource.

Earlier remains within section A

Due to the extensive earthworks associated with Tempe Tip and the earlier quarry, the archaeological potential for intact environmental data is Nil across most of Section A. In the location of Sleigh's depot which was not affected by the tip, pre-canal mudflats may be preserved beneath the dredged reclamation material below 4m. However, disturbance created by the construction of the canal may have compromised these deposits in areas close to the canal bank. Evidence of the dredging to produce the reclaimed land and substantial drainage features may survive. However, the research potential of these features and deposits is low. Overall, the archaeological potential for early land use in Section A is Nil to Low.

Revised Archaeological Potential Section B

Warnes Shell Lime Company

The type of kilns used in Warnes' operation will have had a great bearing on its survivability. Shell lime kilns came in many forms, but many were dug into the ground and loaded from the top (Pearson, 1990).

The construction of St Peters Interchange has caused considerable disturbance to the site. There has been extensive earthworks in the area which are likely to have removed all but the deepest sub-surface structures (Figure 4.1). Although the sub-surface components of the kilns and associated chimney structures may be deep, the remains are likely to be decontextualised and have limited research potential. The archaeological potential of the Warnes Shell Lime Company site is therefore considered to be Low.

Government Wool Sheds and adjacent warehouses

The entire footprint of six (and the partial footprint of four more) of the 250 Government wool sheds that were constructed along the Alexandra Canal in the early 1940s are contained within Section B.

The elevated floors of the sheds indicates that only posts or postholes would survive archaeologically, which would eliminate evidence of interior modification or reuse following the stockpiling of wool during WWII. The exposed nature of the underfloor cavity is also unlikely to have preserved uncompromised or meaningful evidence of the activities within the sheds. The archaeological potential of the Government Wool Sheds is therefore considered to be Low.

The adjacent warehouses which have also been assessed by Artefact Heritage as having Moderate potential are of a different construction type to the Government Wool Sheds. They were constructed between 1946 and 1951. Aerial photos show that after demolition, the concrete slab floors of these warehouses were left in place. There are no traces of internal divisions of space or evidence of activity

areas remaining on the concrete slabs. The archaeological potential of the adjacent warehouses is therefore considered to be None.

Earlier remains within Section B

Environmental data relating to the pre-canal phase, including the original bank of Shea's creek and substantial modifications to it may survive beneath the reclamation material in Section B. However, because of the waterlogged and polluted nature of this land, any environmental data is likely to be compromised by twentieth century activities at the site. Overall, the archaeological potential of these features is Low.

Revised Archaeological Potential Section C

Lauriston Park Estate

Lauriston Park Estate was an estate of weatherboard houses, established in 1902. The houses were timber-framed and constructed on brick piers. The nature of this construction method minimises the type and amount of remains that are left in the ground after demolition. The archaeological potential for the houses of the Lauriston Park Estate is therefore revised to Nil to Low. However, sub-surface structures in the yards may survive.

There are several areas that suggest minimal disturbance to subsurface features in Section C (Airport roadways and carparks). The archaeological potential for subsurface yard structures is considered to be Moderate to High in those areas.

Earlier remains in Section C

The poorly drained sandy soils of the Airport lands are likely to have leached much of the evidence of early agriculture from the upper deposits. While postholes of lightweight structures and fencelines may survive, their identification as such may not be possible due to the lack of context. Rubbish dumps related to early activity and rubbish opportunistically dumped into the reclamation fills may survive. However, due to the unknown density and nature of activity across the area in the early period, the overall archaeological potential for these events is Nil to Low. The former (pre-airport) alignment of the Botany Goods Line is partially located in Section C. Although some sleepers and ballast may survive beneath the roadway of Qantas Drive, the research potential of these objects is Nil to Low. The overall archaeological potential of the remains of the early goods line alignment is therefore considered to be Low.

5 Environmental aspects and impacts

Potential impacts on non-Aboriginal heritage have been assessed based on impacts to the significance of a heritage item as a result of:

- Direct (physical) impacts – caused by removing or altering the item or fabric of heritage significance, or excavating in areas of archaeological potential within the Project site
- Potential direct impacts – caused by vibration or by removing adjoining structures within or outside the Project site
- Visual impacts – caused by changes to the setting or curtilage of heritage items, places, historic streetscapes, and views within or outside the Project site.

The main potential for direct impacts will occur during construction. Visual impacts are generally associated with operational infrastructure and the permanent changes to landscape and setting that would occur during operation.

The key approach to minimising the potential for non-Aboriginal heritage impacts, and in particular cumulative impacts with other projects, will be designing the Project in accordance with the Urban Design and Landscape Plan (UDLP) to be prepared for the Project. The plan will include strategies and design principles to ensure that the design of Project features and ancillary infrastructure is sympathetic to the existing landscape heritage significance of the study area. The design of the Project, in particular the bridges over Alexandra Canal and heritage interpretation, will also seek to enhance the heritage significance of Alexandra Canal, which provides a link to the area's European and industrial heritage. Further information on the approach to urban design is provided in section 7.12 of the EIS/MDP.

5.1 Construction activities

Key aspects of the Project that could result in adverse impacts to non-Aboriginal heritage include:

- Temporary access roads during construction.
- Construction of bridges and drainage outlets in proximity to the Alexandra Canal.
- widening and upgrading of roads.
- Construction of the St Peters interchange connection may impact on any surviving remains of the Warnes shell lime company.
- Use of vibration generating equipment within proximity to heritage items.

5.2 Potential impacts

Likely and/or potential impacts on non-Aboriginal heritage associated with the Project are discussed in Chapter 17 of the EIS/MDP and include:

- Construction of bridge abutments over the Alexandra Canal has the potential to impact on the heritage aesthetics of the Canal;
- Construction of drainage outlets through the wall of the Alexandra Canal will impact on the heritage fabric of the canal;
- Bridge construction works has the potential to impact Mascot (Shea's Ck) Underbridge; and

- The interconnection at St Petes Interchange has the potential to impact on a section of the Cooks River Container Terminal and associated items.

Notwithstanding, mitigation and management measures provided in Section 6 as well as design of the Project aim to minimise the above likely and potential impacts to non-Aboriginal heritage values.

5.3 Unexpected Finds

There are areas of industrial, residential and environmental archaeology that may have survived with good integrity within the Project area and which may but not be exposed during the period of archaeological investigations. These are classed as unexpected heritage finds. Unexpected heritage finds may include, but not be limited to:

- Artefacts derived from housing that has been scattered across the site during the processes of demolition and building during the later nineteenth century and twentieth century.
- Rubbish pits containing waste and discarded artefacts disposed of away from housing
- Evidence of early land management practices.
- Some remains of early laneways which may include Telford road surfaces or a hardened clay surface with wheel ruts.

These will be managed in accordance with the methodologies detailed in Section 6 and as per the Unexpected Heritage Items Procedure included in Appendix A.

6 Non-Aboriginal heritage mitigation and management measures

6.1 Mitigation of impacts to non-Aboriginal heritage items

6.1.1 Heritage induction

AMBS will prepare a document that addresses the Project scope, identifying the sensitivities of the site and the relevant heritage requirements of the Project and will be presented to all on-site personnel. The induction will be approved by the Primary Excavation Director (ED) and presented by JHSW personnel. The induction/toolbox will include include:

- Understanding the heritage significance of the anticipated archaeological resource, including:
  - Repercussions of any breaches to the approved archaeological strategy
  - Understanding the unexpected finds procedures
  - The nature of the archaeological resource
  - Maps showing location of anticipated archaeological features
  - Photographs of the types of anticipated archaeological features
- Responsibilities under the Heritage Act 1977 (NSW).

Additional toolbox meetings will be given each day, as required, to provide an overview and management of the anticipated archaeological resource for that day and in the event of unanticipated relics or features being exposed.

6.1.2 Archival Recording

In accordance with the requirements of UMM NAH9, photographic archival recording will be carried out for the following items to the extent impacted by the JHSW works:

- Alexandra Canal
- Sydney (Kingsford Smith) Airport Group
- Cooks River Container Terminal
- Mascot (Shea's Ck) Underbridge
- Botany Rail Line

The archival recording will be carried out prior to works commencing in the vicinity of the above listed item and in accordance with How to Prepare Archival Records of Heritage Items (NSW Heritage Office, 1998) and Photographic Recording of Heritage Items Using Film or Digital Capture (Heritage Office, 2006b). Once complete, a report will be prepared detailing the history and significance of the item, relevant findings from the archival recording and an overview of the project. This report will be provided to the appropriate local council(s), local library, local historical society and the owner of the asset.

6.1.3 Alexandra Canal

Bridge abutments and drainage works will affect the fabric of the Alexandra Canal. The walls of Alexandra Canal are constructed from varying materials with differing levels of significance as

identified in the Alexandra Canal Conservation Management Plan (Government Architect's Office [GAO] 2004) (CMP). **Table 6.1** shows wall types that are in the vicinity of the proposed bridge abutments and drainage works.

Table 6.1: Wall types that may be affected by works.

Wall Type	CMP Assessment	Mitigation
Broken Range Bond Ashlar (Sandstone wall): high significance.	Approximately 263m of broken range bond ashlar wall (high significance) is adjacent to the project boundary and may be partly affected by the works. The broken range bond wall is an interrupted style of bond and utilises blocks of differing size. All stone has a quarry face and dressed sides to form the bond. The broken range bond wall is in exceptional condition where there has been a maintained bank. However, where there has been interference with the bond for drainage or other works there has been failure of the embankment wall and bank (GAO 2004, p35).	Preservation or restoration of fabric. Small areas of damage to be repaired using the original bond technique where possible. The restoration will be agreed in consultation with Sydney Water as part of the detailed design process. Archival recording will be completed prior to any works in accordance with How to prepare Archival Recordings of Heritage Items (NSW Heritage Office 1998) and Photographic Recording of Heritage Items Using Film or Digital capture (NSW Heritage Office 2006). Archaeological monitoring and recording of all dismantling works. Removed stones will be kept whole for reuse in reconstruction at the location of damage or elsewhere along similarly constructed parts of the canal.
Sandstone Remnant Wall (Remnant Stone Wall): high significance.	Approximately 164m of sandstone remnant wall (high significance) is adjacent to the project boundary and may be partly affected by the works. The sandstone remnant wall is original fabric of the Alexandra Canal. The wall has been laid with squared off sandstone using a running bond (GAO 2004, p36).	Preservation or restoration of fabric. Small areas of damage to be repaired using the original bond technique where possible. The restoration will be agreed in consultation with Sydney Water as part of the detailed design process. Archival recording will be completed prior to any works in accordance with How to prepare Archival Recordings of Heritage Items (NSW Heritage Office 1998) and Photographic Recording of Heritage Items

Wall Type	CMP Assessment	Mitigation
		Using Film or Digital capture (NSW Heritage Office 2006). Section in the Tempe Reach will be treated as archaeological (GAO 2004, p36). Archaeological monitoring and recording of all dismantling works. Removed stones will be kept whole for reuse in reconstruction at the location of damage or elsewhere along similarly constructed parts of the canal.
Shotcrete (intrusive): intrusive significance.	Although these sections have a functional significance for the canal, they have been identified as intrusive to the overall heritage significance of the item (GAO 2004, p39).	Replace with fabric to be agreed in consultation with Sydney Water as part of the detailed design process.

6.1.4 Sydney (Kingsford Smith) Airport Group

Eight buildings in the Sydney (Kingsford Smith) Airport Group (located on Commonwealth land) will be demolished as part of the Project. The buildings have been identified as having Little or Neutral heritage value (Sydney Airport Heritage Management Plan GML Heritage Pty Ltd, 2009:56-57, Table 4.3). The archival recording is an appropriate mitigation to the significance levels of these items. Archival recording will be completed in accordance with How to prepare Archival Recordings of Heritage Items (NSW Heritage Office 1998) and Photographic Recording of Heritage Items Using Film or Digital capture (NSW Heritage Office 2006).

6.2 Archaeological Management

A Historical Archaeological Assessment and Research Design (HAARD) has been prepared in accordance with Updated Mitigation Measure NAH10. The rationale, research design and methodology for the archaeological salvage excavations is presented in detail in the HAARD (refer to Appendix B of this Plan) and includes the following areas:

- Intact sections of Alexandra Canal along the western bank of the canal on either side of the existing pedestrian and rail bridges;
- Vacant land at 30 Canal Road (Lot 4 DP 555771 and Lot 3 DP825649);
- Land located north of Canal Road that is currently used for the construction (stockpiling) of the New M5 (Lot A DP 391775, Lot BDP 394647 and Lot 2 DP1168612);
- Sydney Airport land considered to contain low or moderate archaeological potential;

- Land along Qantas Drive considered to contain low or moderate archaeological potential;
- Sydney Airport land located east of Sydney Airport northern lands carpark and west of Botany Rail Line (Lot 1 DP 826101); and
- Land to the west of Boral's St Peters facility and east of the Botany Rail Line.

6.2.1 Scope of non-Aboriginal archaeological investigations

An archaeological investigation program will be undertaken. The archaeological investigations program will respond to the assessment of potential and significance as detailed below.

Areas of Low potential

Areas of Low potential will be managed with targeted monitoring. The areas of monitoring will be targeted based on the type of impacts and the nature of the archaeological resource in the impacted areas. In areas of Low potential that are not targeted for monitoring, the Unexpected Finds Protocol will be implemented.

Table 6.2: Areas of low potential

Section	Location	Purpose
A	Sleigh's Shea's Creek Depot (Lot 1 DP826101)	Monitor for evidence of early land creation, land use, construction of the canal where early fills and sediments are intact (locations of deep excavation works only). Confirm low research potential of Sleigh's depot.
B	Warne's Shell Lime Company (Lot A DP391775)	Establish the nature and depth of existing impacts in the known location of Warne's structures and monitor areas of low impact for surviving remains of shell lime kilns.
C	Botany Goods Line and surrounds, market gardens (Lot 11 DP213317, part Lot 8 1050923)	Monitor a small sample of locations (dependent on proposed impacts) for evidence of early land use if intact deposits remain. Confirm low research potential of rail line.

Areas of Moderate-High potential

Archaeological testing or monitoring to determine the extent, integrity and potential significance of the underlying archaeology in areas of Moderate to High potential. The methodology of either testing or monitoring will depend on the nature of the impacts in those areas. (Section 6.2.2).

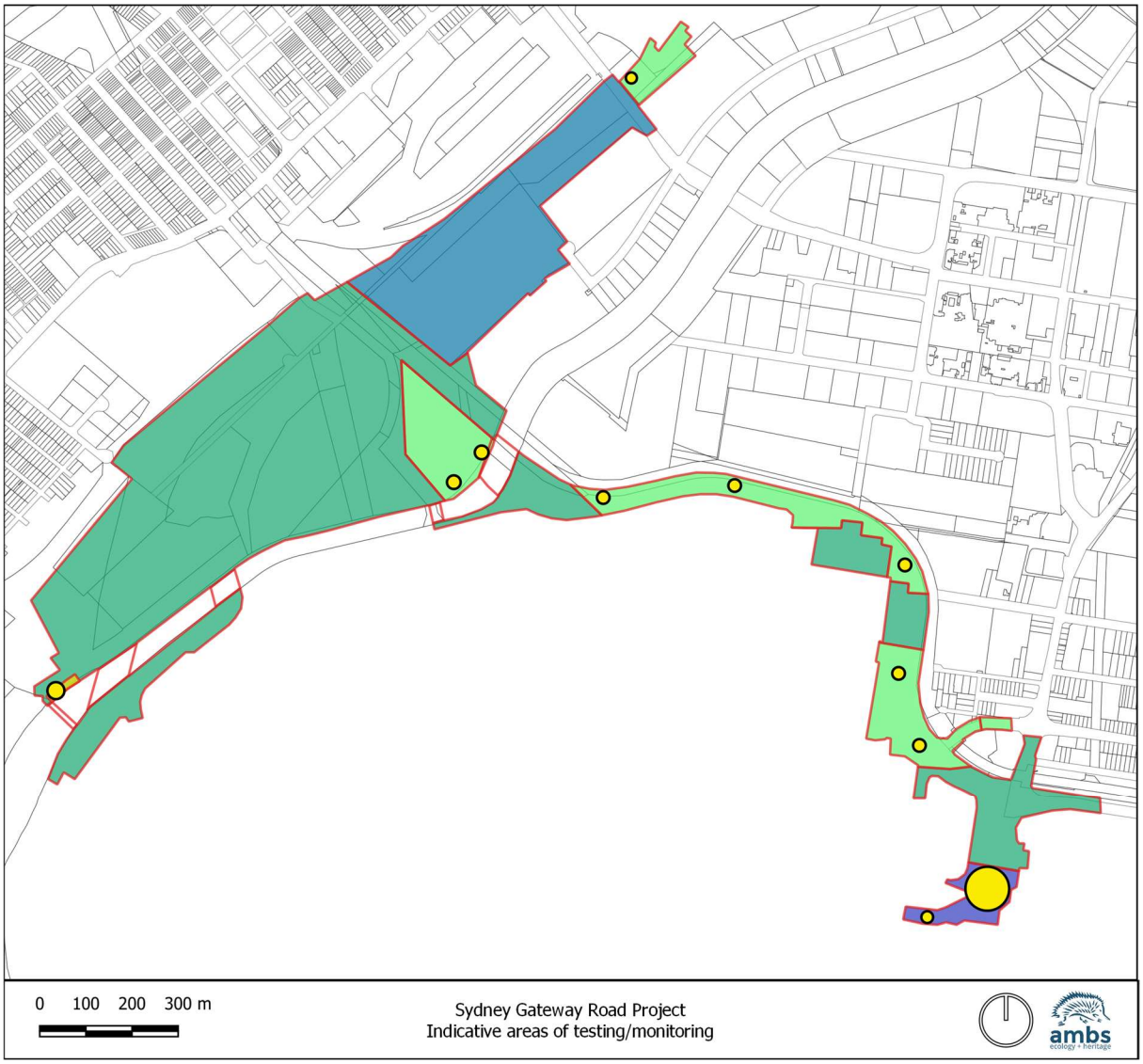
Table 6.3: Areas of moderate to high and high potential

Section	Location	Purpose

A	Alexandra Canal (right bank, Tempe Reach)	Monitor works that will affect areas of sandstone remnant wall. Monitor shallow works on the adjacent bank or excavate a test trench to accurately record the deposits behind the wall if proposed works will impact below existing disturbance.
C	Lauriston Park Estate (part Lot 8 1050923)	Monitor large open area works in carparks and roadways (areas of low impact) for evidence of occupation deposits and subsurface structures such as cesspits, wells and air raid shelters. Test in smaller or deeper areas of impact to more accurately record deposits which may not be easily interpretable (where wider context is absent).

If archaeological remains are present with good integrity after monitoring or testing, open area stratigraphic excavation will proceed to salvage all significant archaeological remains within a defined area (Section 6.2.4).

Figure 6-1: Indicative areas of testing and monitoring (yellow). Actual locations and number of monitoring or testing events will depend on the nature and depth of impacts.



6.2.2 Archaeological monitoring

Mechanical removal of the current structures and surfaces across the site will be monitored by the Primary Excavation Director (ED), Mike Hincks and, if required by the scale of work, assisted by the Secondary ED, Lian Ramage. The mechanical excavation will be shallow scrapes to ensure the exposed surface is progressively reduced in a controlled manner. The archaeological monitoring will be undertaken in all areas of Low potential during initial ground-breaking activities.

Prior to any excavation commencing, appropriate WHS precautions will be implemented to ensure that management of contaminated soils (which may contain heritage relics) are appropriately managed. This may include presence of a hygienist depending on the area of excavation.
If there are no underlying archaeological relics, features or deposits in the areas under investigation, the Primary ED will attend the site to verify and a Clearance Certificate will be prepared by the Primary ED to inform the Project team and Proponent in writing.

After the issue of a clearance certificate, there is still the unlikely potential that unexpected relics may be exposed during site works (see Section 7.3 below).

Where a significant archaeological resource with good integrity is exposed, open area excavation will proceed (Section 7.1.4), following removal of the overburden and once the area has been made safe.

6.2.3 Archaeological testing

Archaeological testing will be undertaken in up to three areas of moderate to high archaeological potential, depending on the scope and nature of proposed impacts in those areas. The archaeological testing will consist of targeted trenches in each area of Moderate to High potential. The size and number of the trenches will be determined by the nature of the potential resource in that area.

Initial excavation will be with a mechanical excavator with a batter bucket. The excavator operator will be directed by the archaeologist. Once archaeological levels are reached, manual excavation will commence to expose and record the archaeology.

If there are no underlying archaeological relics, features or deposits in the areas under investigation, the Primary ED will attend the site to verify and a Clearance Certificate will be prepared by the Primary ED to inform the Project team and Proponent in writing.

After the issue of a clearance certificate, there is still an unlikely potential that unexpected relics may be exposed during site works (see Section 6.3 below).

Where a significant archaeological resource with good integrity is exposed, open area excavation will proceed (Section 6.1.4) following removal of the overburden and once the area has been made safe.

6.2.4 Open area stratigraphic excavation

The extent that open area excavation will be required will not be known until any potential archaeology has been exposed. The nature of the resource at the site and the likelihood that remains of structures and rubbish dumps will be relatively isolated means that open area excavation is likely to be targeted and restricted to small areas. In the event that large, intact industrial or environmental features are present, the aim will be to excavate a sample of the most intact and representative part of the complex as a proportionate response to the assessed low research potential and significance of those items. Determination of the sample will be based on the sample's ability to answer pre-determined research questions and represent the significance values of the item.

Open area excavation will proceed once the site has been made safe. Excavations will be directed by the Primary ED, Mike Hincks, or the Secondary ED, Lian Ramage. The team may comprise up to 6 archaeologists, though this may increase or reduce in accordance with the site archaeology.

Excavation will be in accordance with the following methodology to ensure that all significant archaeological relics, features and deposits are appropriately managed and recorded:

- Establish a site datum and lay out a grid, relevant to the size of the site, 10m, 20m or 50m, across the site in order to record the levels of extant deposits, features and relics;
- Significant features will be recorded in detail and excavated manually under the supervision of the excavation director:
    - In the unlikely event that intact residential underfloor areas are encountered, they will be excavated within a 500mm grid, using 50mm spits, and wet sieved;

  - Cesspits and rubbish pits will be excavated along tip lines (if identifiable);
- All significant archaeological deposits, features and relics that are exposed during the excavations will be recorded in accordance with heritage best practice standards. Recording will include:
  - Cleaning features to facilitate photographic recording;
  - Scale plans;
  - Elevations of features, if relevant;
  - Digital photographs (in JPG and RAW format); and
  - Photogrammetry
  - Site survey; and
  - Detailed description of the feature, deposit or relic to ensure that a clear and comprehensive record of the archaeological resource of the site is preserved for the future.
- Sequential numbering of features and deposits to facilitate preparation of a Harris Matrix and artefact labelling;
- Preparation and development of a Harris matrix, to show stratigraphic relationships between all recorded archaeological features and deposits;
- All information regarding the location, dimensions and characteristics of all recorded archaeological features and deposits will be recorded on pro-forma context sheets;
- Collection of all significant artefacts for analysis, except from non-significant unstratified fill. Samples of bricks and mortar will be collected from each structure, as relevant;

Soil samples will be taken from topsoils, cesspits, and other relevant deposits for analysis by a palynologist. The results of the analysis will provide an insight into the indigenous and introduced flora of the locality and diet of the local community.

A Clearance Certificate will be issued by the Historic Excavation Director for each site requiring archaeological testing or excavation and recording after investigations are completed at that particular location.

6.3 Unexpected Heritage Finds

There are areas of industrial, residential and environmental archaeology that may have survived with good integrity within the study area. These will be managed in accordance with the methodologies detailed above and as per the Unexpected Heritage Items Procedure included in Appendix A.

Work will cease within the immediate environment of an unexpected find and the Primary ED will attend the site to determine its integrity, significance and to determine the appropriate management for the find.

Following completion of the appropriate management of an unexpected heritage find, the Primary ED will provide written advice that all archaeological investigations within an area have been completed.

6.4 Post-Excavation Management

6.4.1 Artefact Management

Artefacts will be cleaned, bagged, and labelled in accordance with archaeological context, and appropriately stored for analysis so that any information that can contribute to the understanding of the site and its historical development is not lost. Artefact processing and analysis will be in accordance with the AMBS system. The database for the site will be included in the Excavation Report.

A repository for the long-term storage of the artefacts from the Gateway Project will also be required.

6.4.2 Final Excavation Report

At completion of the archaeological investigation program a Heritage Report will be prepared detailing the results of the fieldwork and post-excavation analysis. The report will be prepared in accordance with current heritage best practice, the relevant guidelines listed in Section 3.1.1 and the requirements of a standard excavation permit and will include:

- An executive summary of the archaeological programme;
- Due credit to the client paying for the excavation, on the title page;
- An accurate site location and site plan (with scale and north arrow);
- Historical research, references and bibliography;
- Detailed information on the excavation, including the aim, the context for the excavation, procedures, treatment of artefacts (cleaning, conserving, sorting, cataloguing, labelling, scale photographs and/or drawings, location of repository) and analysis of the information retrieved;
- Nominated repository for the items;
- Detailed response to research questions (at minimum those stated in the approved Research Design);
- Conclusions from the archaeological programme. The information must include a reassessment of the site's heritage significance, statement(s) on how archaeological investigations at this site have contributed to the community's understanding of the site and other comparable archaeological sites in the local area and recommendations for the future management of the site;
- Details of how information about this excavation has been publicly disseminated (for example provide details about Public Open Days and include copies of press releases, public brochures and information signs produced to explain the archaeological significance of the site).

The Heritage Report will include Alexandra Canal, any archaeological deposits discovered within areas identified as having potential to contain archaeological remains and any unexpected heritage finds as required by CoA E8.

The Heritage Report will be submitted to the Planning Secretary, the Heritage Council of NSW and Heritage DPC for information no later than nine (9) months after the completion of the work in accordance with CoA E7.

7 Compliance management

7.1 Roles and responsibilities

The JHSWJV Project Team's organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Table 3-1 of this Plan.

7.2 Training

All employees, contractors and utility staff working on site will undergo site induction training relating to non-Aboriginal heritage management issues prior to construction commencing (refer to Section 6.1.1 for details around non-aboriginal heritage). The induction training will address elements related to heritage management including:

- Existence and requirements of this sub-plan
- Relevant legislation
- Roles and responsibilities for heritage management
- Location of identified heritage sites and no-go areas
- Proposed heritage management and protection measures
- Procedure to follow in the event of an unexpected heritage item find or discovery of human remains during construction works (Roads and Maritime Services Unexpected Heritage Items, Heritage Procedure (November 2015) (refer Appendix A)).

Further details regarding staff induction and training are outlined in 3.5 of the CEMP.

7.3 Monitoring and inspections

Inspections of areas and activities with the potential to impact non-Aboriginal heritage will occur for the duration of the Project. Site inspections will cover the implementation of management measures and requirements for site activities protecting non-Aboriginal heritage areas. Archaeological monitoring of works in non-Aboriginal heritage areas will be conducted in accordance with the methodology in Section 6.2.

In the event that monitoring equipment is required to be installed within or on any heritage listed structures, advice from a heritage specialist will be obtained prior to installation in accordance with the requirements of CoA E28.

Additional requirements and responsibilities in relation to inspections are documented in Section 3.10 and Section 3.10.4 of the CEMP.

7.4 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.10.5 of the CEMP.

7.5 Reporting

Reporting requirements and responsibilities are documented in Section 3.10.8 of the CEMP.

Preparation of an excavation report is a standard condition of consent for approval to remove the archaeological resource from any site. This ensures that the information gained through excavation can be disseminated to inform future excavations and on-going research. The report will include the post-excavation analysis, including analysis of all archaeological features, deposits and structures, catalogue and analysis of all artefacts and historical context.

A preliminary report will also be prepared for each individual site within the study area, following archaeological investigations at that site. This will be as a mitigation for the removal of State significant archaeology. Works associated with Alexandra Canal may also require a stand-alone report to be submitted to Sydney Water and to the Heritage Council, however would form an integral part of the overarching final archaeological report.

8 Review and improvement

8.1 Continuous improvement

Continuous improvement of this plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

8.2 Plan update and amendment

The processes described in Chapter 3.13 and Chapter 3.14.2 of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Only the Environment, Approvals and Sustainability Manager, or delegate, has the authority to change any of the environmental management documentation.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 3.11.2 of the CEMP.

Appendix A –Unexpected Heritage Items Procedure

Transport
Roads & Maritime
Services

NSW GOVERNMENT

Unexpected Heritage Items

Heritage Procedure 02

November 2015

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Contents

Appendices

Please note

This procedure applies to all development and activities concerning roads, road infrastructure and road related assets undertaken by Roads and Maritime.

For advice on how to manage unexpected heritage items as a result of activities related to maritime infrastructure projects, please contact the Senior Environmental Specialist (Heritage).

1 Purpose

This procedure has been developed to provide a consistent method for managing unexpected heritage items (both Aboriginal and non-Aboriginal) that are discovered during Roads and Maritime activities. This procedure includes Roads and Maritime's heritage notification obligations under the *Heritage Act 1977* (NSW), *National Parks and Wildlife Act 1974* (NSW), A*boriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth) and the *Coroner's Act 2009* (NSW).

This document provides relevant background information in Section 3, followed by the technical procedure in Sections 6 and 7. Associated guidance referred to in the procedure can be found in Appendices A-H.

2 Scope

This procedure assumes that an appropriate level of Aboriginal and non-Aboriginal heritage assessment has been completed before work commences on site. In some cases, such as exempt development, detailed heritage assessment may not be required.

Despite appropriate and adequate investigation, unexpected heritage items may still be discovered during maintenance and construction works. When this happens, this procedure must be followed. This procedure provides direction on when to stop work, where to seek technical advice and how to notify the regulator, if required.

This procedure applies to <u>all</u> Road and Maritime construction and maintenance activities

This procedure **applies to**:

- The discovery of any unexpected heritage item (usually during construction), where Roads and Maritime does not have approval to disturb the item or where safeguards for managing the disturbance (apart from this procedure) are not contained in the environmental impact assessment.
- All Roads and Maritime projects that are approved or determined under Part 3A (including Transitional Part 3A Projects), Part 4, Part 5 or Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), or any development that is exempt under the Act.

This procedure must be followed by Roads and Maritime staff, alliance partners (including local council staff working under Road Maintenance Council Contracts, [RMCC]), developers under works authorisation deeds or any person undertaking Part 5 assessment for Roads and Maritime.

This procedure **does not** apply to:

- The legal discovery and disturbance of heritage items as a result of investigations being undertaken in accordance with OEH's *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (2010); an Aboriginal Heritage Impact Permit (AHIP) issued under the *National Parks and Wildlife Act 1974*; or an approval issued under the *Heritage Act 1977*[1].
- The legal discovery and disturbance of heritage items as a result of investigations (or other activities) that are required to be carried out for the purpose of complying with any environmental assessment requirements under Part 3A (including Transitional Part 3A Projects) or Part 5.1 of the EP&A Act.
- The legal discovery and disturbance of heritage items as a result of construction related activities, where the disturbance is permissible in accordance with an AHIP[2]; an approval issued under the *Heritage Act 1977*; the Minister for Planning's conditions of project approval; or safeguards (apart from

[1] RMS' heritage obligations are incorporated into the conditions of heritage approvals.

[2] RMS *Procedure for Aboriginal cultural heritage consultation and investigation* (2011) recommends that Part 4 and Part 5 projects that are likely to impact Aboriginal objects during construction seek a whole-of-project AHIP. This type of AHIP generally allows a project to impact known and potential Aboriginal objects within the entire project area, without the need to stop works. It should be noted that an AHIP may exclude impact to certain objects and areas, such as burials or ceremonial sites. In such cases, the project must follow this procedure.

this procedure) that are contained in the relevant environmental impact assessment.

All construction environment management plans (CEMPs) must make reference to and/or include this procedure (often included as a heritage sub-plan). Where approved CEMPs exist they must be followed in the first instance. Where there is a difference between approved CEMPs and this procedure, the approved CEMP must be followed. Where an approved CEMP does not provide sufficient detail on particular issues, this procedure should be used as additional guidance. When in doubt always seek environment and legal advice on varying approved CEMPs.

3 Types of unexpected heritage items and their legal protection

The roles of project, field and environmental staff are critical to the early identification and protection of unexpected heritage items. **Appendix A** illustrates the wide range of heritage discoveries found on Roads and Maritime projects and provides a useful photographic guide. Subsequent confirmation of heritage discoveries must then be identified and assessed by technical specialists (usually an archaeologist).

An 'unexpected heritage item' means any unanticipated discovery of an actual or potential heritage item, for which Roads and Maritime does not have approval to disturb[3] or does not have a safeguard in place (apart from this procedure) to manage the disturbance.

These discoveries are categorised as either:

(a) Aboriginal objects

(b) Historic (non-Aboriginal) heritage items

(c) Human skeletal remains.

The relevant legislation that applies to each of these categories is described below.

3.1 Aboriginal objects

The *National Park and Wildlife Act 1974* protects *Aboriginal objects* which are defined as:

"*any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non Aboriginal extraction, and includes Aboriginal remains*"[4].

Examples of Aboriginal objects include stone tool artefacts, shell middens, axe grinding grooves, pigment or engraved rock art, burials and scarred trees.

IMPORTANT!

<u>All</u> Aboriginal objects, regardless of significance, are protected under law.

If any impact is expected to an Aboriginal object, an Aboriginal Heritage Impact Permit (AHIP) is usually required from the Office of Environment and Heritage (OEH)[5]. Also, when a person becomes aware of an Aboriginal object they must notify

[3] Disturbance is considered to be any physical interference with the item that results in it being destroyed, defaced, damaged, harmed, impacted or altered in any way (this includes archaeological investigation activities).
[4] Section 5(1) *National Park and Wildlife Act 1974*.
[5] Except when Part 3A, Division 4.1 of Part 4 or Part 5.1 of the *EP&A Act* applies.

the Director-General of OEH about its location[6]. Assistance on how to do this is provided in Section 7 (Step 5).

3.2 Historic heritage items

Historic (non-Aboriginal) heritage items may include:

- Archaeological 'relics'
- Other historic items (i.e. works, structures, buildings or movable objects).

3.2.1 Archaeological relics

The *Heritage Act 1977* protects *relics* which are defined as:

"*any deposit, artefact, object or material evidence that relates to the settlement of the area that comprises NSW, not being Aboriginal settlement; and is of State or local heritage significance*"[7].

Relics are archaeological items of local or state significance which may relate to past domestic, industrial or agricultural activities in NSW, and can include bottles, remnants of clothing, pottery, building materials and general refuse.

IMPORTANT!

All relics are subject to statutory controls and protections.

If a relic is likely to be disturbed, a heritage approval is usually required from the NSW Heritage Council[8]. Also, when a person discovers a relic they must notify the NSW Heritage Council of its location[9]. Advice on how to do this is provided in Section 7 (Step 5).

3.2.2 Other historic items

Some historic heritage items are not considered to be 'relics'; but are instead referred to as works, buildings, structures or movable objects. Examples of these items that Roads and Maritime may encounter include culverts, historic road formations, historic pavements, buried roads, retaining walls, tramlines, cisterns, fences, sheds, buildings and conduits. Although an approval under the *Heritage Act 1977* (NSW) may not be required to disturb these items, their discovery must be managed in accordance with this procedure.

As a general rule, an archaeological relic requires discovery or examination through the act of excavation. An archaeological excavation permit under Section 140 of the Heritage Act is required to do this. In contrast, 'other historic items' either exist above the ground's surface (e.g. a shed), or they are designed to operate and exist beneath the ground's surface (e.g. a culvert).

[6] This is required under s89(A) of the *National Park and Wildlife Act 1974* (NSW) and applies to **all projects** assessed under Part 3A, Part 4, Part 5 and Part 5.1 of the *EP&A Act*, including exempt development.

[7] Section 4(1) *Heritage Act 1977*.

[8] Except when Part 3A, Division 4.1 of Part 4 or Part 5.1 of the *EP&A Act* applies.

[9] This is required under s146 of the *Heritage Act 1977* and applies to **all projects** assessed under Part 3A, Part 4, Part 5 and Part 5.1 of the *EP&A Act*, including exempt development.

Despite this difference, it should be remembered that relics can often be associated with 'other heritage items', such as archaeological deposits within cisterns and underfloor deposits under buildings.

3.3 Human skeletal remains

Human skeletal remains can be classed as:

- Reportable deaths
- Aboriginal objects
- Relics

Where it is suspected that less than 100 years has elapsed since death, human skeletal remains come under the jurisdiction of the State Coroner and the *Coroners Act* 2009 (NSW). Under s 35(2) of the Act, a person must report the death to a police officer, a coroner or an assistant coroner as soon as possible. This applies to all human remains less than 100 years old[10] regardless of ancestry. Public health controls may also apply.

Where remains are suspected of being more than 100 years old, they are considered to be either Aboriginal objects or non-Aboriginal relics depending on the ancestry of the individual. Aboriginal human remains are protected under the *National Parks and Wildlife Act 1974*, while non-Aboriginal remains are protected under the *Heritage Act 1977*.

The approval and notification requirements of these Acts are described above in sections 3.1 and 3.2. Additionally, the discovery of Aboriginal human remains also triggers notification requirements to the Commonwealth Minister for the Environment under s 20(1) of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth).

IMPORTANT!

All human skeletal remains are subject to statutory controls and protections.

All bones must be treated as potential human skeletal remains and work around them must stop while they are protected and investigated urgently.

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Guidance on what to do when suspected human remains are found is in **Appendix E**.

[10] Under s 19 of the *Coroners Act 2009*, the coroner has no jurisdiction to conduct an inquest into reportable death unless it appears to the coroner that (or that there is reasonable cause to suspect that) the death or suspected death occurred within the last 100 years.

4 Responsibilities

The following roles and responsibilities are relevant to this procedure:

Role	Definition/responsibility
Aboriginal Cultural Heritage Advisor (ACHA)	Provides Aboriginal cultural heritage advice to project teams. Acts as Aboriginal community liaison for projects on cultural heritage matters. Engages and consults with the Aboriginal community as per the Roads and Maritime *Procedure for Aboriginal Cultural Heritage Consultation and Investigation*.
Aboriginal Sites Officer (ASO)	Is an appropriately trained and skilled Aboriginal person whose role is to identify and assess Aboriginal objects and cultural values. For details on engaging Aboriginal Sites Officers, refer to Roads and Maritime *Procedure for Aboriginal Cultural Heritage Consultation and Investigation*.
Archaeologist (A)	Professional consultant, contracted on a case-by-case basis to provide heritage and archaeological advice and technical services (such as reports, heritage approval documentation etc). Major projects with complex heritage issues often have an on call Project archaeologist.
Project Manager (PM)	Ensures all aspects of this procedure are implemented. The PM can delegate specific tasks to a construction environment manager, Roads and Maritime site representatives or regional environment staff, where appropriate.
Regional Environment Staff (RES)	Provides advice on this procedure to project teams. Ensuring this procedure is implemented consistently by supporting the PM. Supporting project teams during the uncovering of unexpected finds. Reviewing archaeological management plans and liaising with heritage staff and archaeological consultants as needed.
Registered Aboriginal Parties (RAPs)	RAPs are Aboriginal people who have registered with Roads and Maritime to be consulted about a proposed Roads and Maritime project or activity in accordance with OEH's Aboriginal cultural heritage consultation requirements for proponents (2010).
Senior Environmental Specialist (Heritage) (SES(H))	Provides technical assistance on this procedure and archaeological technical matters, as required. Reviewing the archaeological management plans and facilitating heritage approval applications, where required. Assists with regulator engagement, where required.
Team Leader - Regional Maintenance Delivery (TL-RMD)	Ensures Regional Maintenance Delivery staff stop work in the vicinity of an unexpected heritage item. Completes Unexpected Heritage Item Recording Form 418 and notifies WS-RMD.
Technical Specialist	Professional consultant contracted to provide specific technical advice that relates to the specific type of unexpected heritage find (eg a forensic or physical anthropologist who can identify and analyse human skeletal

	remains).
Works Supervisor - Regional Maintenance Delivery (WS-RMD)	Ensures Regional Maintenance Delivery staff are aware of this procedure. Supports the Team Leader - Regional Maintenance Delivery during the implementation of this procedure and ensures reporting of unexpected heritage items through environment management systems.

5 Acronyms

The following acronyms are relevant to this procedure:

Acronym	Meaning
A	Archaeologist
ACHA	Aboriginal Cultural Heritage Advisor
AHIP	Aboriginal Heritage Impact Permit
ASO	Aboriginal Site Officer
CEMP	Construction Environment Management Plan
OEH	Office of Environment and Heritage.
PACHCI	Procedure for Aboriginal Cultural Heritage Consultation and Investigation
PM	Project Manager
RAP	Registered Aboriginal Parties
RES	Regional Environmental Staff
SES(H)	Senior Environmental Specialist (Heritage)
TL-RMD	Team Leader – Regional Maintenance Division
RMD	Regional Maintenance Delivery
RMS	Roads and Maritime
WS-RMD	Works Supervisor - Regional Maintenance Division

6 Overview of the Procedure

On discovering something that could be an unexpected heritage item ('the item'), the following procedure must be followed. There are eight steps in the procedure. These steps are summarised in **Figure 1** below and explained in detail in Section 7.

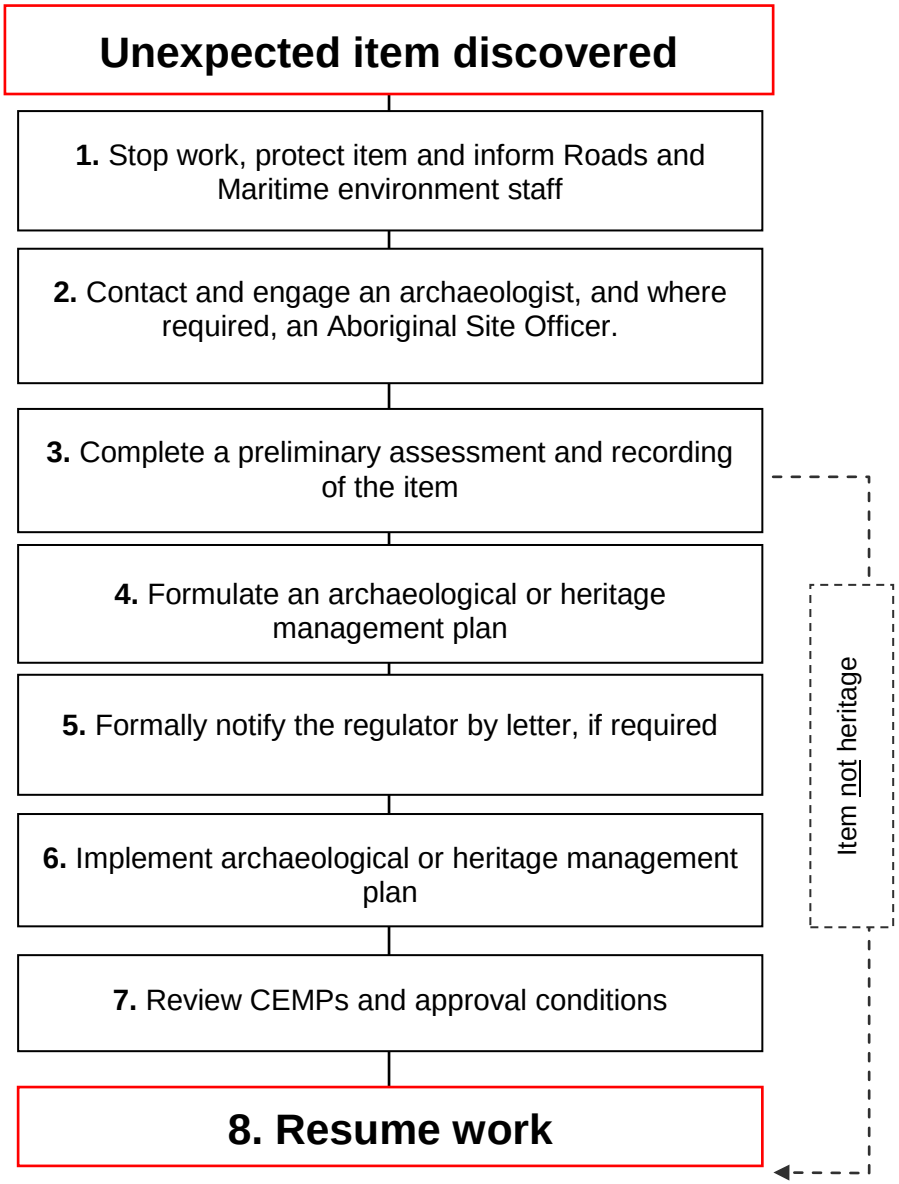


Figure 1: Overview of steps to be undertaken on the discovery of an unexpected heritage item.

IMPORTANT!

RMS may have approval or specific safeguards in place (apart from this procedure) to impact on certain heritage items during construction. If you discover a heritage item and you are unsure whether an approval or safeguard is in place, STOP works and follow this procedure.

7 Unexpected heritage items procedure

Table 1: Specific tasks to be implemented following the discovery of an unexpected heritage item.

Aboriginal Cultural Heritage Advisor (ACHA); Aboriginal Sites Officer (ASO); Archaeologist (A); Project Manager (PM); Regional Environment Staff (RES); Registered Aboriginal Parties (RAPs); Senior Environmental Specialist (Heritage) (SES(H)); Team leader – Roads and Maintenance Division (TL - RMD); Works supervisor – Roads and Maintenance Division (WS - RMD).

Step	Task	Responsibility	Guidance & Tools
1	**Stop work, protect item and inform Roads and Maritime environment staff**		
1.1	Stop all work in the immediate area of the item and notify the Project Manager or Team Leader-RMD. (For maintenance activities, the Team Leader is to also notify the Works Supervisor-RMD)	All	**Appendix A** (Identifying Unexpected Heritage items)
1.2	Establish a 'no-go zone' around the item. Use high visibility fencing, where practical.	PM or TL-RMD	
1.3	Inform all site personnel about the no-go zone. No further interference, including works, ground disturbance, touching or moving the item must occur within the no-go zone.	PM or TL-RMD	
1.4	Inspect, document and photograph the item using 'Unexpected Heritage Item Recording Form 418'.	PM or TL-RMD	**Appendix B** (Unexpected Heritage Item Recording Form 418) **Appendix C** (Photographing Unexpected Heritage items)

Step	Task	Responsibility	Guidance & Tools
1.5	Is the item likely to be bone? If **yes**, follow the steps in Appendix E – 'Uncovering bones'. Where it is obvious that the bones are human remains, you must notify the local police by telephone immediately. They may take command of all or part of the site. If **no**, proceed to next step.	PM or WS-RMD	**Appendix E** (Uncovering Bones)
1.6	Is the item likely to be: a) A relic? (A relic is evidence of past human activity which has local or state heritage significance. It may include items such as bottles, utensils, remnants of clothing, crockery, personal effects, tools, machinery and domestic or industrial refuse) and/or b) An Aboriginal object? (An Aboriginal object may include a shell midden, stone tools, bones, rock art or a scarred tree). If **yes**, proceed directly to Step 1.8 If **no**, proceed to next step.	PM or WS-RMD	**Appendix A** (Identifying heritage items)
1.7	Is the item likely to be a "work", building or standing structure? (This may include tram tracks, kerbing, historic road pavement, fences, sheds or building foundations). If **yes**, can works avoid further disturbance to the item? (E.g. if historic road base/tram tracks have been exposed, can they be left in place?) If **yes**, works may proceed without further disturbance to the item. Complete Step 1.8 within 24 hours. If works cannot avoid further disturbance to the item, works must not recommence at this time. Complete the remaining steps in this procedure.	PM or WS-RMD	**Appendix A** (Identifying heritage items)

Step	Task	Responsibility	Guidance & Tools
1.8	Inform relevant Roads and Maritime Regional Environmental Staff of item by providing them with the completed 'Form 418'.	PM or WS-RMD (RES)	**Appendix D** (Key Environmental Contacts)
1.9	Regional Environmental Staff to advise Project Manager or Works Supervisor whether RMS has an approval or safeguard in place (apart from this procedure) to impact on the 'item'. (An approval may include an approval under the *Heritage Act*, the *National Parks and Wildlife Act* or the *Planning and Assessment Act*). Does RMS have an approval, permit or appropriate safeguard in place to impact on the item? If **yes**, work may recommence in accordance with the approval, permit or safeguard. There is no further requirement to follow this procedure. If **no**, continue to next step.		
1.10	Liaise with Traffic Management Centre where the delay is likely to affect traffic flow.	PM or WS-RMD	
1.11	Report the item as a 'Reportable Event' in accordance with the Roads and Maritime *Environmental Incident Classification and Reporting Procedure*. Implement any additional reporting requirements related to the project's approval and CEMP, where relevant.	PM or WS-RMD	RMS Environmental Incident Classification and Reporting Procedure
2	**Contact and engage an archaeologist and, where required, an Aboriginal site officer**		
2.1	Contact the Project (on-call) Archaeologist to discuss the location and extent of the item and to arrange a site inspection, if required. The project CEMP may contain contact details of the Project Archaeologist. OR	PM or WS-RMD (A; RES; SES(H))	Also see **Appendix D** (Key Environmental Contacts)

Step	Task	Responsibility	Guidance & Tools
	Where there is no project archaeologist engaged for the works, engage a suitably qualified and experienced archaeological consultant to assess the find. A list of heritage consultants is available on the RMS contractor panels on the Buyways homepage. Regional environment staff and Roads and Maritime heritage staff can also advise on appropriate consultants.		Buyways
2.2	Where the item is likely to be an Aboriginal object, speak with your Aboriginal Cultural Heritage Advisor to arrange for an Aboriginal Sites Officer to assess the find. Generally, an Aboriginal Sites Officer would be from the relevant local Aboriginal land council. If an alternative contact person (ie a RAP) has been nominated as a result of previous consultation, then that person is to be contacted.	PM or WS-RMD (ACHA; ASO)	
2.3	If requested, provide photographs of the item taken at Step 1.4 to the archaeologist, and Aboriginal Sites Officer if relevant.	PM or WS-RMD (RES)	**Appendix C** (Photographing Unexpected Heritage items)
3	**Preliminary assessment and recording of the find**		
3.1	In a minority of cases, the archaeologist (and Aboriginal Sites Officer, if relevant) may determine from the photographs that no site inspection is required because no archaeological constraint exists for the project (*eg the item is not a 'relic', a 'heritage item' or an 'Aboriginal object*'). Any such advice should be provided in writing (eg via email) and confirmed by the Project Manager or Works Supervisor - RMD.	A/PM/ASO/ WS-RMD	Proceed to Step 8
3.2	Arrange site access for the archaeologist (and Aboriginal Sites Officer, if relevant) to inspect the item as soon as practicable. In the majority of cases a site inspection is required to conduct a preliminary assessment.	PM or WS-RMD	
3.3	Subject to the archaeologist's assessment (and the Aboriginal Sites Officer's assessment, if relevant), work may recommence at a set distance from the item. This is to protect any other archaeological material that may exist in the vicinity, which has not yet been uncovered. Existing protective fencing established in Step 1.2 may need to be adjusted to	A/PM/ASO/ WS-RMD	

Step	Task	Responsibility	Guidance & Tools
	reflect the extent of the newly assessed protective area. No works are to take place within this area once established.		
3.4	The archaeologist (and Aboriginal Sites Officer, if relevant) may provide advice after the site inspection and preliminary assessment that no archaeological constraint exists for the project (*eg the item is not a 'relic', a 'heritage item' or an 'Aboriginal object'*). Any such advice should be provided in writing (eg via email) and confirmed by the Project Manager or Works Supervisor - RMD.	A/PM/ASO/ WS-RMD	Proceed to Step 8
3.5	Where required, seek additional specialist technical advice (such as a forensic or physical anthropologist to identify skeletal remains). Regional environment staff and/or Roads and Maritime heritage staff can provide contacts for such specialist consultants.	RES/SES(H)	**Appendix D** (Key Environmental Contacts)
3.6	Where the item has been identified as a 'relic', 'heritage item' or an 'Aboriginal object' the archaeologist should formally record the item.	A	
3.7	The regulator can be notified informally by telephone at this stage by the archaeologist, Project Manager (or delegate) or Works Supervisor - RMD. Any verbal conversations with regulators must be noted on the project file for future reference.	PM/A/WS-RMD	
4	**Prepare an archaeological or heritage management plan**		
4.1	The archaeologist must prepare an archaeological or heritage management plan (with input from the Aboriginal Sites Officer, where relevant) shortly after the site inspection. This plan is a brief overview of the following: (a) description of the feature, (b) historic context, if data is easily accessible, (c) likely significance, (d) heritage approval and regulatory notification requirements, (e) heritage reporting requirements, (f) stakeholder consultation requirements, (g) relevance to other project approvals and management plans etc.	A/ASO	**Appendix F** (Archaeological/ Heritage Advice Checklist)
4.2	In preparing the plan, the archaeologist with the assistance of regional environment staff must review the CEMP, any heritage sub-plans, any conditions of heritage approvals, conditions of project approval (and or Minister's Conditions of Approval) and heritage assessment documentation (eg Aboriginal Cultural Heritage Assessment Report). This will outline if the unexpected item is consistent with previous heritage/project approval(s)	A/RES/PM	**Appendix F** (Archaeological/ Heritage Advice Checklist)

Step	Task	Responsibility	Guidance & Tools
	and/or previously agreed management strategies. The Project Manager and regional environment staff must provide all relevant documents to the archaeologist to assist with this. Discussions should occur with design engineers to consider if re-design options exist and are appropriate.		
4.3	The archaeologist must submit this plan as a letter, brief report or email to the Project Manager outlining all relevant archaeological or heritage issues. This plan should be submitted to the Project Manager as soon as practicable. Given that the archaeological management plan is an overview of all the necessary requirements (and the urgency of the situation), it should take no longer than two working days to submit to the Project Manager.	A	
4.4	The Project Manager or Works Supervisor must review the archaeological or heritage management plan to ensure all requirements can reasonably be implemented. Seek additional advice from regional environment staff and Roads and Maritime heritage staff, if required.	PM/RES/SES(H)/ WS-RMD	
5	**Notify the regulator, if required.**		
5.1	Review the archaeological or heritage management plan to confirm if regulator notification is required. Is notification required? If **no**, proceed directly to Step 6 If **yes**, proceed to next step.	PM/RES/SES(H)/ WS-RMD	
5.2	If notification is required, complete the template notification letter.	PM or WS-RMD	**Appendix G** (Template Notification Letter)
5.3	Forward the draft notification letter, archaeological or heritage management plan and the site recording form to regional environment staff and Senior Environmental Specialist (Heritage) for review, and consider any suggested amendments.	PM/RES/SES(H)/ WS-RMD	

Step	Task	Responsibility	Guidance & Tools
5.4	Forward the signed notification letter to the relevant regulator (ie notification of relics must be given to the Heritage Division, Office of Environment and Heritage (OEH), while notification for Aboriginal objects must be given to the relevant Aboriginal section of OEH). Informal notification (via a phone call or email) to the regulator prior to sending the letter is appropriate. The archaeological management plan and the completed site recording form must be submitted with the notification letter. For Part 3A and Part 5.1 projects, the Department of Planning and Environment must also be notified.	PM or WS-RMD	**Appendix D** (Key Environmental Contacts)
5.5	A copy of the final signed notification letter, archaeological or heritage management plan and the site recording form should be kept on file by the Project Manager or Works Supervisor- RMD and a copy sent to the Senior Environmental Specialist (Heritage).	PM or WS-RMD	
6	**Implement archaeological or heritage management plan**		
6.1	Modify the archaeological or heritage management plan to take into account any additional advice resulting from notification and discussions with the regulator.	A/PM or WS-RMD (RES)	
6.2	Implement the archaeological or heritage management plan. Where impact is expected, this would include such things as a formal assessment of significance and heritage impact assessment, preparation of excavation or recording methodologies, consultation with registered Aboriginal parties, obtaining heritage approvals etc, if required.	PM or WS-RMD (RAPs and RES)	PACHCI Stage 3
6.3	Where heritage approval is required contact regional environment staff for further advice and support material. Please note time constraints associated with heritage approval preparation and processing. Project scheduling may need to be revised where extensive delays are expected.	PM/RES/WS-RMD	
6.4	For Part 3A/Part 5.1 projects, assess whether heritage impact is consistent with the project approval or if project approval modification is required from the Department of Planning and Environment. Seek advice from regional environment staff and Environment Branch specialist staff if unsure.	PM/RES	

Step	Task	Responsibility	Guidance & Tools
6.5	Where statutory approvals (or project approval modification) are required, impact upon relics and/or Aboriginal objects must not occur until heritage approvals are issued by the appropriate regulator.	PM or WS-RMD	
6.6	Where statutory approval (or Part 3A/Part 5.1 project modification) is not required and where recording is recommended by the archaeologist, sufficient time must be allowed for this to occur.	PM or WS-RMD	
6.7	Ensure short term and permanent storage locations are identified for archaeological material or other heritage material is removed from site, where required. Interested third parties (eg museums or local councils) should be consulted on this issue. Contact regional environment staff and Senior Environmental Specialist (Heritage) for advice on this matter, if required.	PM or WS-RMD	
7	**Review CEMPs and approval conditions**		
7.1	Check whether written notification is required to be sent to the regulator before re-commencing work. Where this is not explicit in heritage approval conditions, expectations should be clarified directly with the regulator.	PM	
7.2	Update the CEMP, site mapping and project delivery program as appropriate with any project changes resulting from final heritage management (eg retention of heritage item, salvage of item). Updated CEMPs must incorporate additional conditions arising from any heritage approvals, and Aboriginal community consultation if relevant. Include any changes to CEMP in site induction material and update site workers during toolbox talks.	PM	
8	**Resume work**		
8.1	Seek written clearance to resume project work from regional environment staff and the archaeologist (and regulator, if required). Clearance would only be given once all archaeological excavation and/or heritage recommendations (where required) are complete. Resumption of project work must be in accordance with the all relevant project/heritage approvals/determinations.	RES/A/PM/WS-RMD	
8.2	If required, ensure archaeological excavation/heritage reporting and other heritage	PM/A/WS-RMD	

Step	Task	Responsibility	Guidance & Tools
	approval conditions are completed in the required timeframes. This includes artefact retention repositories, conservation and/or disposal strategies.		
8.3	Forward all heritage/archaeological assessments, heritage location data and its ownership status to the Senior Environmental Specialist (Heritage). They will ensure all heritage items in Roads and Maritime ownership and/or control are considered for the Roads and Maritime S170 Heritage and Conservation Register.	PM/SES(H)/ WS-RMD	
8.4	If additional unexpected items are discovered this procedure must begin again from Step 1.	PM/TL-RMD	

8 Seeking advice

Advice on this procedure should be sought from Roads and Maritime regional environment staff in the first instance. Contractors and alliance partners should ensure their own project environment managers are aware of and understand this procedure. Regional environment staff can assist non-Roads and Maritime project environment managers with enquires concerning this procedure.

IMPORTANT!

Roads and Maritime Services staff and contractors are not to seek advice on this procedure directly from the Office of Environment and Heritage without first seeking advice from regional environment staff and heritage policy staff.

Technical archaeological or heritage advice regarding an unexpected heritage item should be sought from the contracted archaeologist. Technical specialist advice can also be sought from heritage policy staff within Environment Branch to assist with the preliminary archaeological identification and technical reviews of heritage/archaeological reports.

9 Related information

Contact details: Senior Environmental Specialist (Heritage), Environment Branch, 02 8588 5754

Effective date: 01 February 2015

Review date: 01 February 2016

This procedure should be read in conjunction with:

- Roads and Maritimes' *Heritage Guidelines 2015.*
- Roads and Maritime Services *Environmental Incident Classification and Reporting Procedure*
- Roads and Maritime's *Procedure for Aboriginal Cultural Heritage Consultation and Investigation*
- RTA *Environmental Impact Assessment Guidelines.*

This procedure replaces:

- Procedure 5.5 ("*unexpected discovery of an archaeological relic or Aboriginal object*") outlined in the RTA's *Heritage Guidelines* 2004.

Other relevant reading material:

- NSW Heritage Office (1998), *Skeletal remains: guidelines for the management of human skeletal remains*.
- Department of Environment and Conservation NSW (2006), *Manual for the identification of Aboriginal remains.*
- Department of Health (April 2008), *Policy Directive: Burials - exhumation of human remains*[11]*.*

[11] http://www.health.nsw.gov.au/policies/pd/2008/pdf/PD2008_022.pdf

Appendix A

Identifying Unexpected Heritage Items

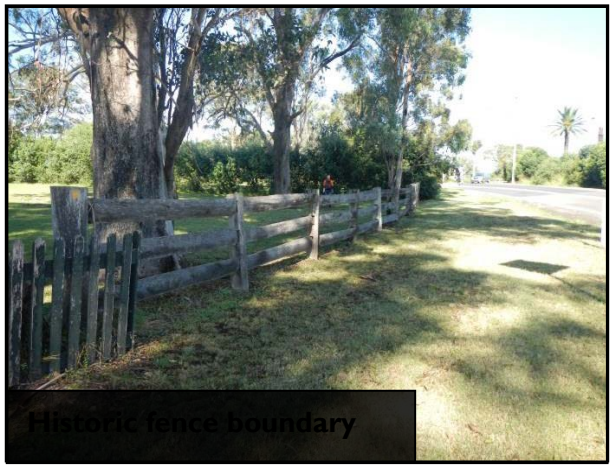
The following images can be used to assist in the preliminary identification of potential unexpected items (both Aboriginal and non-Aboriginal) during construction and maintenance works. Please note this is not a comprehensive typology.

Top left hand picture continuing clockwise: Stock camp remnants (Hume Highway Bypass at Tarcutta); Linear archaeological feature with post holes (Hume Highway Duplication), Animal bones (Hume Highway Bypass at Woomargama); Cut wooden stake; Glass jars, bottles, spoon and fork recovered from refuse pit associated with a Newcastle Hotel (Pacific Highway, Adamstown Heights, Newcastle area).

Top left hand picture continuing clockwise: Woodstave water pipe with tar and wire sealing (Horsley Drive); Tram tracks (Sydney); Brick lined cistern (Clyde); Retaining wall (Great Western Highway, Leura).

Top left hand picture continuing clockwise: Road pavement (Great Western Highway, Lawson); Sandstone kerbing and guttering (Parramatta Road, Mays Hill); Telford road (sandstone road base, Great Western Highway, Leura); Ceramic conduit and sandstone culvert headwall (Blue Mountains, NSW); Corduroy road (timber road base, Entrance Road, Wamberai).

Top left hand corner continuing clockwise: Alignment Pin (Great Western Highway, Wentworth Falls); Survey tree (MR7, Albury); Survey tree (Kidman Way, Darlington Point, Murrumbidgee); Survey tree (Cobb Highway, Deniliquin); Milestone (Great Western Highway, Kingswood, Penrith); Alignment Stone (near Guntawong Road, Riverstone). Please note survey marks may have additional statutory protection under the *Surveying and Spatial Information Act 2002*.



Top left hand corner continuing clockwise: Remnant bridge piers (Putty Road, Bulga); Wooden boundary fence (Campbelltown Road, Denham Court); Dairy shed (Ballina); Golden Arrow Mine Shaft.

Top left hand corner: Culturally modified stone discovered on Main Road 92, about two kilometres west of Sassafras. The remaining images show a selection of stone

artefacts retrieved from test and salvage archaeological excavations during the Hume Highway Duplication and Bypass projects from 2006-2010.

Appendix B

Unexpected Heritage Item Recording Form 418

Unexpected heritage item recording form

Date:		**Recorded by:** (Include name and position)	
Project name:			
Description of works being undertaken (eg Removal of failed pavement by excavation and pouring concrete slabs in 1m x 1m replacement sections).			
Description of exact location of item (eg Within the road formation on Parramatta Road, east bound lane, at the corner of Johnston Street, Annandale, Sydney).			

Description of item found (What type of item is it likely to be? Tick the relevant boxes).

A. A relic	☐	A 'relic' is evidence of a past human activity relating to the settlement of NSW with local or state heritage significance. A relic might include bottles, utensils, plates, cups, household items, tools, implements, and similar items.
B. A 'work, building or structure'	☐	A 'work' can generally be defined as a form infrastructure such as tram tracks, a culvert, road base, a bridge pier, kerbing, and similar items.
C. An Aboriginal object	☐	An 'Aboriginal object' may include stone tools, stone flakes, shell middens, rock art, scarred trees and human bones.
D. Bone	☐	Bones can either be human or animal remains. **Remember that you must contact the local police immediately by telephone if you are certain that the bone(s) are human remains.**
E. Other	☐	

Provide short description of item (eg Metal tram tracks running parallel to road alignment. Good condition. Tracks set in concrete, approximately 10cms (100 mm) below the current ground surface).	

Sketch
(Provide a sketch of the item's general location in relation to other road features so its approximate location can be mapped without having to re-excavate it. In addition, please include details of the location and direction of any photographs of the item taken).

Action taken (Tick either A *or* B)

A. Unexpected item **would not** be further impacted on by works ☐

Describe how works would avoid impact on the item. (eg The tram tracks will be left *in situ*, and recovered with road paving).

B. Unexpected item **would be** further impacted on by works ☐

Describe how works would impact on the item. (eg Milling is required to be continued to 200 mm depth to ensure road pavement requirements are met. Tram tracks will need to be removed).

Project manager / works supervisor signature	

Appendix C

Photographing Unexpected Heritage Items

Photographs of unexpected items in their current context (*in situ*) may assist heritage staff and archaeologists to better identify the heritage values of the item. Emailing good quality photographs to specialists can allow for better quality and faster heritage advice. The key elements that must be captured in photographs of the item include its position, the item itself and any distinguishing features. All photographs must have a scale (ruler, scale bar, mobile phone, coin) and a note describing the direction of the photograph.

Context and detailed photographs

It is important to take a general photograph (Figure 1) to convey the location and setting of the item. This will add much value to the subsequent detailed photographs also required (Figure 2).

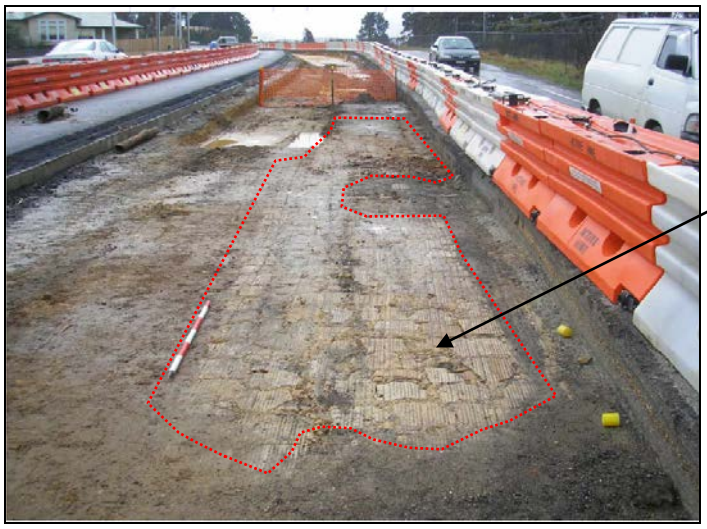


Figure 2: Close up detail of the sandstone surface showing material type, formation and construction detail. This is essential for establishing date of the feature.

Figure 1: Telford road uncovered on the Great Western Highway (Leura) in 2008.

Photographing distinguishing features

Where unexpected items have a distinguishing feature, close up detailed photographs must be taken of this, where practicable. In the case of a building or bridge, this may include diagnostic details architectural or technical features. See Figures 3 and 4 for examples.

Figure 3: Ceramic bottle artefact with stamp.

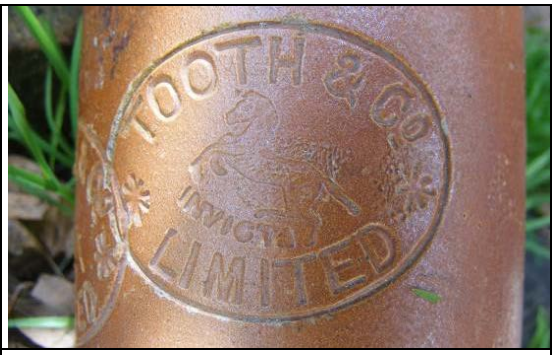


Figure 4: Detail of the stamp allows '*Tooth & Co Limited*' to be made out. This is helpful to a specialist in gauging the artefact's origin, manufacturing date and likely significance.

Photographing bones

The majority of bones found on site will those of be recently deceased animal bones often requiring no further assessment (unless they are in archaeological context). However, if bones are human, Roads and Maritime must contact the police immediately (see Appendix F for detailed guidance). Taking quality photographs of the bones can often resolve this issue quickly. Heritage staff in Environment Branch can confirm if bones are human or non-human if provided with appropriate photographs.

Ensure that photographs of bones are not concealed by foliage (Figure 5) as this makes it difficult to identify. Minor hand removal of foliage can be undertaken as long as disturbance of the bone does not occur. Excavation of the ground to remove bone(s) should not occur, nor should they be pulled out of the ground if partially exposed. Where sediment (adhering to a bone found on the ground surface) conceals portions of a bone (Figure 6) ensure the photograph is taken of the bone (if any) that is not concealed by sediment.

Figure 5: Bone concealed by foliage.

Figure 6: Bone covered in sediment

Ensure that all close up photographs include the whole bone and then specific details of the bone (especially the ends of long bones, the *epiphysis*, which is critical for species identification). Figures 7 and 8 are examples of good photographs of bones that can easily be identified from the photograph alone. They show sufficient detail of the complete bone and the epiphysis.

Figure 7: Photograph showing complete bone.

Figure 8: Close up of a long bone's epiphysis.

Appendix C

Key Environmental Contacts

Key environmental contacts

Hunter region	Environmental Manager (Hunter)	4924 0440
	Aboriginal Cultural Heritage Advisor	4924 0383
Northern region	Environment Manager (North)	6640 1072
	Aboriginal Cultural Heritage Advisor	6604 9305
Southern region	Environmental Manager (South)	6492 9515
	Aboriginal Cultural Heritage Advisor	4221 2767
South West region	Environment Manager (South West)	6937 1634
	Aboriginal Cultural Heritage Advisor	6937 1647
Sydney region	Environment Manager (Sydney)	8849 2516
	Aboriginal Cultural Heritage Advisor	8849 2583
Western region	Environment Manager (West)	6861 1628
	Aboriginal Cultural Heritage Advisor	6861 1658
Pacific Highway Office	Environment Manager	6640 1375
Regional Maintenance Delivery	Environment Manager	9598 7721
Environment Branch	Senior Environmental Specialist (Heritage)	8588 5754

Heritage Regulators

Heritage Division Office of Environment and Heritage Locked Bag 5020 Parramatta NSW 2124 Phone: (02) 9873 8500	Department of the Environment (Clth) GPO Box 787 Canberra ACT 2601 Phone: (02) 6274 1111
Office of Environment and Heritage (Sydney Metropolitan) Planning and Aboriginal Heritage Section PO Box 668 Parramatta NSW 2124 Phone: (02) 9995 5000	Office of Environment and Heritage (North Eastern NSW) Planning and Aboriginal Heritage Section Locked Bag 914 Coffs Harbour NSW 2450 Phone: (02) 6651 5946
Office of Environment and Heritage (North Western NSW) Environment and Conservation Programs PO Box 2111 Dubbo NSW 2830 Phone: (02) 6883 5330	Office of Environment and Heritage (Southern NSW) Landscape and Aboriginal Heritage Protection Section PO Box 733 Queanbeyan NSW 2620 Phone: (02) 6229 7188

Project-Specific Contacts

Position	Name	Phone Number
Project Manager		
Site/Alliance Environment Manager		
Regional Environmental Officer		
Aboriginal Cultural Heritage Advisor		
Consultant Archaeologist		
Local Police Station		
OEH: Environment Line		131 555

Appendix E

Uncovering Bones

This appendix provides Project Managers with (1) advice on what to do when bones are discovered; (2) guidance on the notification pathways; and (3) additional considerations and requirements when managing the discovery of human remains.

1. First uncovering bones

Stop all work in the vicinity of the find. All bones uncovered during project works should be **treated with care and urgency** as they have the potential to be human remains. Therefore they must be identified as either human or non-human as soon as possible by a qualified forensic or physical anthropologist. These specialist consultants can be sought by contacting regional environment staff and/or heritage staff at Environment Branch.

On the very rare occasion where it is *instantly obvious* from the remains that they are human, the Project Manager (or a delegate) should **inform the police by telephone** prior to seeking specialist advice. It will be obvious that it is human skeletal remains where there is no doubt, as demonstrated by the example in Figure 1. Often skeletal elements in isolation (such as a skull) can also clearly be identified as human. Note it may also be obvious that human remains have been uncovered when soft tissue and clothing are present.

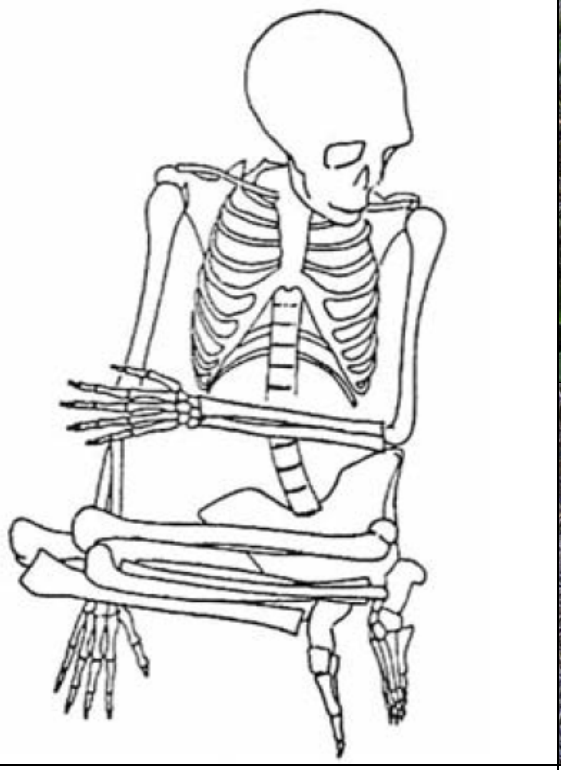


Figure 1: Schematic of a complete skeleton that is 'obviously' human[12].

Figure 2: Disarticulated bones that require assessment to determine species.

This preliminary phone call is to let the police know that Roads and Maritime is undertaking a specialist skeletal assessment to determine the approximate date of death which will inform legal jurisdiction. The police may wish to take control of the site at this stage. If not, a forensic or physical anthropologist must be requested to make an on-site assessment of the skeletal remains.

[12] After Department of Environment and Conservation NSW (2006), *Manual for the identification of Aboriginal Remains*: 17.

Where it is not 'obvious' that the bones are human (in the majority of cases, illustrated by Figure 2), specialist assessment is required to establish the species of the bones. Photographs of the bones can assist this assessment if they are clear and taken in accordance with guidance provided in Appendix C. Good photographs often result in the bones being identified by a specialist without requiring a site visit; noting they are nearly always non-human. In these cases, non-human skeletal remains must be treated like any other unexpected archaeological find.

If the bones are identified as human (either by photographs or an on-site inspection) a technical specialist must determine the likely ancestry (Aboriginal or non-Aboriginal) and burial context (archaeological or forensic). This assessment is required to identify the legal regulator of the human remains so **urgent notification** (as below) can occur. Preliminary telephone or verbal notification by the Project Manager or regional environment staff is considered appropriate. This must be followed up later by Roads and Maritime's formal letter notification as per Appendix G when a management plan has been developed and agreed to by the relevant parties.

2. Range of human skeletal notification pathways

The following is a summary of the different notification pathways required for human skeletal remains depending on the preliminary skeletal assessment of ancestry and burial context.

A. Human bones are from a recently deceased person (*less than* 100 years old).

> **☑ Action**
> A police officer must be notified immediately as per the obligations to report a death or suspected death under s35 of the *Coroners Act 2009* (NSW). It should be assumed the police will then take command of the site until otherwise directed.

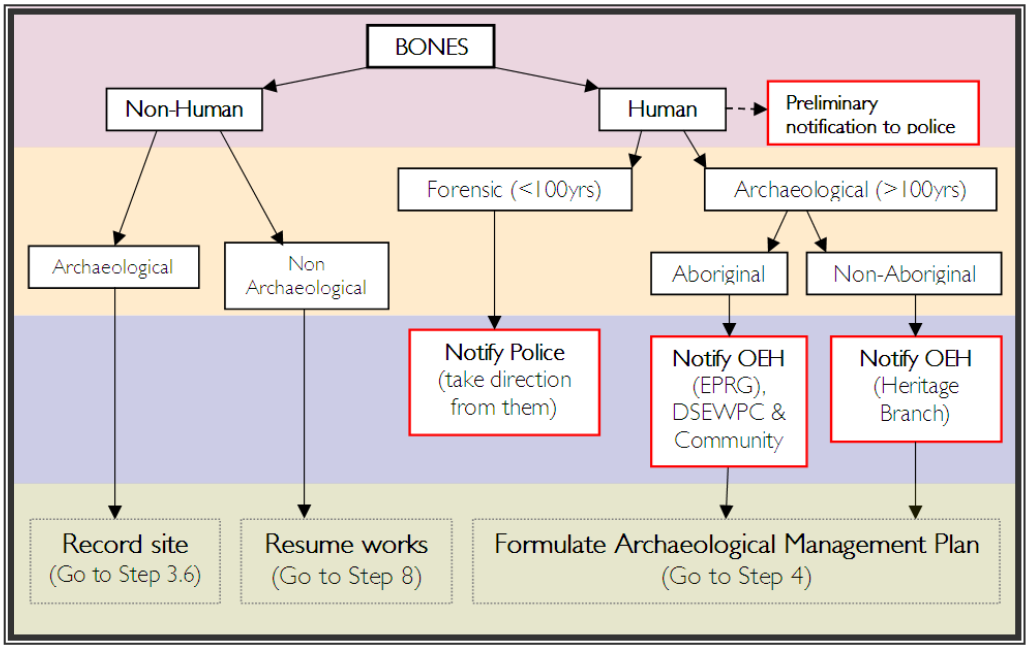
B. Human bones are archaeological in nature (*more than* 100 years old) and are likely to be *Aboriginal* remains.

> **☑ Action**
> The OEH and the RMS Aboriginal Cultural Heritage Advisor (ACHA) must be notified immediately. The ACHA must contact and inform the relevant Aboriginal community stakeholders who may request to be present on site. Relevant stakeholders are determined by the RTA's *Procedure for Aboriginal Cultural Heritage Consultation and Investigation*.

C. Human bones are archaeological in nature (*more than* 100 years old) and likely to be *non-Aboriginal* remains.

> **☑ Action**
> The OEH (Heritage Branch, Conservation Team) must be notified immediately.

The simple diagram below summarises the notification pathways on finding bones.



After the appropriate verbal notifications (as described in B and C), the Project Manager must proceed through the *Unexpected Heritage Items Procedure* to formulate an archaeological management plan (Step 4). Note no archaeological management plan is required for forensic cases (A), as all future management is a police matter. Non-human skeletal remains must be treated like any other unexpected archaeological find and so must proceed to recording the find as per Step 3.6.

3. Additional considerations and requirements

Uncovering archaeological human remains must be managed intensively and needs to consider a number of additional specific issues. These issues might include facilitating culturally appropriate processes when dealing with Aboriginal remains (such as repatriation and cultural ceremonies). Roads and Maritime's ACHA can provide advice on this and how to engage with the relevant Aboriginal community. Project Managers, more generally, may also need to consider overnight site security of any exposed remains and may need to manage the onsite attendance of a number of different external stakeholders during assessment and/or investigation of remains. Project Managers may also be advised to liaise with local church/religious groups and the media to manage community issues arising from the find. Additional investigations may be required to identify living descendants, particularly if the remains are to be removed and relocated.

If exhumation of the remains (from a formal burial or a vault) is required, Project Managers should also be aware of additional approval requirements under the *Public Health Act 1991* (NSW). Specifically, Roads and Maritime is required to apply to the Director General of NSW Department of Health for approval to exhume human remains as per Clause 26 of the *Public Health (Disposal of Bodies) Regulation 2002* (NSW)[13]. Further, the exhumation of such remains needs to consider health risks such as infectious disease control, exhumation procedures and reburial approval and registration. Further guidance on this matter can be found at the NSW Department of Health website.

In addition, due to the potential significant statutory and common law controls and prohibitions associated with interfering with a public cemetery, project teams are

[13] This requirement is in addition to heritage approvals under the *Heritage Act 1977*.

advised, when works uncover human remains adjacent to cemeteries, to confirm the cemetery's exact boundaries.

Appendix F

Archaeological Heritage Advice Checklist

The following checklist can be used by the Project Manager and the archaeologist to ensure all relevant archaeological issues are considered when developing the management plan required at Step 4 of this procedure.

An archaeological or heritage management plan can include a range of activities and processes, which differ depending on the find and its significance.

	Required	**Outcome/notes**
Assessment and investigation		
• Assessment of significance	Yes/No	
• Assessment of heritage impact	Yes/No	
• Archaeological excavation	Yes/No	
• Archival photographic recording	Yes/No	
Heritage approvals and notifications		
• AHIPs, Section 140, S139 exceptions etc	Yes/No	
• Regulator relics/objects notification	Yes/No	
• Roads and Maritime's S170 Heritage and Conservation Register listing requirements	Yes/No	
• Compliance with CEMP or other project heritage approvals	Yes/No	
Stakeholder consultation		
• Aboriginal stakeholder consultation requirements and how it relates to RTA *Procedure for Aboriginal Cultural Heritage Consultation and Investigation* (PACHCI).	Yes/No	
• Advice from regional environmental staff, Aboriginal Cultural Heritage Advisor, Roads and Maritime heritage team.	Yes/No	
Artefact/ heritage item management		
• Retention or conservation strategy (eg items may be subject to long conservation and interpretation) • Disposal strategy (eg former road pavement) • Short term and permanent storage locations (interested third parties should be consulted on this issue).	Yes/No	
• Control Agreement for Aboriginal objects.	Yes/No	
Program and budget		
• Time estimate associated with archaeological or heritage conservation work.		
• Total cost of archaeological/heritage work.		

Appendix G

Template Notification Letter

PASTE INTO RMS LETTER TEMPLATE

"[Select and type date]"

[Select and type reference number]

[Select and type file number]

[Insert recipient's name and address, see **Appendix D**]

[Select and type salutation and name],

Re: Unexpected heritage item discovered during Roads and Maritime Services project works.

I write to inform you of an unexpected [select: relic, heritage item or Aboriginal object] found during Roads and Maritime Services construction works at [insert location] on [insert date]. [Where the regulator has been informally notified at an earlier date by telephone, this should be referred to here].

This letter is in accordance with the notification requirement under [select: Section 146 of the *Heritage Act 1977* (NSW) or Section 89(A) of the *National Parks and Wildlife Act 1974* (NSW) **NB:** There may be not be statutory requirement to notify of the discovery of a 'heritage Item that is not a relic or Aboriginal object].

NB: On finding Aboriginal human skeletal remains this letter must also be sent to the Commonwealth Minister for Sustainability, Environment, Water, Populations and Communities (SEWPC) in accordance with notification requirements under Section 20(1) of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth).

[Provide a brief overview of the project background and project area. Provide a summary of the description and location of the item, including a map and image where possible. Also include how the project was assessed under the *Environmental Planning and Assessment Act 1979* (NSW) (eg Part 5). Also include any project approval number, if available].

Roads and Maritime Services [*or contractor*] has sought professional archaeological advice regarding the item. A preliminary assessment indicates [provide a summary description and likely significance of the item]. Please find additional information on the site recording form attached.

Resulting from these preliminary findings, Roads and Maritime Services *[or contractor]* is proposing [provide a summary of the proposed archaeological/heritage approach (eg develop archaeological research design (where relevant), seek heritage approvals, undertake archaeological investigation or conservation/interpretation strategy). Also include preliminary justification of such heritage impact with regard to project design constraints and delivery program].

The proposed approach will be further developed in consultation with a nominated Office of Environment and Heritage staff member.

Please contact me if you have any input on this approach or if you require any further information.

Yours sincerely

[Sender name and position]

[Attach the archaeological/heritage management plan and site recording form].

About this release

Reference number	RMS 12.003 **|** PN 285 P02
Title	Unexpected Heritage Items Procedure
Parent procedure	RMS Heritage Guidelines
Prepared by	Environment Officer (Heritage) Gretta Logue Environment Officer (Heritage) Daniel Percival
Approved by	Manager Environmental Policy, Planning and Assessment Michael Crowley
Document location	Objective - SF2013/153770 / Unexpected heritage items procedure.doc
Document status	Version 1.0, 16 March 2015

Version	Date	Revision description
1.0	01/11/11	First issue
Revised	23 July 2012	Amended to reflect that (a) unexpected finds do not include items covered by a relevant approval; (b) Aboriginal people must be consulted where an unexpected find is likely to be an Aboriginal object; (c) the Department of Planning and Environment must be notified in accordance with Step 5 of this procedure for Part 3A and Part 5.1 projects.
Revised	09 October 2013	Amended to clarify that the procedure applies to all types of unexpected heritage items, not just archaeological items. The procedure introduces the term 'Historic Items' to cover both 'archaeological relics' and 'other historic items' such as works, structures, buildings and movable objects. The title of the document has been amended to better reflect this clarification.
Revised	16 March 2015	The procedure was streamlined to address all project types including maintenance works. The separate maintenance procedure (formerly Appendix B) was removed. Names and titles updated throughout.

Your comments and suggestions to improve this or any of the Heritage Guidelines and associated documents may be sent to:

Senior Environmental Specialist (Heritage)
Environmental Policy, Planning and Assessment
Environment Branch, Roads and Maritime Services
Level 17, 101 Miller Street
North Sydney, NSW 2060
Ph: 8588 5726

rms.nsw.gov.au

heritage@rms.nsw.gov.au

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

Transport
Roads & Maritime
Services

Appendix B – Historical Archaeological Assessment and Research Design and Excavation Methodology

Sydney Gateway Road Project, Historical Archaeological Assessment & Research Design

Prepared by AMBS Ecology & Heritage
for John Holland

Draft

March 2021

AMBS Reference: 20889

Document Information

Citation:	AMBS Ecology & Heritage 2021, *Sydney Gateway Road Project, Historical Archaeological Assessment & Research Design*. Consultancy report to John Holland.
AMBS Ref:	20889
Versions:	Version 1: Draft Report issued March 2021
Recipient:	Rob Muir, Environment Manager, Sydney Gateway Project
Approved by:	Lian Ramage, AMBS Senior Historic Heritage Consultant

Contents

Tables

Figures

1 Introduction

1.1 Background

AMBS Ecology & Heritage (AMBS) has been commissioned by John Holland Pty Ltd on behalf of Transport for NSW (TfNSW) and Sydney Airport, to prepare a Historical Archaeological Assessment (HAA) for the Gateway Road Project. TfNSW and Sydney Airport have proposed a new direct high-capacity road connection linking the Sydney motorway network at St Peters interchange, where the M4 and M8 motorways will meet, with Sydney Airport's domestic and international terminals and the Port Botany Precinct. Figure 1.1 provides an overview of the Project.

The Sydney Gateway Road Project Environmental Impact Statement/Major Development Plan (EIS/MDP) (November 2019) assessed the impacts of construction in terms of non-Aboriginal heritage within Chapter 17. This Historical Archaeological Assessment and Research Design has been written in response to condition NAH8 set out in the Major Development Plan Updated Management Measures (UMMs) from the 'Response to Submissions' report (May 2020):

> *A Historical Archaeological Assessment and Research Design and Excavation Methodology will be prepared for, and implemented at, the following locations within the project site:*
>
> - *Intact sections of Alexandra Canal along the western bank of the canal on either side of the existing pedestrian and rail bridges* [see Alexandra Canal, Section 4.2.4]
> - *Vacant land at 30 Canal Road (Lot 4 DP 555771 and Lot 3 DP825649*) [see Government Wool Sheds and adjacent warehouses: Section 4.3.2]
> - *Land located north of Canal Road that is currently used for the construction (stockpiling) of the New M5 (Lot A DP 391775, Lot BDP 394647 and Lot 2 DP1168612)* [see Warne's Shell Lime Company: Section 4.3.1]
> - *Sydney Airport land considered to contain low or moderate archaeological potential* [See Lauriston Park Estate: Section 4.4.1]
> - *Land along Qantas Drive considered to contain low or moderate archaeological potential* [See Botany Goods Line and Market Gardens: Section 4.4.2 and 4.4.3]
> - *Sydney Airport land located east of Sydney Airport northern lands carpark and west of Botany Rail Line (Lot 1 DP 826101)* [see Sleigh's Shea's Creek Depot: Section 4.2.1]
> - *Land to the west of Boral's St Peters facility and east of the Botany Rail Line.* [see Government Wool Sheds and adjacent warehouses: Section 4.3.2]
>
> *The Historical Archaeological Assessment and Research Design and Excavation Methodology will identify the specific features of archaeological significance that could be present at these locations, provide a scope for further investigations to confirm and specify appropriate archaeological management for any remains identified.*

1.2 Project Area

The project is located eight kilometres south of the Sydney central business district, in the suburbs of Tempe, St Peters and Mascot. It is located in the Inner West, City of Sydney and Bayside local government areas.

The majority of the project site is owned by the Australian Government and leased to Sydney Airport Corporation. Other land is owned by the NSW and local governments, and private landowners (including Sydney Airport Corporation). The location of the project is shown in Figure 1.1.

Figure 1.1: Location of the project

1.3 Authorship

This report was written by Mike Hincks (Senior Historic Heritage Consultant AMBS), except for Section 2 which was written by Victoria Cottle (Historic Heritage Consultant AMBS) and Mike Hincks. This report was reviewed by Lian Ramage (Senior Historic Heritage Consultant AMBS).

2 Historic Context

Appendix C of *Sydney Gateway Road Project Technical Working paper 9 – Statement of Heritage Impact* prepared by Artefact Heritage (2019) is a comprehensive history of the study area. The following includes information contained in that history, as well as additional information that has been referenced throughout.

AMBS has maintained the use of Artefact's division of the study area into three main sections, for consistency. Section A is the western portion encompassed by the suburb of Tempe, Alexandra Canal and part of Airport Drive; Section B is the northern portion encompassed by suburbs Sydenham and St Peters, and Section C is the eastern portion encompassed by Sydney Airport and the suburbs of Mascot and Botany.

2.1 1796-1888 – Early development of the area

During the early years of settlement, the land in and surrounding St Peters, Tempe, Mascot and Botany consisted of marshy swamps and thick scrub and forest surrounding the Cooks River, Sheas Creek and their tributaries. The first land grants occurred in the area from the late eighteenth century; the study area is located to the east of Thomas Smith's 470-acre land grant of 1796, that developed into the Village of Tempe. A large portion of the study area was also located in the original mouth of the Cooks River and Sheas Creek; Sheas Creek was flanked by swamps, mudflats and mangroves in the areas close to the Cooks River. The far eastern portion of the study area (Section C) was located within two 30-acre grants given to Andrew Byrne and Mary Lewin in 1809; the remainder of Section C remained unoccupied.

Smith's allotment was subdivided in the 1830s, and Tempe House was subsequently constructed to the south of the study area. The Tempe Estate was subdivided and sold in 1859; Section A comprises land sold to brothers Patrick and Thomas McGuire and Section B was sold to F Mitchell and later belonged to Thomas Holt (Figure 2.1). No structures appear to have been erected within any portion of the study area at this time, and the lots of land remained large, reflecting the poor value and use of the swampy landscape; the land to the west of Sheas Creek mainly consisted of mud flats and swamp land rising to a clayey ridge.

By 1850, Section C was granted to Thomas Stubbs, Thomas Torkington and J R Hatfield; this portion of the study area likely functioned as market gardens (Figure 2.2). Market gardens were first established around Botany and Mascot in the 1830s and became more prevalent in the 1870s following the end of the Gold Rush, bringing an influx of Chinese immigrants. The market gardens were concentrated in the area east of Alexandra Canal and west of the village of Botany; however, by the 1880s, Chinese market gardens occupied some of the land north of Canal Road and south-east of Section B.

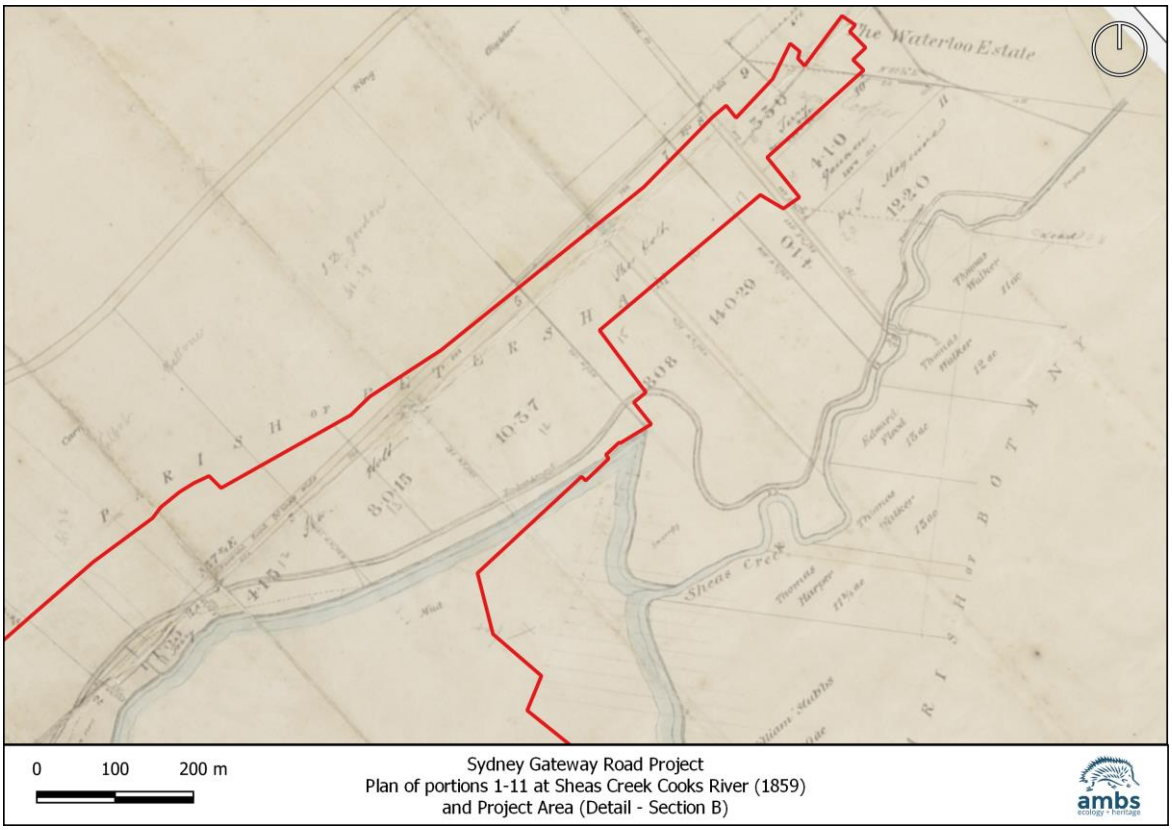


Figure 2.1 'Plan of portions 1-11 at Sheas Creek Cooks River' (1859), overlaid with the study area, showing areas within Section B owned by McGuire and Holt, and within mouth of Sheas Creek and Cooks River (Source: NSW State Library, M Z/M2 811.1827/1859/1).

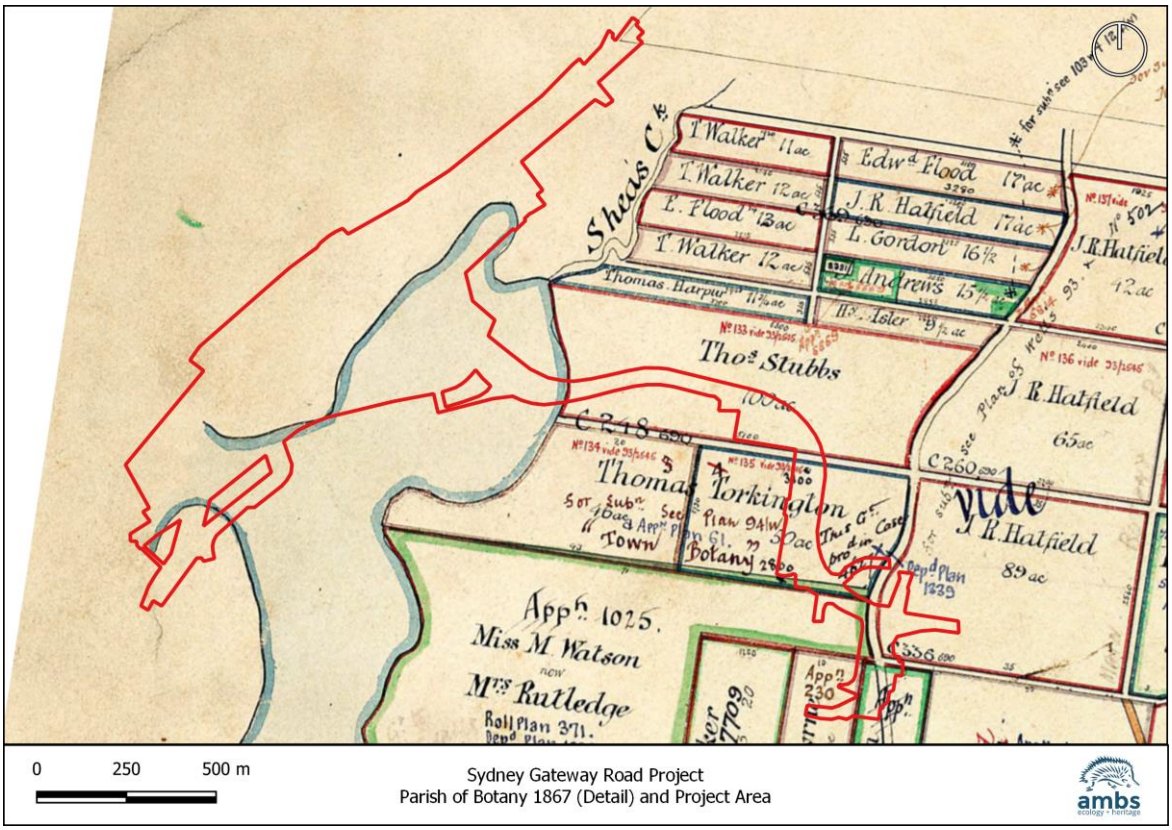


Figure 2.2 Botany Parish Map (1867) overlaid with the study area showing land grants within Section C (Source: https://hlrv.nswlrs.com.au/).

Noxious industries such as wool washing, meat works, candle works, leather tanning, paper making and brick making were established along Sheas Creek and the Cooks River from the mid-nineteenth century, following the introduction of the 1848 *Noxious Industries Act;* the Act forced these industries out of the city of Sydney and into Botany, Mascot, St Peters and Tempe. Brickworks expanded rapidly south along Cooks River Road (now Princes Highway) in the late nineteenth century, utilising the high clayey ground that rose on the western side of Sheas Creek, within Section B (Figure 2.3).

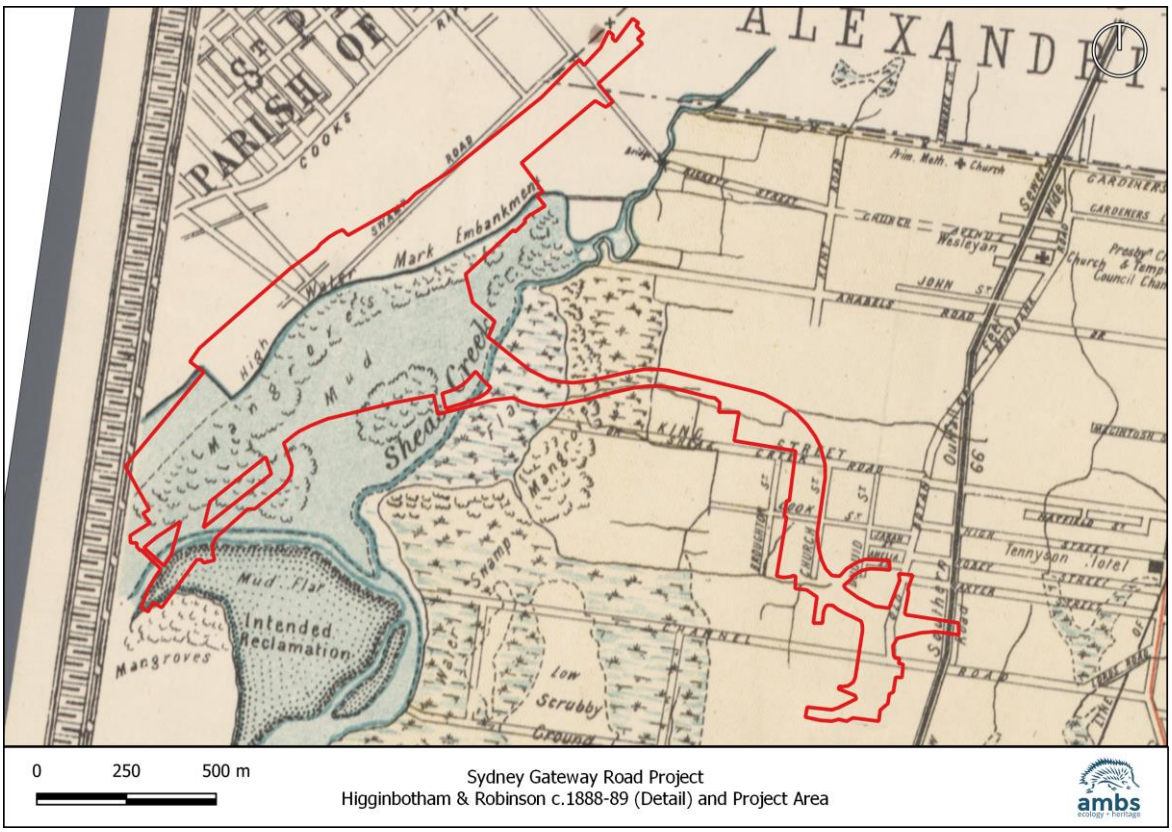


Figure 2.3 Higginbotham & Robinson map of North Botany (1888-89) overlaid with the study area, showing mud flats and mangroves rising to higher ground at the western side of Sheas Creek (Source: City of Sydney, https://archives.cityofsydney.nsw.gov.au/nodes/view/1069573?keywords=north%20botany&highlights=WyJub3J0aCIsImJvdGFueSJd).

2.2 1888-1947 – Alexandra Canal, Industrial Development and Mascot Aerodrome

The Borough of North Botany was established in 1888, and around this time the dredging of Sheas Creek and construction of the Alexandra Canal began, in an effort to reduce the contamination of Sheas Creek and encourage developing industries in the area. The surrounding mud flats were reclaimed and became increasingly valuable, particularly on the western side, which was quickly subdivided below Ricketty Street in the late 1890s (DPWS Heritage Design Services, 2004: 16).

Within the western area of Section A, clay pits (serving the brick making industry) and a gravel quarry were established in the late nineteenth century that were later used as a landfill site for domestic and industrial waste; the eastern half of Section A was occupied by early twentieth century industrial structures.

Land within the southern extent of Section C was occupied by the 1902 Lauriston Park subdivision, consisting of three blocks of fibro and weatherboard houses. The subdivision was designed to

accommodate working class men and women employed by industries along the Cooks River as well as the nearby Ascot Racecourse (opened in 1904). The recollections of a resident of the Lauriston Estate (33 Lords Road) detailed the character of his house and its construction:

> *The front boundary was marked by a five foot six inches high picket fence. Immediately behind the fence was a well-maintained privet hedge at the same height and about 18 inches wide. Then came a pathway, a garden of hydrangeas and the house. A fence gate was at the centre. The house was double-fronted with the entrance door set back in the centre off a covered wooden verandah. The door was of wood with coloured glass inserts… Originally at the end of the hall was the back entrance that also opened onto a covered rear verandah that ran across the back of the dining room and down on the left side of the door… Behind the kitchen with its own entrance off the rear verandah was the laundry that had also comprised the original bathroom… In the rear garden were fig, lemon, loquat and peach trees. There was also space for a long clothes line supported by 'clothes props', a poultry coup, vegetable plots, woodpile with chopping block and various flowering shrubs. [The house] was apparently a 'Hudson Ready-Built'. It was timber framed on brick piers about one metre high. The exterior cladding was weatherboard and the roof corrugated iron. Interior lining was also long narrow board. The timber floors were variously stained or covered by carpet squares and linoleum (Windross, 2004).*

Figure 2.4: Hudson's 'ready-built' timber cottages, as advertised in a 1915 trade catalogue. The description of 33 Lords Road on the Lauriston Park estate fits the specifications of House 12, p33. (Sydney Living Museums Caroline Simpson Library and Research Collection: https://archive.org/details/Hudson2075_201710/page/n33/mod/2up)

Despite the expansion of the suburbs onto the reclaimed flatlands north of the Cooks River, the area was still very much mixed in terms of its land-use. The persistence of tanneries in the area in the early twentieth century prompted the construction of the Botany goods line, to carry slaughterhouse by-products from Glebe Island to the tanneries at Botany (DPWS Heritage Design Services, 2004: 20). The line was partially constructed by 1915 and was opened in 1925 and ran through Sections B and C of the study area. The easternmost extent of Section C was located within the Mascot Goods Yard.

On the western side of the canal, industry was spreading south along Cooks River Road (now the Princes Highway). One of the largest brickmaking enterprises in St Peters was the Austral Brick Company, incorporated in 1908. The Austral Brickworks was located at the corner of Cooks River Road and Cowper Street; in 1912, the company purchased an additional property along Canal Road. The Ralford yards were a small brickwork comprised of one patent kiln and operated as a subsidiary of the Austral Brick Company (Extent Heritage, 2019: 21). During the Depression in 1936, the Austral Brick Company acquired Josiah Gentle's Bedford Brickworks, established in 1893 on the northern corner of Cooks River Road at the present location of Sydney Park (City of Sydney, 2018). The Austral Brick Company yards are included within the easternmost extent of Section B (St Peters Interchange).

Fronting Canal Road at the southern corner of the brickworks, and partially located within the project area were buildings associated with 'Consolidated Metal Products Ltd, C. Doring Pty Ltd' and the 'Warnes Shell Lime Company' (Figure 2.5). The Warnes' shell lime business had been established in the area in 1882, and had exploited the abundant shell resource along the mudflats of the Cooks River. Warnes and Son were operating on Canal Road in 1928 when the business became the Warnes Shell Lime Company (*Construction and Local Government Journal*, 1928: 17). The company was liquidated in 1966 (*Government Gazette of the State of New South Wales*, 1966: 2368).

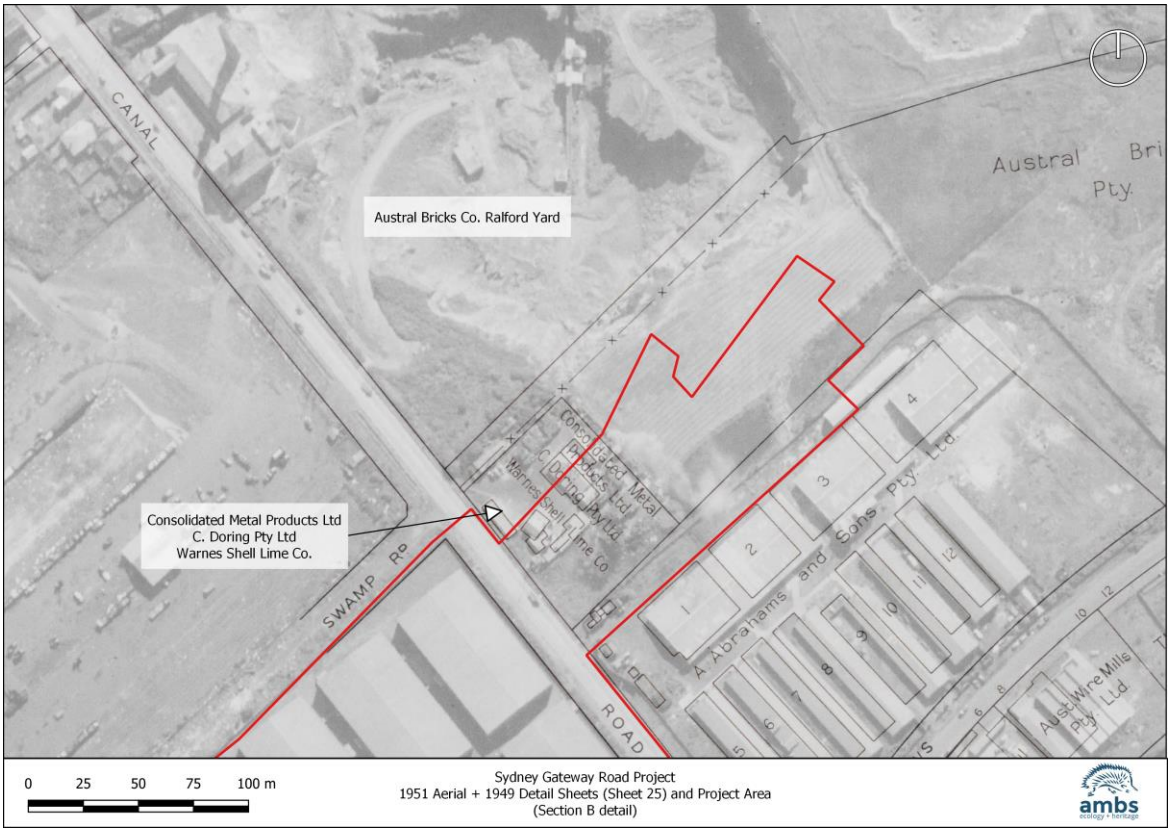
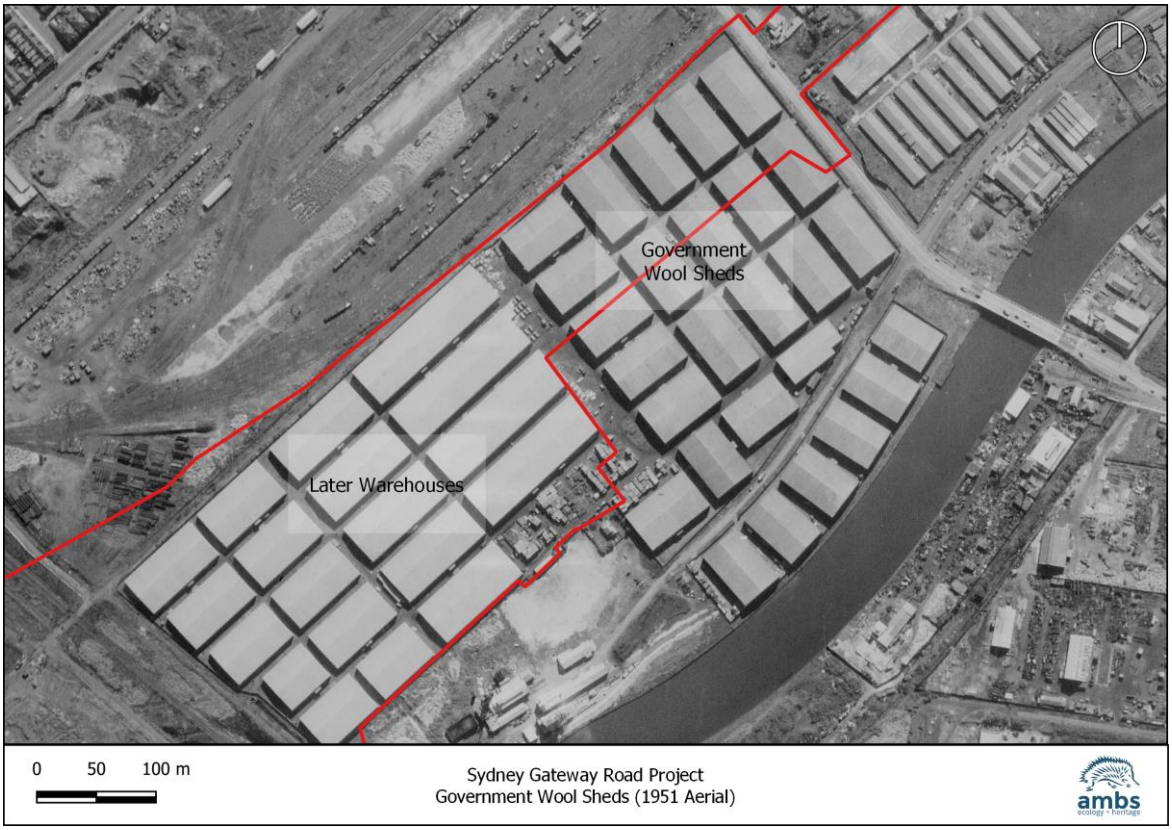


Figure 2.5 Detail Sheet 1949-72, Sheet 25, Sheas Creek overlaid with the study area, showing Austral Brick Co yards, Consolidated Metal Products Ltd C. Doring Pty Ltd and Warnes Shell Lime Co within Section B (Source: City of Sydney, https://archives.cityofsydney.nsw.gov.au/nodes/view/1709128).

On the other side of Canal Road between Swamp Road (now Cooks River Container Terminal) and the Alexandra Canal, were 27 of the 250 Shea's Creek Wool Sheds that were constructed for the Commonwealth Government in the early 1940s. Built during World War II by Stuart Bros, the stores were erected as an emergency wartime measure for the temporary storage of wool that could not be exported due to hostilities. Once the stockpile of wool had been cleared the stores were either

disposed of or used as stores or warehouses (NSW Government Office of Environment & Heritage, 2005).



On the western bank of Alexandra Canal, below Shea's Creek Underbridge, H. C. Sleigh established a depot for the storage and distribution of his company's 'Golden Fleece' motor spirit product. Sleigh is thought to have been importing petroleum products from as early as 1913, but the earliest record of his property on the Alexandra Canal is from a 1930 aerial image. The depot included large above-ground tanks, lightweight shed and office structures, and open space used for storing barrels of motor spirit, imported from the United States. Sleigh's depot had a short wharf on the canal, and the 1942 and 1943 aerial images show transport ships docked at the wharf. The depot was well documented by photographer Sam Hood in 1944 (SLNSW Hood Collection Part I: *Home and Away* – 20943).

Figure 2.6: 1951 Aerial image of H.C. Sleigh's Depot on the western side of Alexandra Canal, showing the project area (red).

Figure 2.7: Sleigh's Depot looking northeast along the Alexandra Canal in October 1944. A large storage tank can be seen in the foreground. Barrels are stacked in the middle distance and the wharf is at the extreme right of the image. Sam Hood Collection, SLNSW. Image No. 20943.

Figure 2.8: A lightweight shed structure at the northwestern edge of Sleigh's depot, adjacent to the rail line, in October 1944. View to the southeast. Sam Hood Collection, SLNSW. Image No. 20952.

The Mascot Aerodrome was established south-west of the study area in the late 1920s and early 1930s, and became an official airport in 1936, named the Kingsford Smith Airport. At this time, the adjacent land within the study area (Section C) continued to be occupied by market gardens and their associated buildings and Lauriston Park estate.

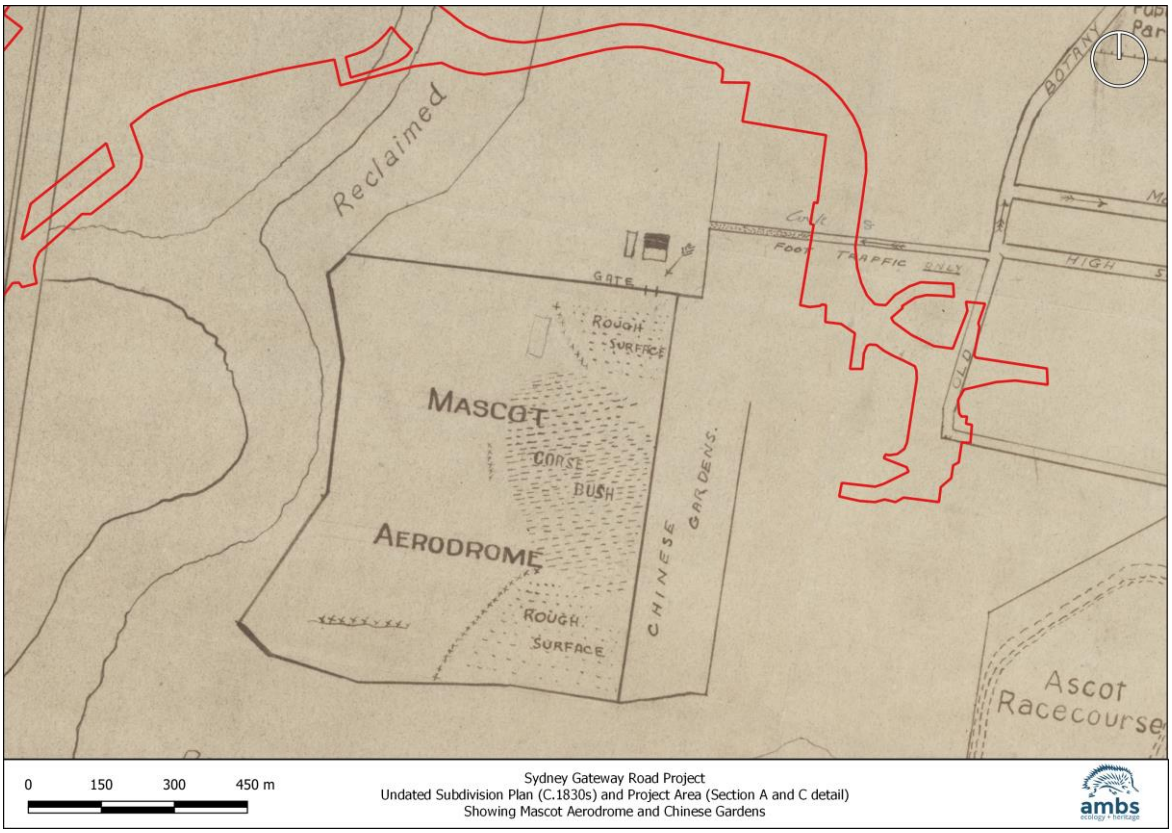


Figure 2.9: An undated (c.1930s) subdivision plan of North Botany showing the Mascot Aerodrome and 'Chinese Gardens' south of the Study Area. SLNSW Mascot Subdivision Plans (Z/SP/M10 103 - [Plan of Mascot] - Cooks River Rd, Botany Rd, O'Riordan St, High St, Coward St, Ricketty St).

2.3 1947-1963 – Sydney Airport expansion

In 1947, the airport and surrounding area began to be redeveloped; from this time, Lauriston Park was gradually resumed for the expansion of the airport. Major works to divert the Cooks River to the west near Tempe Bridge began in 1948 for the construction of the new east-west runway (GML, 2009: 15). The lower section of Alexandra Canal, within Section C, was also backfilled with sand, diverting it to the north-west (DPWS Heritage Design Services, 2004: 26).

This period was also characterised by a shift away from local resources, as the brickworks and shell lime companies closed, and Alexandra Canal became redundant as an industrial waterway. In the 1940s and 1950s, warehouses began to be established on land previously occupied by market gardens in the northern portion of Section B, between the Botany Rail Line and Canal Road (Figure 2.10).

In 1960, due to the expansion of Sydney Airport, the Botany Rail Line was diverted 400 metres north of its original alignment between the Alexandra Canal and O'Riordan Street (Section C), to its present alignment.

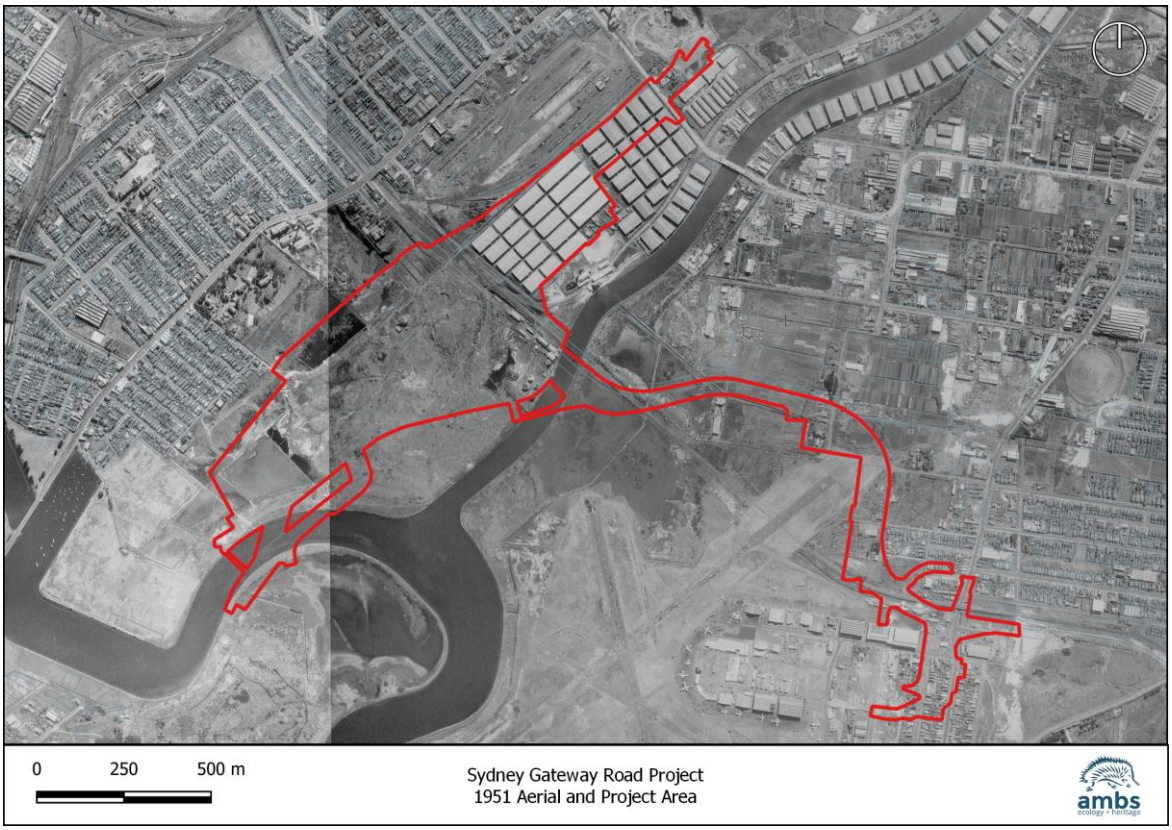


Figure 2.10 1951 Aerial overlaid with the study area, showing warehouses occupying Section B, and Lauriston Park Estate within Section C; Sydney Airport is also pictured south-west of Section C.

2.4 1963-Present

The construction of the north-south runway between 1963 and 1972 involved further deviation of the Alexandra Canal to the west, completed in 1970. By 1970, land associated with the gravel and clay quarries and landfill in Section A was being used by Council for green waste and demolition materials and became known as Tempe Tip; the majority of Section A is within the tip site. From the 1990s, it was used to dispose ash from nearby Bunnerong Power Station and Sydney Airport expansion.

The remaining residents of the Lauriston Estate were moved out in 1990 to accommodate the construction of a third runway for Sydney Airport, completed in 1994. Portions of the Botany Goods Line were upgraded and duplicated following pre-Olympics upgrades to Sydney Airport in 1999. In 2000, the Tempe Tip was closed and declared a remediation site, and in 2004 it became the Tempe Recreation Reserve. From 1997 to 2008, various refurbishment and redevelopment schemes were announced for the Alexandra Canal; however, in 2008 the NSW Environment Protection Authority (EPA) stated that the canal was severely contaminated with toxic sediments, halting attempts for its revitalisation. From 2015 the WestConnex and Airport East projects have been ongoing; portions of Airport Drive have been widened within Section C.

3 Artefact Heritage Assessment of Archaeological Potential

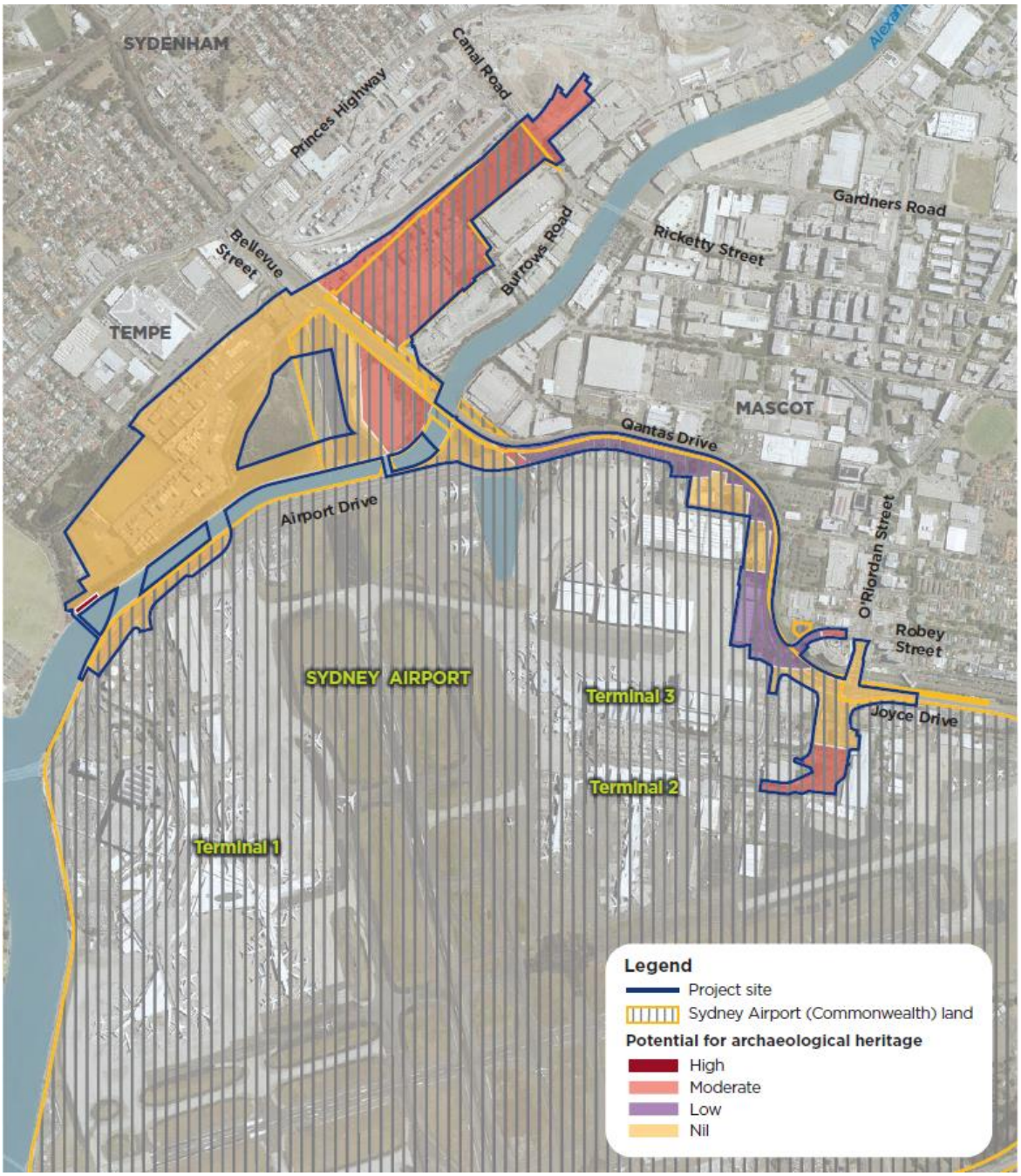
The assessment of archaeological potential included in the Impact Statement prepared by Artefact Heritage for the EIS is a preliminary assessment of archaeological potential only and is reproduced in Table 4.1 below. This assessment has been expanded upon and revised by AMBS in Section 4.

Table 3.1: Summary of Archaeological potential by Artefact Heritage, 2019.

Section	Phase	Nature of Potential Archaeological Remains	Potential
A	1 – c1796–1830 Mudflat and mangroves	Environmental data including pollen, seeds and phytoliths surviving within intact soil profiles	Former quarry/tip site – Nil Remainder – Nil
	2 – c1830–1870 Farming, mudflats and mangroves	Environmental data including pollen, seeds and phytoliths surviving within intact soil profiles	Former quarry/tip site – Nil Remainder – Nil
	3 – 1870–1919 Early establishment of the Alexandra Canal, land reclamation and quarrying	Evidence of landscape modification such as levies, drainage lines or redeposited soils associated with Alexandra Canal construction in areas along original banks of the canal Evidence of landscape modification associated with quarrying activities such as refuse material dumps or truncated landforms in areas once occupied by Tempe Tip and a gravel quarry	Former quarry/tip site – Nil Remainder Moderate – High
	4 – 1919–1946 Modifications to the Alexandra Canal, gravel quarrying, Tempe Tip and industrial buildings.	Ephemeral evidence of landscape modification such as levies, drainage lines or redeposited soils associated with Alexandra Canal modifications Evidence of landscape modification associated with quarrying activities such as refuse material dumps or truncated landforms Early to mid-20th century domestic and commercial refuse associated with Tempe Tip Brick or concrete footings associated with industrial buildings located along south-eastern corner of Section A	Former quarry/tip site – Nil Remainder Moderate – High
	5 – 1946–1990 Alexandra Canal, Tempe Tip and industrial buildings	Ephemeral evidence of landscape modification such as levies, drainage lines or redeposited soils associated with Alexandra Canal modifications Late-20th century domestic, commercial and building refuse associated with later use of Tempe Tip Brick or concrete footings associated with industrial buildings located along south-eastern corner of Section A	Former quarry/tip site – High Remainder Moderate – High
B	1 – c1796–1830 Mudflat and mangroves	Environmental data including pollen, seeds and phytoliths surviving within intact soil profiles	Nil

Section	Phase	Nature of Potential Archaeological Remains	Potential
	2 – c1830–1870 Farming, mudflat and mangroves	Ephemeral environmental data including pollen, seeds and phytoliths surviving within intact soil profiles Embankment along Sheas Creek Plough and fence lines	Low
	3 – 1870–1919 Alexandra Canal, land reclamation, market gardens	Ephemeral environmental data including pollen, seeds and phytoliths surviving within intact soil profiles associated with market gardens Plough and fence lines Evidence of landscape modification such as levies, drainage lines or redeposited soils associated with construction of the Alexandra Canal Land reclamation fill containing 19th and 20th century commercial, domestic and building waste	Low
	4 – 1919–1946 Market gardens, Botany Rail Line, St Peters brickworks buildings and warehouses at 30 Canal Road	Ephemeral environmental data including pollen, seeds and phytoliths surviving within intact soil profiles associated with market gardens Plough and fence lines Evidence of rail infrastructure such as sidings, rails, sleepers and ballast along the Botany Rail Line corridor Evidence of brick or concrete footings, flues, kilns, refuse deposits, drains and brick or cement floors to the east and west of Canal Road	Moderate
	5 – 1946–1990 St Peters brickworks buildings and warehouses at 30 Canal Road	Evidence of brick or concrete footings, flues, kilns, refuse deposits, drains and brick or cement floors	Moderate
C	1 – c1796–1830 Mangroves, mudflats, land grants, roads and scattered residential development	Ephemeral environmental data including pollen, seeds and phytoliths surviving within intact soil profiles Early road surfaces containing sandstone or gravels Evidence of residential development including refuse deposits, fence lines, shell lime production and landscape modifications	Nil – Low
	2 – c1830–1870 Market gardens, roads and scattered residential development	Environmental data including pollen, seeds and phytoliths surviving within intact soil profiles Early road surfaces containing sandstone or gravels Evidence of residential development including refuse deposits, fence lines, shell lime production and landscape modifications	Low
	3 – 1870–1919 Land reclamation, market gardens and	Land reclamation fill containing 19th and 20th century commercial, domestic and building waste	Low – Moderate

Section	Phase	Nature of Potential Archaeological Remains	Potential
	residential development (Lauriston Park and market garden dwellings/structures)	Ephemeral environmental data including pollen, seeds and phytoliths surviving within intact soil profiles Early road surfaces containing sandstone or gravels Evidence of residential occupation including refuse deposits, fence lines, brick, cement or masonry footings, post holes, yard surfaces	
	4 – 1919–1946 Botany Goods Line, market gardens and residential development (Lauriston Park and market garden dwellings/structures)	Evidence of rail infrastructure such as rails, sleepers and ballast associated with the Botany Rail Line Land reclamation fill containing 19th and 20th century commercial, domestic and building waste alongside Ephemeral environmental data including pollen, seeds and phytoliths surviving within intact soil profiles Evidence of residential occupation including refuse deposits, fence lines, brick, cement or masonry footings, post holes, yard surfaces	Moderate
	5 – 1946–1990 Botany Goods Line, market gardens and residential development (Lauriston Park and market garden dwellings/structures)	Evidence of rail infrastructure such as rails, sleepers and ballast Land reclamation fill containing 19th and 20th century commercial, domestic and building waste Environmental data including pollen, seeds and phytoliths surviving within intact soil profiles Evidence of residential occupation including refuse deposits, fence lines, brick, cement or masonry footings, post holes, yard surfaces	Moderate


SYDENHAM
Princes Highway
Canal Road
Bellevue Street
TEMPE
Burrows Road
Ricketty Street
Gardners Road
MASCOT
Qantas Drive
Airport Drive
O'Riordan Street
Robey Street
Joyce Drive
SYDNEY AIRPORT
Terminal 3
Terminal 2
Terminal 1
Legend
Project site
Sydney Airport (Commonwealth) land
Potential for archaeological heritage
High
Moderate
Low
Nil

4 AMBS Updated Analysis of Archaeological Potential

4.1 Review of the Historical Context

AMBS have reviewed the historical context of the project area, with the aim of building on areas which lacked the necessary information to make an accurate prediction of archaeological potential. The results of the additional research have been produced in Section 3 of this report. The review of historic context has led to the revision of four areas of Moderate potential as identified by Artefact Heritage:

1. The location of Sleigh's Shea's Creek Depot (Section A)
2. The location of Warnes Shell Lime Company (Section B)
3. The location of Government Wool Sheds and adjacent warehouses (Section B)
4. The location of the Lauriston Park Estate (Section C)

The Artefact Heritage HIS and HAA did not identify the name and type of the industries in Sections A and B (items 1, 2 and 3 above), and so a full assessment of archaeological potential based on their use of the land and the type of industry was not possible. Further research into the house types in the Lauriston Park Estate has also led to a revision of the potential in Area C.

4.2 Revised Archaeological Potential Section A

4.2.1 Sleigh's Shea's Creek Depot

Sleigh's depot was photographed in October 1944 by Sam Hood. The photographs are held in the Hood Collection by SLNSW. In total there are 11 photographs showing the different structures at Sleigh's depot and of the yards that were used for storing barrels of petroleum product. The photographs and the historical record of Sleigh as an importer of motor spirit from the US, demonstrate that the facility at Shea's Creek was a storage and distribution centre, and was not used for processing or primary manufacture. Except for the large storage tanks at the southeast corner of the property (a large section of which was removed by the realignment of the Alexandra Canal), the buildings at the site all appear to be lightweight structures of timber, including offices, open-sided sheds and covered loading bays.

The photographs show that barrels were stored in long rows on the open ground. Lightweight timber office buildings were located at the western end of the depot. A short wharf (which was removed during the canal realignment) extended along the southern half of the canal frontage, and small, lightweight sheds were constructed against the inside of a paling fence that ran between the yard and the canal. In the central part of the depot was a deep and wide depression that had the appearance of being periodically waterlogged. Ships were unloaded at the wharf (vessels can be seen docked at the depot in the 1942 and 1943 aerial images), and trucks were loaded under open sheds at the western end of the property.

Because the function of the depot was limited to storage and distribution, and the structures (except for the large fuel tanks) were lightweight in nature, the archaeological potential of the depot overall has been revised to **Low**. Although the foundations of the tanks, and the pads or posts relating to the timber structures may remain, the function of the site as a transit point for a single product means it is unlikely to leave behind substantive evidence of a non-structural nature. In addition, the limited structural remains are unlikely to provide any meaningful information about the depot that is not already available from the photographic resource.

4.2.2 Environmental data including pollen, seeds and phytoliths surviving within intact soil profiles

Due to the extensive earthworks associated with Tempe Tip and the earlier quarry, the archaeological potential for intact environmental data is Nil across most of Section A. In the location of Sleigh's depot which was not affected by the tip, pre-canal mudflats may be preserved beneath the dredged reclamation material below 4m. However, disturbance created by the construction of the canal may have compromised these deposits in areas close to the canal bank. Overall, the archaeological potential for environmental data in Section A is **Nil to Low.**

4.2.3 Evidence of landscape modification such as levies, drainage lines or redeposited soils associated with Alexandra Canal modifications

Across most of Section A, evidence of these events and activities will have been removed by the tip and quarry. Beneath Sleigh's depot, evidence of the dredging to produce the reclaimed land and substantial drainage features may survive. However, the research potential of these features and deposits is low. The overall archaeological potential of these modifications in Section A is **Nil to Low**.

4.2.4 Construction of the Alexandra Canal

Evidence for construction of the Alexandra Canal is likely to be intact only in the area of the original sandstone bank, a 165m-long stretch on the western side of the canal, immediately north of Tempe Recreation Reserve. Due to the relatively undisturbed nature of this original part of the canal, the archaeological potential of this event is **High**.

4.3 Revised Archaeological Potential Section B

4.3.1 Archaeological Potential of Warnes Shell Lime Company

Warne's Shell Lime Company represents the persistence of nineteenth century technologies well into the twentieth century, in an industry that was rapidly evolving during that period. The shell lime business was operational on canal road sometime after 1888, and possibly as early as 1883. A pre-Alexandra Canal date may be more likely, as this would have positioned the kilns on the high ground above the mudflats at the mouth of Shea's creek and would have been at a time when local shell digging in the Botany area was still profitable (Dungog Chronicle, 1949).

By 1949 Warne's shell lime business was still operational at Canal Road. The long-standing occupation of the site may have aided its survival, as the kilns would have been well-maintained, and presumably substantial in order to maintain viability well into the twentieth century. The type of kilns used in Warnes' operation will have had a great bearing on its survivability. Shell lime kilns came in many forms, but many were dug into the ground and loaded from the top (Pearson, 1990).

The construction of St Peters Interchange has caused considerable disturbance to the site. There has been extensive earthworks in the area which are likely to have removed all but the deepest sub-surface structures (Figure 4.1). Although the sub-surface components of the kilns and associated chimney structures may be deep, the remains are likely to be decontextualised and have limited research potential. The archaeological potential of the Warnes Shell Lime Company site is therefore considered to be **Low**.

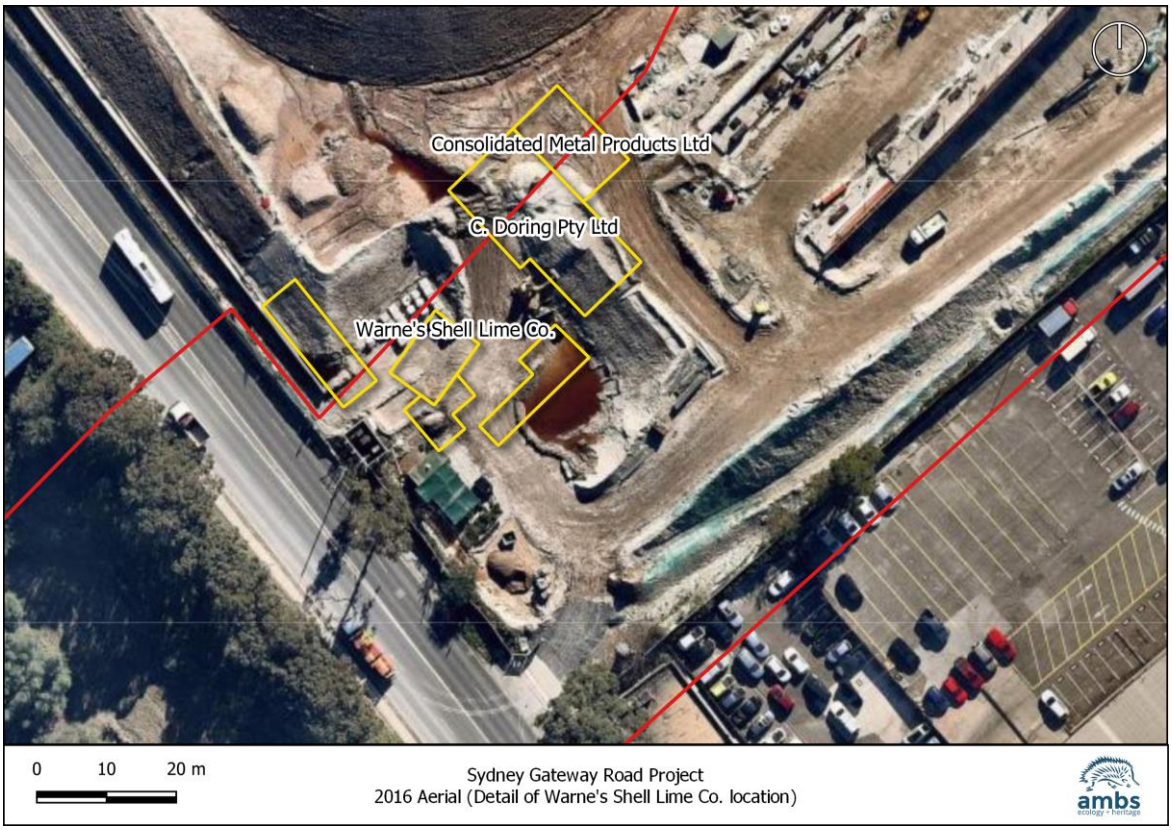


Figure 4.1: 2016 aerial (Nearmap) showing substantial earthworks including a sump in the location of Warne's Shell Lime Co.

4.3.2 Archaeological Potential of the Government Wool Sheds and adjacent warehouses

The entire footprint of six (and the partial footprint of four more) of the 250 Government wool sheds that were constructed along the Alexandra Canal in the early 1940s are contained within Section B.

Some of the wool sheds constructed during this period are still standing along the eastern bank of the canal. The standing sheds have the following characteristics:

> *All buildings are of hardwood construction with exposed prefabricated timber roof trusses and timber framed external walls. The timber floors are elevated above ground level. The roofs themselves are constructed of corrugated profile fibrous sheeting, which is typical for the WWII period.*
>
> *The original rectangular floor is the same for all the sheds. The design of a typical shed is based on a structural bay determined by the standard dimension of wool bales (4 ft long, 2 ft 6 in wide and 2 ft 6 in high). Floor to ceiling heights are determined by a standard stack of 4 bales, or in this case, 8 bales. Floors are elevated to allow for underfloor cross ventilation as well as providing suitably height for loading and unloading from trucks. For ease and speedy unloading, three loading bays with sliding door are provided on either side of each shed, as well as one at the end façade facing the access road. Open space intervals are provided between each of the sheds where trucks can drive right up to loading bays at the sides.*
>
> *In plan, each shed is approximately 61.2 m (201 ft.) long, 37.1m (122 ft.) wide and 6.1m (20ft.) high (from elevated floor to the underside of the roof trusses). Each shed comprises 10 modular bays of 6.1m by 37.1m, and each modular bay comprises timber posts grid of*

6.1m centre lengthwise and 5.3m centre width wise. Each timber post is approximately 200mm by 195mm.

The size of a typical highlight window opening is 1.7m wide, 1.31m high and that of a typical sliding door opening is 4.2m by 3m. The windows are positioned so that they admit light down the aisles between the stacks of wool bales (NSW Government Office of Environment & Heritage, 2005).

The elevated floors of the sheds indicates that only posts or postholes would survive archaeologically, which would eliminate evidence of interior modification or reuse following the stockpiling of wool during WWII. The exposed nature of the underfloor cavity is also unlikely to have preserved uncompromised or meaningful evidence of the activities within the sheds. The archaeological potential of the Government Wool Sheds is therefore considered to be **Low**.

The adjacent warehouses which have also been assessed by Artefact Heritage as having Moderate potential are of a different construction type to the Government Wool Sheds. They were constructed between 1946 and 1951. Aerial photos show that after demolition, the concrete slab floors of these warehouses were left in place. There are no traces of internal divisions of space or evidence of activity areas remaining on the concrete slabs. The archaeological potential of the adjacent warehouses is therefore considered to be **None**.

Figure 4.2: Exposed concrete slabs of the demolished warehouses in Section B in 2005.

4.3.3 Pre-canal environmental data including pollen, seeds and phytoliths surviving within intact soil profiles, and the embankment along Shea's Creek

Environmental data relating to the pre-canal phase, including the original bank of Shea's creek and substantial modifications to it may survive beneath the reclamation material in Section B. However, because of the waterlogged and polluted nature of this land, any environmental data is

likely to be compromised by twentieth century activities at the site. Overall, the archaeological potential of these features is **Low**.

4.4 Revised Archaeological Potential Section C

4.4.1 Archaeological Potential of the Lauriston Park Estate

Lauriston Park Estate was an estate of weatherboard houses, established in 1902. A detailed recollection of his childhood home by Allen Windross (Windross, 2004) describes his house at 33 Lord's Road as a 'Hudson Ready-Built', timber-framed and constructed on brick piers. This is likely to be typical of the style of house across the small estate.

The nature of this construction method minimises the type and amount of remains that are left in the ground after demolition. While evidence of the brick piers may remain, the elevated timber frame means that there would be no substantial footings left after demolition with which to determine room configuration or layout. The late construction date for the houses also eliminates the possibility of underfloor deposits, which are generally the richest source of archaeological information about the day to day lives of people in their homes.

The archaeological potential for the houses of the Lauriston Park Estate is therefore revised to **Nil to Low**. However, sub-surface structures in the yards such as wells, cisterns and cesspits may survive. Windross's recollections indicate that the property was not originally connected to the sewerage system. Despite the late date for the construction of the houses, cesspits may therefore remain across the estate. Windross's house also had an air raid shelter in the back yard:

> *With the war's end came the need to fill in the back garden air raid shelter. Neighbours came along with items of old wooden and metal furniture. Over time these items collapsed down so there was always a hollow in the lawn at that point (Windross, 2004).*

If features such as this survive, that combine both household items and non-typical structures, they would provide a unique snapshot of life at the Lauriston Park Estate. There are several areas that suggest minimal disturbance to subsurface features in Section C (Airport roadways and carparks). The archaeological potential for subsurface yard structures is considered to be **Moderate to High** in those areas.

4.4.2 Market Gardens and landscape modifications

The poorly drained sandy soils of the Airport lands are likely to have leached much of the evidence of early agriculture from the upper deposits. While postholes of lightweight structures and fencelines may survive, their identification as such may not be possible due to the lack of context. Rubbish dumps related to early activity and rubbish opportunistically dumped into the reclamation fills may survive. However, due to the unknown density and nature of activity across the area in the early period, the overall archaeological potential for these events is **Nil to Low**.

4.4.3 Botany Goods Line

The former (pre-airport) alignment of the Botany Goods Line is partially located in Section C. Although some sleepers and ballast may survive beneath the roadway of Qantas Drive, the research potential of these objects is Nil to Low. The overall archaeological potential of the remains of the early goods line alignment is therefore considered to be **Low.**

Figure 4.3: AMBS revised archaeological potential.

5 Archaeological Significance

The physical evidence of past activities is a valuable resource that is embodied in the fabric, setting, history and broader environment of an item, place or archaeological site. The above evaluation of the Gateway site has identified the limited potential for relatively intact archaeological resources. 'Cultural heritage significance' and 'heritage value' are terms used to express the tangible and intangible values of an item, place or archaeological site, and the response that it evokes in the community. An item will be considered to be of local (or State) significance if, in the opinion of the Heritage Council of NSW, it meets one or more of the seven SHR criteria.

5.1 AMBS Updated Assessment of Archaeological Significance

The Statement of Heritage Impact prepared by Artefact Heritage included a preliminary archaeological assessment which identified areas of Moderate archaeological potential associated with industry in Sections A and B and with residences in Section C. Further research has led to a revision of archaeological potential in those areas, and the identification of the types of remains that may survive.

The following is an updated assessment of the significance of these potential remains against the SHR criteria.

> ***Criterion (a) an item is important in the course, or pattern, of NSW's cultural or natural history (or the local area);***

The archaeology of this site is associated with domestic and industrial premises of the early to mid-twentieth century, and of a major engineering event (the construction of the Alexandra Canal) in the late nineteenth century.

Archaeological evidence of Warne's Shell Lime business, (and particularly the kiln structures) would be significant at a local level under criterion (a). Warne's business was established in the area in the 1880s because of the rich shell beds in the Cooks River estuary. Its presence on Canal Road until 1966 was the last surviving link to the early exploitation of local resources and one of the few examples of shell lime technology still being used in the local area. Archaeological evidence of the kilns and manufacturing process would make a significant contribution to the history of industry in the area.

Evidence relating to the construction of the Alexandra Canal would be of local significance under criterion (a). Although the Alexandra Canal is listed on the SHR (01621), the listing states that the archaeological evidence of the canal would not contribute to the State significant values of the item due to its overall poor survival. However, archaeological evidence of the pre-canal environment, dredged fills and fascine dyke that may survive behind the unmodified parts of the canal banks would have the potential to contribute to the transformative values of the canal at a local level.

Archaeological evidence of backyard air raid shelters in the Lauriston Park Estate would be significant at a local level for its ability to illustrate the daily experiences and concerns of living next to an airfield during wartime, and the intertwined relationship of the airport with the local community.

If present with good integrity, archaeological evidence of the pre-canal environment would be significant at a local level for its ability to demonstrate the dramatic changes that took place over the first decades of colonial occupation.

Criterion (b) an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the local area);

The archaeological resource is not associated with any known persons of importance in the local area, or in the history of NSW, and would not meet the threshold for significance under criterion (b).

Criterion (c) an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);

Archaeological evidence of the shell lime kilns at Warne's Canal Road premises may have the ability to demonstrate early lime burning technologies and their development over a 70 year period. If present with good integrity, the resource may be significant under criterion (c) at a local level.

Evidence relating to the construction of the Alexandra Canal, if present with good integrity, would be of local significance under criterion (b) for its ability to contribute to the values of local workmanship and engineering associated with the canal.

Criterion (d) an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons (or the local area);

While no consultation has been undertaken with the local community in relation to the values of the archaeology, it is acknowledged that local communities are interested in the archaeology of their local area and its development. It is possible that if substantial and intact archaeology is found it may have value to the local community or specific community groups.

The threshold for significance against this criterion has not been met at this time.

Criterion (e) an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the local area);

If present with good integrity, the archaeological resource at Warne's Shell Lime business has considerable to high research potential for its ability to demonstrate the development of early local technologies into the twentieth century.

If present with good integrity, the archaeological remains of air raid shelters backfilled with household goods and furniture at the Lauriston Park Estate would have considerable research potential for their ability to provide a snapshot of life in the short-lived community during wartime.

Artefact assemblages from cesspits associated with the Lauriston Park houses have the potential to provide an insight into daily life, living standards, diet, class and gender.

The archaeology of the Alexandra Canal has the potential to make a contribution to an understanding of the transformative nature of the canal at a local level, and the design and technologies that went into its construction.

Analysis of soils and the fill of cesspits and the like could provide information regarding the pre-colonial landscape, plantings associated with the settlement of the area and the diet of the local community.

If evidence survives of significant modifications of the swampy landscape to create a more habitable environment this would enhance our understanding of local land management practices.

Criterion (f) an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the local area);

Archaeological evidence of the shell lime kilns at Warne's Canal Road premises may have the ability to demonstrate early lime burning technologies and their development over a 70 year period. Shell lime kilns are uncommon in the archaeological record (Pearson, 1990). If present with good integrity, the resource may be significant under criterion (f) at a local level.

Criterion (g) an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or cultural or natural environments (or the local area).

The archaeological resource at the site is unlikely to meet the threshold for criterion (g) at a local level.

5.2 Statement of Archaeological Significance

The archaeological resource associated with the Gateway site, if present with good integrity, has the potential to provide information regarding the late-nineteenth and early twentieth century development of housing and industry in an environment that has been dramatically transformed, first by the construction of the Alexandra Canal, and again by the establishment of the Mascot Aerodrome and Sydney Airport and associated industries.

Physical evidence of industrial and residential structures and activities, if present with good integrity, have the potential to provide an insight into life in a continually shifting environment. Evidence from the archaeological resource of the Lauriston Park Estate, such as personal, work-related and domestic artefacts, has the potential to be compared with assemblages from similar sites and assist with addressing research questions relating to urbanisation, material culture, consumerism, identity, and everyday life of a wartime community.

If evidence of modifications to the landscape survive in the archaeological record this would contribute to our understanding of early land management practices.

The archaeological resource associated with the Gateway site, if present with good integrity, would have local significance.

6 Archaeological Research Design and Methodology

Archaeological remains can enhance the historical record and as such make a contribution to an understanding of the history and settlement of a local area. As identified in this report, the archaeological resource within the project footprint, if present with good integrity, has moderate to high research potential and local significance. In view of the substantial costs involved in the archaeological excavation of a site, the research design should be problem-oriented; however, allowance should always be made for new questions to respond to unexpected archaeological evidence. Archaeological research questions provide a framework for an archaeological investigation and for the analysis of the results of the excavation and artefacts recovered during excavations.

6.1 AMBS Research Questions

To ensure that the research potential and significance of an archaeological resource is realised, archaeological investigations should aim to address substantive research themes. The following research questions would form the foundation of the archaeological investigations within the footprint of the Waterloo Station site. These will be developed into an Archaeological Research Framework to inform all historical archaeological projects being undertaken within the Sydney Gateway project by AMBS, which will be updated as the project progresses. This assists with ensuring that the Sydney Gateway archaeological program has substantive research outcomes. Relevant research question to this site are:

Modification of the Landscape & Environment

- *Is there surviving evidence of the early local environment, and the swamp surrounding the mouth of Shea's Creek? Is there evidence of the early estuarine environment? What can this evidence tell us about the character of the early nineteenth century landscape? Analysis of buried silts may inform us about environmental changes following the introduction of manufacturing within the locality and the extent and nature of pollution from these industries.*

- *Is there surviving evidence of early land-use practices such as land clearance or agriculture? What can this evidence tell us about use of the local landscape? What does it tell us about the modification of the landscape with European settlement?*

Remaking the Landscape – Reclamation of the Shea's Creek mudflats

- *What is the nature of the fills? What can these fills and their contents tell us about the nature and process of the reclamation? What can the fills tell us about the way the land was used after it was reclaimed? Was the ground too poor for residential and heavy industrial development? Are there signs that the ground was unstable or polluted?*

Residential Housing and Material Culture

- *What can the construction techniques, size, layout and form of the structures tell us regarding the period of use and areas of activity?*
- *Are there intact occupation deposits and what can these tell us about daily life in the community?*
- *What can the contents of occupation deposits from cesspits, rubbish pits and wells or cisterns (if present) tell us about the daily lives and domestic practices of the local community, which could be evaluated and compared with artefact assemblages from similar sites within primary urban environments, that may not be available from other sources?*

Industry and Technology

- *What evidence is there for Warne's Shell Lime Company? What type of kilns were in use? Is there evidence for changes in technology over time, or of changes in the size and capacity of the operations?*
- *Is there evidence that the kilns were established at the Canal Road property before the construction of the canal?*
- *Is there evidence of the working conditions or of the daily lives of the workers?*

The above questions should allow for responding to larger research themes relating to: developing technologies, material culture, urbanisation, transforming the environment, and personal and social identity. The research questions will inform the procedure for recording the archaeological resource uncovered during excavation, the recovery and storage of artefacts and provide a framework for the excavation. In addition, new questions are likely to arise during excavation and / or during the post-excavation analysis, which may provide additional insights into different aspects of the site that may not have been previously considered.

6.2 Archaeological Management

The day-to-day management of the archaeological excavations will be undertaken by Primary Excavation Director, Mike Hincks and Secondary Excavation Director Lian Ramage. Key members of the team will be Guy Hazell, surveyor, who will set out the site grid and survey all site features to contribute to the overall plan of the site in its entirety and in accordance with each identified phase of the site. James Cole, AMBS Archaeologist, will be important in assisting in the day to day management of the site.

The archaeological investigations program will comprise:

- Archaeological monitoring of areas of **Low potential**. The areas of monitoring will be targeted based on the type of impacts and the nature of the archaeological resource in the impacted areas. In areas of Low potential that are not targeted for monitoring, the Unexpected Finds Protocol will be implemented.
- Archaeological testing or monitoring to determine the extent, integrity and potential significance of the underlying archaeology in areas of **Moderate to High potential**. The methodology of either testing or monitoring will depend on the nature of the impacts in those areas. (Section 6.2.2).
- If archaeological remains are present with good integrity after monitoring or testing, open area stratigraphic excavation would proceed to salvage all archaeological remains within a defined area (Section 6.2.5).

The significance and research potential of the archaeological resource associated with Warne's Shell Lime Company, the intact original portions of the Alexandra Canal, and the yards of the Lauriston Park Estate houses means that these buildings will be excavated using both mechanical and manual techniques. The following methodology addresses all potential instances where archaeological investigations will be required within this site.

6.2.1 Heritage Induction

AMBS will prepare a document that addresses the project scope, identifying the sensitivities of the site and the relevant heritage requirements of the project and will be presented to all on-site personnel. The induction will be approved by the Primary Excavation Director (ED) and presented

by the Secondary Excavation Director (ED). The induction/toolbox will include an illustrated easy to understand hard copy outlining the main points and procedure, which will include:

- Understanding the heritage significance of the anticipated archaeological resource, including:
- Repercussions of any breaches to the approved archaeological strategy
- Understanding the unexpected finds procedures
- The nature of the archaeological resource
- Maps showing location of anticipated archaeological features
- Photographs of the types of anticipated archaeological features

Additional toolbox meetings will be given each day, as required, to provide an overview and management of the anticipated archaeological resource for that day and in the event of unanticipated relics or features being exposed.

6.2.2 Archaeological Monitoring

Where required, mechanical removal of the current structures and surfaces across the site will be monitored by the Primary ED, Mike Hincks and, if required by the scale of work, assisted by the Secondary ED Lian Ramage. The archaeological monitoring will be undertaken in all areas of Low potential during initial ground-breaking activities.

If there are no underlying archaeological relics, features or deposits in the areas under investigation, the Primary ED will attend the site to verify and a Clearance Certificate will be prepared by the Primary ED to inform the project team and Proponent in writing.

After the issue of a clearance certificate, there is still the unlikely potential that unexpected relics may be exposed during site works (see Section 6.4 below).

Where a significant archaeological resource with good integrity is exposed, open area excavation or targeted excavation will proceed (Section 6.2.4) following removal of the overburden and once the area has been made safe.

6.2.3 Archaeological Testing

Archaeological testing may be undertaken in up to three areas of moderate to high archaeological potential, depending on the scope and nature of proposed impacts in those areas. The archaeological testing will consist of targeted trenches. The size and number of the trenches will be determined by the nature of the potential resource and the impacts in that area.

Initial excavation will be with a mechanical excavator with a batter bucket. The excavator operator will be directed by the archaeologist. Once archaeological levels are reached, manual excavation will commence to expose and record the archaeology.

If there are no underlying archaeological relics, features or deposits in the areas under investigation, the Primary ED will attend the site to verify and a Clearance Certificate will be prepared by the Primary ED to inform the project team and Proponent in writing.

After the issue of a clearance certificate, there is still the unlikely potential that unexpected relics may be exposed during site works (see Section 6.4 below).

Where a significant archaeological resource with good integrity is exposed, open area excavation will proceed (Section 6.2.4) following removal of the overburden and once the area has been made safe.

6.2.4 Targeted Excavation

Targeted excavation will occur when isolated or decontextualised significant features or deposits are found. Targeted excavation will follow the methodology of Open Area Stratigraphic Excavation but will focus on discrete features or deposits and their immediate context.

6.2.5 Open Area Stratigraphic Excavation

The extent that open area excavation will be required will not be known until the potential archaeology has been exposed. Because of the nature of the resource at the site and the likelihood that the remains of structures and rubbish dumps will be relatively isolated, open area excavation is likely to be targeted and restricted to small areas. In the event that large, intact industrial or environmental features are present, the aim will be to excavate a sample of the most intact and representative part of the complex as a proportionate response to the assessed low research potential and significance of those items. Determination of the sample will be based on the sample's ability to answer pre-determined research questions and represent the significance values of the item.

Open area excavation will proceed once the site has been made safe. Excavations will be directed by the Primary ED, Mike Hincks, or the Secondary ED, Lian Ramage. The team may comprise up to 6 archaeologists, though this may increase or reduce in accordance with the site archaeology.

Excavation will be in accordance with the following methodology to ensure that all significant archaeological relics, features and deposits are appropriately managed and recorded:

- Establish a site datum and lay out a grid, relevant to the size of the site, 10m, 20m or 50m, across the site in order to record the levels of extant deposits, features and relics;
- Significant features will be recorded in detail and excavated manually under the supervision of the excavation director:
    - In the unlikely event that intact residential underfloor areas are encountered, they will be excavated within a 500mm grid, using 50mm spits, and wet sieved;
    - Cesspits and rubbish pits will be excavated along tip lines (if identifiable);
- All significant archaeological deposits, features and relics that are exposed during the excavations will be recorded in accordance with heritage best practice standards. Recording will include:
    - Cleaning features to facilitate photographic recording;
    - Scale plans;
    - Elevations of features, if relevant;
    - Digital photographs (in JPG and RAW format); and
    - Photogrammetry
    - Site survey; and
    - Detailed description of the feature, deposit or relic to ensure that a clear and comprehensive record of the archaeological resource of the site is preserved for the future.
- Sequential numbering of features and deposits to facilitate preparation of a Harris Matrix and artefact labelling;
- Preparation and development of a Harris matrix, to show stratigraphic relationships between all recorded archaeological features and deposits;
- All information regarding the location, dimensions and characteristics of all recorded archaeological features and deposits will be recorded on pro-forma context sheets;

- Collection of all significant artefacts for analysis, except from non-significant unstratified fill. Samples of bricks and mortar will be collected from each structure, as relevant;

Soil samples will be taken from topsoils, cesspits and other relevant deposits for analysis by a palynologist. The results of the analysis should provide an insight into the indigenous and introduced flora of the locality and diet of the local community.

A Clearance Certificate will be issued by the Historic Excavation Director for each site requiring archaeological testing or excavation and recording after investigations are completed at that particular location.

6.3 Archaeological Excavation and Sampling Strategy

6.3.1 Section A: Alexandra Canal

Depending on the scope of impact to the canal and surrounding deposits, monitoring of works or a test trench will be designed to determine the nature and extent of the archaeological resource in that area. All works that will impact below the construction fills for the existing bike track and contemporary surfacing will require archaeological monitoring or testing. If archaeology is present and impacts are unavoidable, the resource will be recorded and removed in the area of impact.

6.3.2 Section B: Warne's Shell Lime Company

Depending on the scale of impacts in this area, monitoring or archaeological testing is recommended to determine the presence and integrity of the archaeological resource. If archaeology is present and of good integrity, open area excavation will proceed to record and salvage any remains associated with Warne's operation.

6.3.3 Section C: Lauriston Park Estate

Depending on the scale and nature of impacts in this area, archaeological monitoring or testing should be undertaken for impacts below the existing road construction fills. Archaeological investigations in this area will focus on subsurface structures in the yards such as cesspits, cisterns and WWII air raid shelters. If archaeology is present and of good integrity, targeted excavation will proceed to record and salvage the remains.

6.4 Unexpected Heritage Finds

As identified in this report there are areas of industrial, residential and environmental archaeology that may have survived with good integrity within the study area. These will be managed in accordance with the methodologies detailed above.

However, there is potential that physical evidence associated with the early occupation of the local area may be present, but not exposed during the period of archaeological investigations; unexpected heritage finds. The unexpected heritage find may include, but not be limited to:

- Artefacts derived from housing that has been scattered across the site during the processes of demolition and building during the later nineteenth century and twentieth century.
- Rubbish pits containing waste and discarded artefacts disposed of away from housing
- Evidence of early land management practices.
- Some remains of early laneways which may include Telford road surfaces or a hardened clay surface with wheel ruts.

Work will cease within the immediate environment of the find and the Primary ED, Mike Hincks will attend the site to determine its integrity and significance and to determine the appropriate management for the find.

Following completion of the appropriate management of the unexpected heritage find, the Primary ED will provide written advice that all archaeological investigations within an area have been completed.

6.5 Post-Excavation Management

6.5.1 Artefact Management

Artefacts will be cleaned, bagged, and labelled in accordance with archaeological context, and appropriately stored for analysis so that any information that can contribute to the understanding of the site and its historical development is not lost. Artefact processing and analysis will be in accordance with the AMBS system. The database for the site will be included in the Excavation Report.

A repository for the long-term storage of the artefacts from the Gateway project will also be required.

6.5.2 Final Excavation Report

At completion of the archaeological investigation program a report will be prepared detailing the results of the fieldwork and post-excavation analysis. The report will be prepared in accordance with current heritage best practice and the requirements of a standard excavation permit and will include:

- An executive summary of the archaeological programme;
- Due credit to the client paying for the excavation, on the title page;
- An accurate site location and site plan (with scale and north arrow);
- Historical research, references and bibliography;
- Detailed information on the excavation, including the aim, the context for the excavation, procedures, treatment of artefacts (cleaning, conserving, sorting, cataloguing, labelling, scale photographs and/or drawings, location of repository) and analysis of the information retrieved;
- Nominated repository for the items;
- Detailed response to research questions (at minimum those stated in the approved Research Design);
- Conclusions from the archaeological programme. The information must include a reassessment of the site's heritage significance, statement(s) on how archaeological investigations at this site have contributed to the community's understanding of the site and other comparable archaeological sites in the local area and recommendations for the future management of the site;
- Details of how information about this excavation has been publicly disseminated (for example provide details about Public Open Days and include copies of press releases, public brochures and information signs produced to explain the archaeological significance of the site).

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