

Appendix B2

Heritage Management Sub-plan Infrastructure Works (Package 4)

Parramatta Light Rail – Stage 1

September 2020

PLR1INF-CPBD-ALL-HE-PLN-000001 Rev 10

Heritage Management Sub-plan

Project Name: Parramatta Light Rail Stage 1
Infrastructure Contract

Project number	N81080
Document number	PLR1INF-CPBD-ALL-HE-PLN-000001
Revision date	29 September 2020
Revision	10

Rev.	Date	Prepared By	Reviewed By	Approved By	Remarks
A	03/03/2019	B. Cole	D. Corish	Mac Harvey	nil
0	08/04/2019	D Corish	P. Monsted	Mac Harvey	nil
1	23/05/2019	G. Figueira	D. Corish	Mac Harvey	nil
2	21/06/2019	G. Figueira	P.Monsted	Mac Harvey	nil
3	26/07/2019	G. Figueira	P.Monsted	Mac Harvey	nil
4	8/08/2019	D. Corish	P.Monsted	D. Jackson	nil
5	12/08/2019	D. Corish	P.Monsted	D. Jackson	nil
6	02/10/2019	D. Corish	P.Monsted	D. Jackson	nil
7	31/10/2019	G. Figueira	P.Monsted	D. Jackson	nil
8	6/07/2020	G. Figueira	D Corish	D. Jackson	Nil
9	28/08/2020	G. Figueira	D Corish	D. Jackson	Nil
10	29/09/2020	G. Figueira	D Corish	D. Jackson	Nil

Details of Revision Amendments

Document Control

The Project Director is responsible for ensuring that this plan is reviewed and approved. The Project Director is responsible for updating this plan to reflect changes to the project, legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Director and/or client before being distributed / implemented.

Revision	Details
Rev A	Initial submission.
Rev 0	First draft submitted to TfNSW and ER.
Rev 1	Incorporation of TfNSW / ER Rev 0 comments. Revision issued for external stakeholder consultation.
Rev 2	Second draft submitted to TfNSW and ER for consultation.
Rev 3	Incorporation of external stakeholder consultation comments. Submission for ER endorsement
Rev 4	Incorporation of ER comments and submission to ER for endorsement.
Rev 5	Incorporation of ER endorsement and submission to the DPIE for approval.
Rev 6	Incorporation of DPIE comments and submission to the DPIE for approval.
Rev 7	Incorporation of Heritage NSW's and DPIE comments and submission to the DPIE for approval.
Rev 8	Minor amendments and submission to ER for endorsement.
Rev 9	Minor amendments as part of annual review.
Rev 10	Incorporation of TfNSW / ER Rev 9 comments.

THIS PAGE LEFT INTENTIONALLY BLANK

Contents

Glossary/ Abbreviations	iv
1 Introduction	7
1.1 Context	7
1.2 Background	7
1.3 Infrastructure Works	10
1.4 Relationship with SOM	11
1.5 Scope of this sub-plan	11
1.6 Environmental Management Systems Overview	12
2 Purpose and Objectives	15
2.1 Purpose	15
2.2 Objectives	15
2.3 Targets	15
3 Environmental Requirements	16
3.1 Relevant Legislation and Guidelines	16
3.2 Minister's Conditions of Approval	18
3.3 Environmental Mitigation and Management Measures	34
3.4 Environmental Performance Outcomes	60
4 Consultation	63
4.1 Consultation requirements under the Infrastructure Approval	63
4.2 Aboriginal Consultation	65
5 Existing Environment	66
5.1 Non-Aboriginal Heritage	66
5.2 Aboriginal Heritage	67
6 Environmental Aspects and Impacts	68
6.1 Construction Activities	68
6.2 Heritage Impacts	69
7 Environmental Mitigation and Management Measures	93
7.1 Unexpected Human Remains	100
7.2 Sustainability	100
8 Non-Aboriginal Heritage Risk Management	102
8.1 Built and Landscape Heritage	102
8.2 Historical Archaeology	103
8.3 Non-Aboriginal Heritage Salvage and Archival Recording	108
9 Aboriginal Heritage Risk Management	110

9.1	Aboriginal Archaeology – Parramatta Sand Body	110
9.2	Unexpected Heritage Finds – Aboriginal Archaeology	111
9.3	Aboriginal Archaeology Salvage	111
9.4	Further Archaeological Salvage for Unexpected Finds.....	113
9.5	Post Excavation Analysis	113
10	Compliance Management	114
10.1	Roles and Responsibilities	114
10.2	Training	114
10.3	Monitoring and Inspections	114
10.4	Reporting	114
10.5	Auditing	115
11	Review and Improvement	121
11.1	Continuous Improvement	121
11.2	HMP Update and Amendment	121
	Appendix A –Unexpected Heritage Finds Procedure	122
	Appendix B – Stakeholder and Agency Consultation	123
	Appendix C – Heritage Items.....	157
	Appendix D – Aboriginal Archaeology Sites Locality Maps	182
	Appendix E – Environmental Representative Endorsement.....	183

Figures

Figure 1-1:	Parramatta Light Rail Stage 1 Route.....	8
Figure 1-2:	Parramatta Light Rail Stage 1 Delivery Strategy	10
Figure 1-3:	Relationship between SOM and INF	11
Figure 1-4:	Environmental Management System.....	14

Tables

Table 3-1:	Conditions of Approval relevant to the HMP	18
Table 3-2:	Revised Environmental Mitigation and Management Measures relevant to this HMP.....	34
Table 3-3:	Environmental Performance Outcomes relevant to this HMP	60
Table 4-1	Summary of Consultation and Approval	64
Table 5-1:	Aboriginal archaeological sites (adapted from Kelleher, 2017)	67
Table 6-1:	Aspects and Impacts Summary	68
Table 6-2:	Key Non-Aboriginal Heritage Items - Impacts, Management Measures and Recommendations	70
Table 6-3:	Zone 1 HAMU – Impacts, Mitigation and Management Measures	83
Table 6-4:	Aboriginal Archaeological Sites (partially adapted from Kelleher, 2017)	91

Table 7-1: Heritage Management and Mitigation Measures	94
Table 7-2: Heritage specific sustainability targets.....	100
Table 9-9-1: Indicative Extent of Aboriginal Salvage Excavation	112
Table 9-9-2: Sample Categories	113
Table 10-1: Inspection and Monitoring Requirements	116
Table 10-2: Reporting Requirements	118
Table B-1: Log of consultation with Cumberland Council as per A5(b) and (c)	124
Table B-2: Log of consultation with City of Parramatta Council (CoPC) as per A5(b) and (c)	124
Table B-3: Log of issues raised by City of Parramatta Council (CoPC) as per A5 (d) and (e).....	125
Table B-4: Log of consultation with Heritage NSW as per A5(b) and (c)	126
Table B-5: Log of issues raised by Heritage NSW as per A5 (d) and (e)	128
Table B-6: Log of consultation with Kamilaroi-Yankuntjatjara Working Group RAP	152
Table B-7: Log of issues raised by Kamilaroi-Yankuntjatjara Working Group RAP	152
Table B-8: Log of consultation with Muragadi Heritage Indigenous Corporation RAP	154
Table B-9: Log of consultation with Murra Bidgee Mullangari Aboriginal Corporation RAP.....	154
Table B-10: Log of consultation with Tocomwall RAP	154
Table B-11: Log issues raised by Tocomwall RAP	154
Table B-12: Log of consultation with Walbunja RAP as per A5(b) and (c)	155
Table B-13: Log of of consultation with Darug Land Observations RAP	155
Table B-14: Log of of consultation with Widescope Indigenous Group RAP	155
Table B-15: Log of of consultation with Darug Aboriginal Land Care RAP	155

Glossary/ Abbreviations

Abbreviations	Expanded text
Aboriginal Place	An Aboriginal Place is an area declared by the Minister administering the Act to be of special significance with respect to Aboriginal culture.
Aboriginal objects	Aboriginal objects include any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW, before or concurrent with occupation by non-Aboriginal people, as defined in section 5 of the NPW Act.
AFT	Objects such as stone tools, and associated flaked material, spears, manuports, grindstones, discarded stone flakes, modified glass or shell demonstrating evidence of use of the area by Aboriginal people.
AMU	Archaeological Management Unit
CEMP	Construction Environmental Management Plan
CNVIS	Construction Noise and Vibration Impact Statement
CHAR	Cultural Heritage Assessment Report
CMP	Conservation Management Plan
NVMP	Noise and Vibration Management Sub-plan
CoA	Conditions of Approval
CoPC	City of Parramatta Council
CSSI	Critical State Significant Infrastructure
DPIE	NSW Department of Planning, Industry and Environment (the responsibilities of the former Department of Environment and Planning are now administered by the Department of Planning, Industry and Environment).
DUAP	NSW Department of Urban Affairs and Planning (now Department of Planning, Industry and Environment)
ECM	Environmental Control Map

Abbreviations	Expanded text
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPO	Environmental Performance Outcomes
ER	Environmental Representative
ETS	Electronic Ticketing System
EWMS	Environmental Work Method Statement
GPR	Ground Penetrating Radar
HAMU	Historical Archaeological Management Unit
HARD	Historical Archaeological Research Design and Excavation Methodology
Heritage Act	<i>Heritage Act 1977</i>
HMP (or Sub-plan)	Heritage Management Sub-plan
ICOMOS	International Council on Monuments and Sites
INF	Infrastructure Works
JV, the	CPB Contractors and Downer EDI Works Joint Venture (Parramatta Connect)
LEP	Local Environmental Plan
LRV	Light Rail Vehicle
LTWMP	Landscape and Temporary Works Management Sub-plan
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NVMP	Noise and Vibration Management Sub-plan
non-Aboriginal Heritage	European / built heritage items, places, sites or historical archaeology
OEH	Office of Environment and Heritage <i>Where reference in the planning approval, this Plan and consultation has been made to OEH it should be noted that OEH has been abolished from 1 July 2019. The OEH (environment) section is taken as a reference to Department of Planning, Industry and Environment (DPIE) and</i>

Abbreviations	Expanded text
	<i>the OEH (heritage) section is taken as a reference to Heritage NSW</i>
OHW	Overhead Wires/Wiring
PAD	Potential Archaeological Deposit
PHALMS	Parramatta Historical Archaeological Landscape Management Study
PSS or PSB	Parramatta Sand Sheet or Parramatta Sand Body
RAP	Registered Aboriginal Parties
Relic	Any deposit, artefact, object or material evidence that: (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and (b) is of State or local heritage significant.
REMMM	Revised Environmental Mitigation and Management Measures
s170	Section 170 heritage and conservation register for government agencies
Planning Secretary	Secretary of the NSW Department of Planning, Industry and Environment (or delegate)
SaM facility	Stabling and Maintenance facility
SHR	State Heritage Register
SOM	Supply Operate and Maintain Works
SPIR	Submission and Preferred Infrastructure Report
Stage 1	Parramatta Light Rail – Stage 1 (Westmead to Carlingford)
TfNSW	Transport for New South Wales

1 Introduction

1.1 Context

This Heritage Management Sub-plan (HMP or Sub-plan) forms part of the Construction Environmental Management Plan (CEMP) for the Parramatta Light Rail Stage 1, Package 4 Infrastructure Works (the Project). This HMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA) SSI-8285, the revised environmental mitigation and management measures (REMMs) and Environmental Performance Outcomes (EPO's) listed in *Parramatta Light Rail Stage 1 Westmead to Carlingford via Parramatta CBD and Camellia Environmental Impact Statement* (the EIS), as amended by the *Parramatta Light Rail (Stage 1) Westmead to Carlingford via Parramatta CBD and Camellia Submissions Report (incorporating Preferred Infrastructure Report)* (February 2018) (the SPIR). In addition, this Sub-plan addresses all applicable legislation and contractual requirements, including the PLR Stage 1 Infrastructure Contract Project Deed (ISD-17-6721).

1.2 Background

1.2.1 Parramatta Light Rail – Stage 1 description

Parramatta Light Rail is one of the NSW Government's major infrastructure projects being delivered to serve a growing Sydney.

Parramatta Light Rail Stage 1 (Stage 1) will connect Westmead to Carlingford via Parramatta Central Business District (CBD) and Camellia. Stage 1 is expected to be operational in 2023.

Stage 1 will create new communities, connect great places and help both local residents and visitors move around and explore what the region has to offer. The route will link Parramatta's CBD and train station to a number of key locations, including the Westmead Precinct, the Parramatta North Growth Centre, the new Western Sydney Stadium, the Camellia Town Centre, the new Powerhouse Museum and Riverside Theatre arts and cultural precinct, the private and social housing redevelopment at Telopea, the Rosehill Gardens Racecourse and the three Western Sydney University campuses.

In summary, the key features of Stage 1 include:

- A new dual track light rail network of approximately twelve (12) kilometres in length, including approximately seven (7) kilometres within the existing road corridor and approximately five (5) kilometres within the existing Carlingford Line and Sandown Line, replacing current heavy rail services
- Sixteen (16) stops that are fully accessible and integrated into the urban environment including a terminus stop at each end of Westmead and Carlingford
- High frequency 'turn-up-and-go' services operating seven days a week from 5am to 1am. Weekday services will operate approximately every 7.5 minutes in the peak period between 7am and 7pm
- Modern and comfortable air-conditioned light rail vehicles, nominally 45 metres long and driver-operated, each carrying up to 300 passengers.
- Intermodal interchanges with existing public transport services at Westmead terminus, Parramatta CBD and the Carlingford terminus
- Creation of two light rail and pedestrian zones (no general vehicle access) within the Parramatta CBD along Church Street (generally between Market Street and Macquarie Street) and along Macquarie Street (generally between Horwood Place and Smith Street)

- A Stabling and Maintenance (SaM) Facility located in Camellia for light rail vehicles (LRV) to be stabled, cleaned and maintained
- New bridge structures along the alignment including over James Ruse Drive and Clay Cliff Creek, Parramatta River (near the Cumberland Hospital), Kissing Point Road and Vineyard Creek, Rydalmere
- Alterations to the existing road network including line marking, additional traffic lanes and turning lanes, new traffic signals, and changes to traffic flows
- Relocation and protection of existing utilities
- Public domain and urban design works along the corridor and at Stop precincts
- Closure of the heavy rail line between Carlingford and Clyde
- Active transport corridors and additional urban design features along sections of the alignment and within Stop precincts
- Integration with the Opal Electronic Ticketing System (ETS)
- Real time information in light rail vehicles and at Stops via visual displays and audio.

An overview of Parramatta Light Rail Stage 1 route is shown in **Figure 1-1**.



Figure 1-1: Parramatta Light Rail Stage 1 Route

1.2.2 Statutory Context

The Parramatta Light Rail is subject to environmental impact assessment under the *Environmental Planning and Assessment Act 1979* (EP&A Act). It is classified as Critical State Significant Infrastructure (CSSI). The EIS assessed impacts for Parramatta Light Rail Stage 1 (Westmead to Carlingford). This covered the light rail and associated works including road enabling work.

Stage 1 received Infrastructure Approval from the Minister for Planning under Section 5.19 of the EP&A Act on 29 May 2018 (Critical State Significant Infrastructure Application SSI-8285), subject to the conditions provided in the Instrument of Approval, specifically Schedule B – Ministerial Conditions of Approval.

The Infrastructure Approval was subsequently modified under Section 5.25 of the EP&A Act on 21 December 2018 and 25 January 2019.

The planning approval, modifications and related environmental assessment documents are located at: http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8285.

1.2.3 Stage 1 Delivery Strategy

Delivery of Stage 1 is achieved through the following five packages of work:

- **Enabling Works (Package 1)** – Local road network improvements including O’Connell Street and George Street (off-alignment)
- **Westmead Precinct Works (Package 2)** – Hawkesbury Road widening and demolition at Cumberland Hospital (east and west Campus)
- **Early Works (Package 3)** – Remediation of the Stabling and Maintenance (SaM) Facility
- **Infrastructure Works (Package 4)** (the subject of this Sub-plan) – Design and construction of civil works, public domain and light rail infrastructure up to road level/top of rail and to the top of the concrete slab at stops, including provision of utility services (excluding high-voltage power supply and cabling for rail systems), and decommissioning of the T6 Carlingford Line)
- **Supply, Operate and Maintain Works (Package 5)** – Design and construction of the light rail systems, high-voltage power supply and stops above slab level, the supply of light rail vehicles, and the design and construction of the SaM Facility, including all light rail operations, customer service and asset management.

Each package of work is to be delivered under separate contracts on behalf of the proponent Transport for NSW. While the packages will commence at different times under separate construction approvals, there will be periods during which the packages works will overlap. The interactions between the packages are shown in **Figure 1-2**.

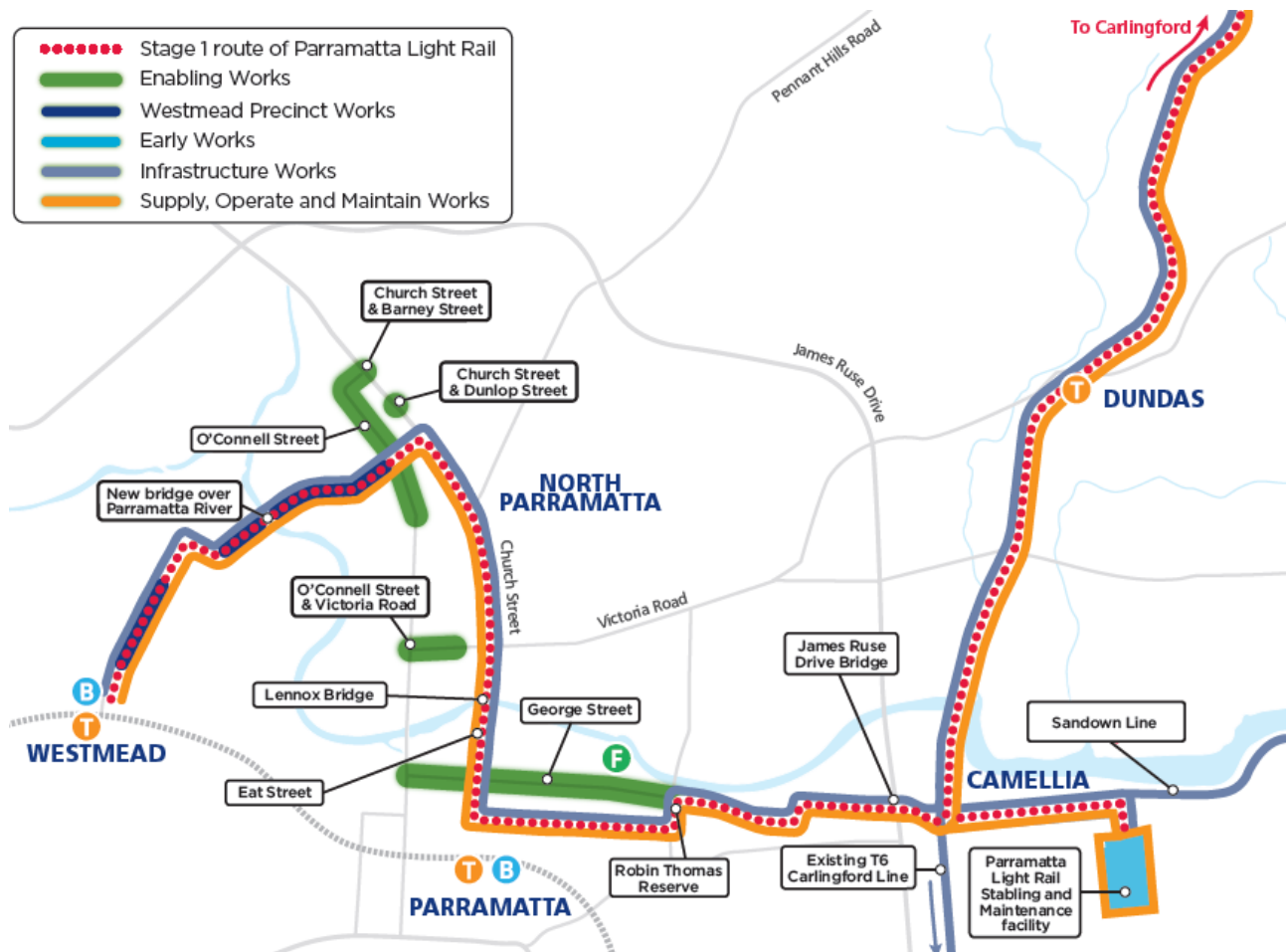


Figure 1-2: Parramatta Light Rail Stage 1 Delivery Strategy

1.3 Infrastructure Works

The CPB Contractors and Downer EDI Works Joint Venture (JV) has been engaged to deliver Package 4 – Infrastructure Works (INF).

In summary the Infrastructure Works include:

- Utility Services adjustment and relocation works (for more than minor impact)
- Property demolition to make space for the light rail tracks and ancillary facilities
- Decommissioning of the existing Carlingford T6 heavy rail line and disused Sandown Line
- Earthworks and retaining structures
- Drainage works
- Intersection signalling works
- The light rail civil infrastructure and Stop slabs
- Urban and architectural design and finishes of the corridor and public domain
- Rail, track slabs, ballasted track and grass tracks
- Footpath and kerb realignment including intersection works and road upgrades to accommodate light rail and other traffic (both temporary and permanent)
- New light rail bridges carrying the light rail over the Parramatta River (at Cumberland Hospital), James Ruse Drive, Vineyard Creek and Kissing Point Road and bridge strengthening and modifications to existing bridges as required

- Provision of the Active Transport Link for pedestrians and cyclists
- Staff and passenger facilities at each light rail terminus
- Rail/road interaction including traffic signals and road sharing
- Testing and commissioning of the Infrastructure Works.

1.4 Relationship with SOM

The Infrastructure Works is closely aligned to the Package 5, Supply, Operate and Maintain (SOM) Works which is being delivered by the Great River City Light Rail consortium. A graphical representation of the split in scope between the two packages is depicted in **Figure 1-3**.

The reasoning for dividing this work into two stages is to ensure that suitably qualified and experienced sub-contractors are in place for each specialised component; civil infrastructure, and operational systems. The Infrastructure Works will deliver the civil infrastructure components of Stage 1 and will not trigger the operational conditions with the exception of those that relate to detailed design.

An interface between the two Joint Ventures has been established to monitor cumulative impacts and the coordination of environmental complaints management, site management controls, and the delineation of incident reporting and non-conformance management. Opportunities to share information, materials and resources will also be explored to support an overall minimisation of heritage impacts.

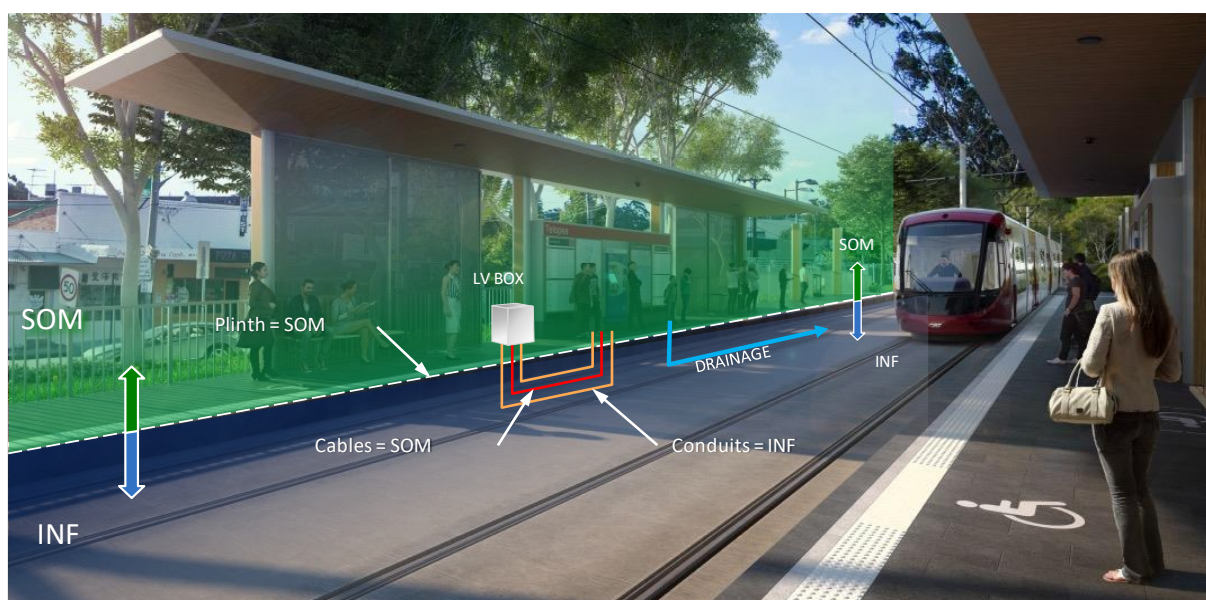


Figure 1-3: Relationship between Infrastructure Works and Supply, Operate and Maintain Works

1.5 Scope of this sub-plan

This Sub-plan outlines the mitigation and management measures the CPB Contractors and Downer EDI Works Joint Venture (the JV), Parramatta Connect, will use to address potential impacts to heritage during design and construction of the Infrastructure Works, while complying with relevant approval, statutory and contract requirements. Sections 3.2, 3.3 and 3.4 provide compliance tables identifying where in this Sub-Plan relevant requirements are addressed.

This Sub-plan is applicable to all activities during construction of the Infrastructure Works, including all areas where physical works will occur or areas that may be otherwise impacted by the construction works, and under the control of the JV. All the JV staff and sub-contractors are required to operate fully under the requirements of this Plan and related environmental management plans, over the full duration of the construction program.

1.6 Environmental Management Systems Overview

To achieve the intended environmental performance outcomes, CPB have established, implemented, maintained and continually improved an EMS in accordance with the requirements of ISO14001:2015. The CPB EMS will be adopted as the guiding environmental management framework for the Infrastructure Works.

The EMS consists of governance documentation, including Sub Plans, procedures and tools as set out below and illustrated in **Figure 1-4**.

- **The JV Environment and Sustainability Policy.** Outlines the commitments and intentions established by the JV to ensure environmental performance and sustainability objectives and targets are achieved (Appendix A3 of the CEMP).
- **The CEMP.** This document details the processes and procedures to be implemented during the Infrastructure Works to comply with applicable CoA, REMMMs, EPOs, legislative obligations and contractual requirements. The relevant compliance obligations are detailed in **Appendix A1**, with a cross reference to where they are met in this Sub-plan.
- **Environmental Management Sub-plans.** These documents describe procedures and controls for specific environmental aspects requiring more rigorous management strategies.
- **Geographic Information System (GIS).** The GIS incorporate key features of the alignment and relevant environmental constraints. Features include waterways, heritage, biodiversity contamination and sensitive receivers amongst other site relevant features. The GIS forms the basis of Environmental Control Maps (ECMs).
- **Procedures, strategies and protocols.** Detailed procedures for inclusion in work packs.

Key interactions for this Sub-plan with other management plans and documents include:

- **Exhumation Management Plan** – which details the specific controls to be implemented during the exhumation of human remains (if required). This is to be prepared as a standalone document in accordance with the *Guidelines for Management of Human Skeletal Remains* (NSW Heritage Office, 1998) prior to conducting construction works in sensitive archaeological areas as defined by the Excavation Director in order to reduce impacts on heritage items (i.e. St. Patrick's Cemetery). This document will be prepared in consultation with Heritage NSW (or its delegate) and submitted to the DPIE for information. Prior to the acceptance of the Exhumation Management Plan, the process outlined in Section 7.1 will be followed.
- **Noise and Vibration Management Sub-plan (NVMP)** (Appendix B3 of the CEMP) – which details the management controls and requirements for managing potential vibration impacts on identified heritage items.
- **Landscape and Temporary Works Management Sub-plan** (Appendix B3 of the CEMP) – which establishes a framework for the integration and protection of landscape values during construction of the Infrastructure Works through graphics, interpretation, wayfinding & signage.
- **Flora and Fauna Management Sub-plan** (Appendix B4 of the CEMP) – which describes how impacts on heritage trees and trees within the vicinity of the listed items will be avoided and/or minimised during the Infrastructure Works.
- **Site Establishment Management Plan** – which outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities.
- **Environmental Design Review Reports** – which will detail the recommendations of the heritage architect/engineer and how those recommendations have been considered and actioned.

- **Urban Design Requirements Report** – which will demonstrate how the design responds to the character, setting and fabric of heritage elements and landscapes.

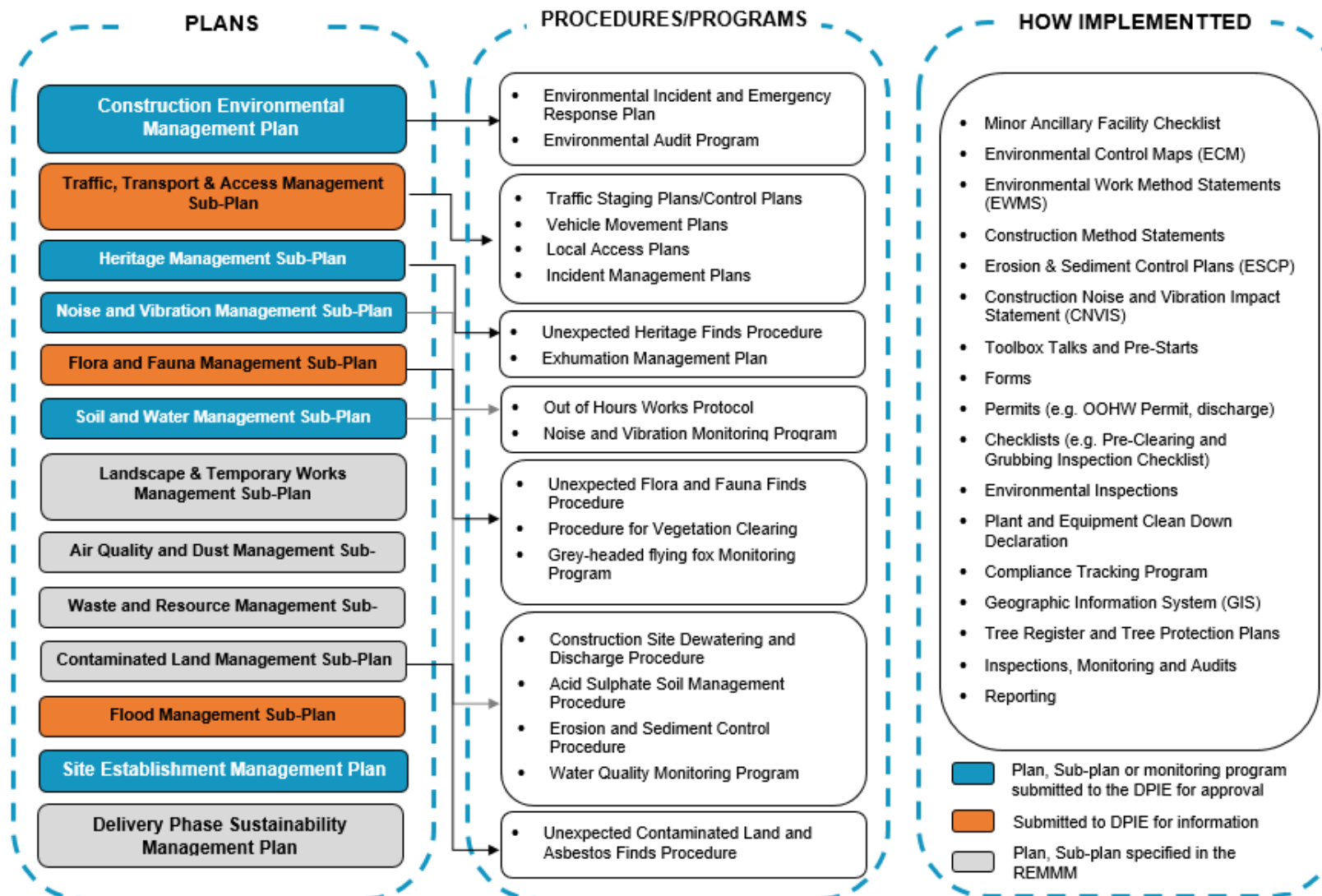


Figure 1-4: Environmental Management System

2 Purpose and Objectives

2.1 Purpose

The purpose of this Sub-plan is to describe how Aboriginal and non-Aboriginal heritage will be protected and managed during detailed design and construction of the Infrastructure Works.

2.2 Objectives

The key objective of the Sub-plan is to comply with the Planning Approval and ensure all CoA, REMMMs, EPOs and licence/permit requirements relevant to Aboriginal heritage and non-Aboriginal heritage are described, scheduled and assigned responsibility as outlined in:

- Parramatta Light Rail (Stage 1), Westmead to Carlingford via Parramatta CBD and Camellia Environmental Impact Statement, Volume 1A and 1B, Main document (WSP Australia Pty Limited for TfNSW, August 2017) Parramatta Light Rail (Stage 1) Westmead to Carlingford via Parramatta CBD and Camellia Submissions Report (incorporating Preferred Infrastructure Report - SPIR) (February 2018)
- PLR Stage 1 Infrastructure Contract Project Deed (ISD-17-6721)
- Infrastructure approval SSI 8285, Conditions of Approval granted to the Stage 1 on 29 May 2018 and subsequent administrative modifications (December 2018 - MOD 1 - and January 2019 - MOD 2)
- Transport for NSW's Unexpected Heritage Finds Guideline, 3TP-SD-115/3.0 (TfNSW, 28 April 2016, reviewed 28 April 2017).

2.3 Targets

The following targets have been established for the management of Aboriginal and non-Aboriginal heritage impacts during the Infrastructure Works:

- Ensure full compliance with the relevant legislative requirements, CoA, REMMMs and EPOs
- Mitigate, minimise, or avoid where reasonable, impacts on known Aboriginal and non-Aboriginal heritage sites through the implementation of appropriate controls and procedures during design and construction activities
- Follow correct procedure and ensure notification of any Aboriginal and non-Aboriginal heritage objects/places uncovered during construction
- Ensure Aboriginal Cultural Heritage Awareness Training is provided to all personnel in the form of inductions before commencement of work
- Maximise awareness of Aboriginal and non-Aboriginal heritage values for all involved in the Infrastructure Works
- Undertake heritage monitoring at appropriate intervals during construction to assess enhancements to heritage values.

3 Environmental Requirements

3.1 Relevant Legislation and Guidelines

3.1.1 Legislation

All legislation relevant to this Sub-plan is included in Appendix A1 of the CEMP.

3.1.2 Additional approvals, licences, permits and requirements

This Sub-plan has been prepared on the basis that Stage 1 (including the Infrastructure Works) has been assessed and approved under Division 5.2 of the EP&A Act. As such, exemptions from non-Aboriginal heritage approvals apply (in accordance with Section 139 and Section 57 of the *Heritage Act 1997*, and under section 90 – AHIPs – of the NPW Act) and no further approvals or permits are envisaged as part of the construction activities. However, notification provisions in accordance with Section 146 of the *Heritage Act 1977* still apply.

3.1.3 Guidelines

The main guidelines, specifications and policy documents relevant to this Sub-plan include:

- Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW, 2010) (for reference only)
- Altering Heritage Assets (Heritage Office and NSW Department of Urban Affairs and Planning (DUAP), 1996)
- Archaeological Assessment Guidelines (NSW Heritage Office and DUAP, 1996)
- Assessing Heritage Significance (NSW Heritage Office, 2001)
- Assessing Significance for Historical Archaeological Sites and Relics (Heritage Branch, 2009)
- The Australia ICOMOS Charter for Places of Cultural Significance, The Burra Charter (Australia ICOMOS, 2013)
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (Department of Environment Climate Change and Water, 2010)
- Conservation Areas (Heritage Office and Department of Urban Affairs & Planning, 1996)
- Criteria for the Assessment of Excavation Directors (Heritage Council of NSW, September 2011)
- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011)
- Guidelines for the preparation of Archaeological Management Plans (Heritage Branch, June 2009)
- Heritage Curtilages (Heritage Office and Department of Urban Affairs & Planning, 1996)
- Historical Archaeology Code of Practice (Heritage Council of NSW, 2006)
- How to Prepare Archival Records of Heritage Items (NSW Heritage Office, 1998)
- Manage Cultural Heritage CPB Contractors Internal Policy (CPB, April 2018)
- Managing risk with heritage trees (Heritage Office, 2010)

- NSW Government Policy on Aboriginal Participation in Construction (NSW Procurement Department of Finance, Services and Innovation, released 1 May 2015, updated 1 August 2016 and June 2018)
- NSW Heritage Manual (Heritage Office, Department of Planning, 1996)
- NSW Heritage Manual - Assessing Heritage Significance (NSW Heritage Office, 2001)
- Photographic Recording of Heritage Items Using Film or Digital Capture (Heritage Office, 2001, revised 2004, 2006)
- Procedure for Aboriginal Cultural Heritage Consultation and Investigation (Roads and Maritime Services, 2011)¹
- Skeletal Remains; Guidelines for Management of Human Skeletal Remains (Heritage Office, 1998)
- Street trees in NSW: Guidelines for conservation and management (Department of Planning, 1990)
- The principles of the Australia ICOMOS 'Burra Charter' for the conservation of culturally significant places provide the foundation for all assessments of Aboriginal and historical heritage (Australia ICOMOS, 2013)
- Transport for NSW Unexpected Heritage Finds Guideline 3TP-SD-115/3.0 (TfNSW, April 2016, revised April 2017)
- EC 2006 guideline 'Assessing Vibration – A Technical Guide' as this defines requirements for assessing the risk of building damage on heritage structures (Office of Environment and Conservation, February 2006).

¹ It is acknowledged that this guideline was developed for use on road construction projects rather than light rail. However, the linear nature of PLR along an urban corridor and similar construction approaches are such that this guideline is relevant.

3.2 Minister's Conditions of Approval

The CoA relevant to this Sub-plan are listed in Table 3-1 below with a cross reference included to indicate where the condition is addressed in this Sub-plan or other Project management documents.

Table 3-1: Conditions of Approval relevant to the HMP

CoA No.	Condition Requirements	Document Reference	How Addressed
A1	The CSSI must be carried out in accordance with the terms of this approval and generally in accordance with the description of the CSSI in the Parramatta Light Rail (Stage 1) Westmead to Carlingford via Parramatta CBD and Camellia Environmental Impact Statement (dated August 2017) (the EIS) as amended by: (a) the Parramatta Light Rail (Stage 1) Westmead to Carlingford via Parramatta CBD and Camellia Submissions Report (incorporating Preferred Infrastructure Report) (February 2018) (the SPIR); (b) SSI 8285 Administrative modification (November 2018) (MOD 1); and (c) SSI 8285 Correction to Administrative modification (January 2019) (MOD 2).	This Sub-plan	This Sub-plan provides a framework for ensuring compliance with the requirements of the CoA (including approved Modifications 1 and 2), REMMMs, relevant legislative requirements and the Project Deed.

CoA No.	Condition Requirements	Document Reference	How Addressed
A5	Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken in consultation with identified parties, evidence of the consultation undertaken must be submitted to the Secretary with the document or monitoring program or review. The evidence must include: (a) documentation of the engagement with the party(ies) identified in the relevant condition of approval before submitting the document for approval; (b) log of the points of engagement or attempted engagement with the identified party(ies) and a summary of the issues raised by the identified party(ies); (c) documentation of any follow-up with the identified party(ies), where feedback has not been provided, to confirm that the identified party(ies) has none or has failed to provide feedback after repeated requests; (d) outline of the issues raised by the identified party(ies) and how they have been addressed, including evidence that the party(ies) is satisfied the issues have been addressed; and where there are outstanding issues raised by the identified party(ies) that have not been adopted, the reasons why they have not been/could not be adopted must be provided, including evidence of consultation with the relevant party(ies).	Section 4 Appendix B	Details of consultation requirements and relevant stakeholders are specified in Section 4. Consultation feedback will be incorporated into this Sub-plan and summarised in Appendix B.
C3	The following CEMP Sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP Sub-plan and be consistent with the CEMP referred to in Condition C1: (d) Heritage – to be prepared in consultation with relevant Councils and OEH and submitted to the Secretary for approval.	Section 4 Appendix B	This Sub-plan has been provided to relevant Councils and the Heritage NSW for consultation. Consultation feedback has been incorporated and summarised in Appendix B. The final Sub-plan has been submitted to the Planning Secretary for approval prior to construction.
C4	The CEMP Sub-plans must state how:		

CoA No.	Condition Requirements	Document Reference	How Addressed
C4	(a) the environmental performance outcomes identified in the documents listed in Condition A1 will be achieved;	Section 3.4	Section 3.4 lists the relevant EPOs applicable to this Sub-plan and describes how they have been addressed in the development of this Sub-plan.
C4	(b) the mitigation measures identified in the documents listed in Condition A1 will be implemented;	Section 3.3	Section 3.3 lists the relevant REMMMs applicable to this Sub-plan and describes how they have been addressed in the development of this Sub-plan.
C4	(c) the relevant terms of this approval will be complied with; and	Section 3.2	Section 3.2 lists the relevant CoAs applicable to this Sub-plan and describes how they have been addressed in the development of this Sub-plan.
C4	(d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.	Section 5 CEMP sections 1.5.1, 3.2.1, Appendix A2 Section 7 Section 8 Section 9	Issues that require management during construction are outlined in Section 5 as well as their predicted impact. The process for quantitative risk assessment for the Project is outlined in the CEMP Section 1.5.1. CEMP Appendix A2 is the environmental risk register for the construction activities associated with the Project. The risk register is reviewed annually, at minimum, and in response to significant issues, incidents and non-compliances. The management of these risks has been outlined in Sections 7, 8 and 9. These will be implemented during pre-construction and construction phases of the Project.

CoA No.	Condition Requirements	Document Reference	How Addressed
C5	The CEMP Sub-plans must be developed in consultation with relevant government agencies (including Relevant Council(s)). Details of all information requested by an agency to be included in a CEMP Sub-plan as a result of consultation, including all copies of correspondence from those agencies, must be provided to the Secretary with the relevant CEMP Sub-plan .	Section 4 Appendix B	This Sub-plan has been provided to the relevant Councils and the Heritage NSW for consultation. Consultation feedback has been incorporated and summarised in Appendix B .
C6	Any of the CEMP Sub-plans may be submitted along with, or subsequent to, the submission of the CEMP but in any event, no later than one month before construction.	Section 4	This Sub-plan has been submitted to the Planning Secretary no later than one month prior to construction.
C8	Construction must not commence until the CEMP and any CEMP Sub-plan specified in Condition C3 have been submitted to or approved by the Secretary. The CEMP and CEMP Sub-plans submitted to or approved by the Secretary, including any minor amendments approved by the ER, must be implemented for the duration of construction. Where construction of the CSSI is staged, construction of a stage must not commence until the CEMP and Sub-plans for that stage have been submitted to or approved by the Secretary. Note: The requirement to submit or have a CEMP or CEMP Sub-plan approved is specified in Condition C3.	Section 4	Construction was not commenced until this Sub-plan was submitted to and approved by the Planning Secretary (as outlined in Section 4). This Sub-plan will be implemented for the duration of construction of the Infrastructure Works.
E43	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 damage. In the event that the vibration testing and monitoring shows that the preferred dose values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures.	NVMP (Section 11.3)	Vibration testing will be undertaken as outlined in the Construction Monitoring Program (Section 11.3 of the NVMP).

CoA No.	Condition Requirements	Document Reference	How Addressed
E44	The Proponent must seek the advice of a heritage specialist on methods and locations for installing equipment used for vibration, movement and noise monitoring of heritage-listed structures.	NVMP (Section 7.4, 11.5)	Heritage listed structures are listed in Section 7.4 of the NVMP. A heritage specialist has been engaged to provide advice when vibration, movement and noise monitoring of heritage-listed structures occurs, as outlined in Section 11.5 in NV63. This has also been referenced in the noise and vibration monitoring methods.
E60	The Proponent must not destroy, modify or otherwise physically affect heritage items (including Aboriginal objects), outside of the CSSI footprint.	Section 7, Table 7-1	Table 7-1 details mitigation measures to be undertaken in order to reduce heritage impacts. Heritage items outside the CSSI footprint will not be physically affected and this will be identified and communicated through relevant Environmental Work Method Statements (EWMS), Environmental Control Maps (ECMs), Toolbox talks and daily pre-starts. This has been included as mitigation measure H1.
E61	Nothing in this approval permits the Proponent to harm, modify, or otherwise impact human remains uncovered during the construction and operation of the CSSI.	Section 7, Table 7-1	Table 7-1 details mitigation measures to be undertaken in order to reduce heritage impacts. This has been included as mitigation measure H13 and will be communicated through relevant EWMS, ECMs, Toolbox talks, Project induction and daily pre-starts.

CoA No.	Condition Requirements	Document Reference	How Addressed
E62	An Unexpected Heritage Finds Procedure must be: (a) prepared to manage unexpected heritage finds in accordance with any guidelines and standards prepared by the Heritage Council of NSW or OEH; and (b) certified by a suitably qualified and experienced archaeologist or heritage specialist. The Procedure must be included in the Heritage Management Sub-Plan required by Condition C3. Note: Human remains that are found unexpectedly during works are under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately.	Section 7, Table 7-1 Section 8.2.8 Section 9.2 Appendix A	The Unexpected Heritage Finds Procedure is provided in Appendix A and reflected in Section 7 (Table 7-1). The application of the Procedure to historical and Aboriginal heritage is detailed in Sections 8.2.8 and 9.2, respectively. The Unexpected Heritage Finds Procedure has been certified by the Excavation Director as being suitable for the Infrastructure Works.
E63	The Unexpected Heritage Finds Procedure, as submitted to the Secretary, must be implemented for the duration of construction and during operational maintenance works.	Section 7, Table 7-1 Appendix A	The Unexpected Heritage Finds Procedure is provided in Appendix A and reflected in Section 7 (Table 7-1). The procedure will be implemented for the duration of construction. This will be communicated through Toolbox talks and daily pre-starts and implemented throughout construction by means of relevant EWMS and ECMs. It is noted that operational maintenance works are the responsibility of the SOM Works (Package 5), refer to Section 1.2.3.

CoA No.	Condition Requirements	Document Reference	How Addressed
E64	The Proponent must prepare a Heritage Interpretation Strategy before work (excluding archaeological excavation required under Condition E70 and E71) which impacts on the items identified below commence which identifies and interprets the heritage values and stories of Aboriginal and non-Aboriginal heritage items, archaeology and heritage conservation areas associated with the CSSI. The Heritage Interpretation Strategy must be prepared and implemented in consultation with OEH and the Heritage Council of NSW (or its delegate). The Heritage Interpretation Strategy must be submitted to the Secretary for information and include, but not be limited to a discussion of the key interpretive themes, stories, archaeological results, and messages proposed to interpret the history and significance of affected heritage items and heritage conservation areas including: (a) Parramatta Female Factory and Institutions Precinct within the Cumberland District Hospital Group; (b) Lennox Bridge; (c) St Patrick's Roman Catholic Cemetery; (d) The Convict Lumberyard (Arthur Phillip High School site) (e) Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve); (f) Queen's Wharf Reserve and stone wall and potential archaeological site; (g) Dundas Railway Station Group; (h) Prince Alfred Square (and potential archaeological site); (i) Royal Oak Hotel and stables (and potential archaeological site); (j) Clyde Carlingford Rail Bridge abutments (Northern); and (k) Clyde Carlingford Rail Bridge abutments (Southern).	Section 7, Table 7-1	A Heritage Interpretation Strategy has been prepared by GML Heritage (current version September 2020). Locations for implementation of heritage interpretation will be incorporated into detailed design in accordance with this Strategy. PCPLR has prepared a Heritage Interpretation Implementation Plan which details an interpretive response for nominated heritage items and heritage conservation areas that are affected by the Infrastructure Works. This requirement has been included as mitigation measure H6 in Table 7-1. A Heritage Interpretation Strategy and a Heritage Interpretation Implementation Plan for the Queen's Wharf Reserve has also been prepared by Enabling Works (Package 1) for the immediate area. A Heritage Interpretation Implementation Plan will also be prepared as part of the Supply Operate and Maintain Works (Package 5) as it relates to this scope of works. Ongoing consultation will be carried with the Interface Contractors to ensure archaeology and interpretation reporting requirements are achieved. The Heritage Interpretation Strategies/Implementation Plans will be consistent and coordinated. This is to be achieved through consultation with relevant stakeholders, including the Heritage NSW, Heritage Council of NSW and relevant councils.

CoA No.	Condition Requirements	Document Reference	How Addressed
E64A	Within six months of the completion of any archaeological excavation and archival recording, the Heritage Interpretation Strategy in Condition E64 must be updated to include any additional heritage items identified and their interpretation. Note: Archaeological excavation and archival recording includes but is not limited to that required by Conditions E70 and E71 inclusive.	Section 7, Table 7-1	The Heritage Interpretation Strategy will be updated within six months of the completion of any archaeological excavation and archival recording. This requirement has been included as mitigation measure H6 in Table 7-1.
E65	Identified impacts to heritage items and heritage conservation areas must be minimised through both detailed design and construction in consultation with the Heritage Council (or its delegate). The measures to manage this must be detailed in the Heritage Management Sub-plan required by Condition C3 .	Section 4 Section 7	Measures to minimise identified impacts to heritage items and heritage conservation areas are detailed in Section 7. Environmental Design Review Reports will detail the recommendations of the heritage architect /engineer and how those recommendations have been considered and actioned in design. This Sub-plan has been provided to the Heritage Council for consultation, with a summary of consultation outlined in Section 4. These measures will be updated throughout construction as necessary and included in applicable ECMs and EWMS.
E66	The Proponent must not destroy, modify or otherwise physically affect any structures within the Cumberland District Hospital Group or the curtilage of the Parramatta Female Factory and Institutions Precinct, except as identified in the documents listed in Condition A1 .	Section 7, Table 7-1	Table 7-1 details mitigation measures to be undertaken in order to reduce heritage impacts. Heritage items will not be physically affected, and this will be communicated through relevant EWMS, ECMs, Toolbox talks and daily pre-starts. This has been included as mitigation measure H1.

CoA No.	Condition Requirements	Document Reference	How Addressed
E67	The proponent must prepare an analysis of alternatives to demolition of CHIP Hostel No. 1 before the commencement of construction in Cumberland Hospital (East Campus) or any work in the Fleet/Factory street intersection which would preclude consequential rail realignment if the CHIP Hostel No. 1 were retained. The analysis must be submitted to the Secretary stating a preferred option for approval. If demolition of the CHIP Hostel No. 1 is proposed, justification must be provided which considers the following guidelines included in the <i>Parramatta North Urban Transformation Consolidated Conservation Management Plan</i> (UrbanGrowth NSW, 2017): (a) that there is no prudent or feasible alternative; (b) demolition would result in no or minimal impacts on the heritage significance of the place or the wider Parramatta North Historic Sites; and (c) demolition would be of an overall benefit to the heritage significance of the place and the wider Parramatta North Historic Sites. Nothing in this approval permits the demolition of the CHIP Hostel No. 1 without the written approval of the Secretary.	Table 6-2	This condition is not triggered by the Infrastructure Works. In the event that it is triggered in the future, an analysis of alternatives will be prepared in accordance with CoA E67.
E68	The detailed design of the CSSI must have regard to the following heritage items to ensure that the design respects and responds to the heritage value of the items: (a) Lennox Bridge; (b) Cumberland District Hospital Group; (c) St Patrick's Roman Catholic Cemetery; (d) Prince Alfred Square (and potential archaeological site); (e) Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve); (f) Queen's Wharf Reserve and stone wall and potential archaeological site and (g) Dundas Railway Station Group.	Table 6-2 Section 7, Table 7-1	An appropriately qualified and experienced heritage architect has been providing independent review throughout detailed design. This has been reflected against relevant heritage items in Table 6-2 and included in Table 7-1 as mitigation measure H3. Environmental Design Review Reports will detail the recommendations of the heritage architect/ engineer and how those recommendations have been considered and actioned.

CoA No.	Condition Requirements	Document Reference	How Addressed
E69	Before installing acoustic treatment at any heritage item identified in the documents listed in Condition A1 the advice of a suitably qualified heritage architect or heritage engineer with specific experience in built heritage must be obtained and implemented to ensure any such work does not have an adverse impact on the heritage significance of the item.	Section 7, Table 7-1	The advice of a suitably qualified heritage architect or heritage engineer will be sought before installing acoustic treatment at any heritage item. This has been included in Table 7-1 as mitigation measure H4.
E70	The Proponent must prepare a Heritage Archival Recording and Salvage Report, including photographic recording of heritage items which have been identified for demolition or modification in the documents referred to in Condition A1 and outline the salvage to be undertaken from these items. Archival recording must be undertaken by a suitably qualified heritage specialist and prepared in accordance with NSW Heritage Office's <i>How to Prepare Archival Records of Heritage Items</i> (1998) and <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (2006). Within 12 months of completing the archival recording, or as otherwise agreed with the Secretary, the Proponent must submit the Heritage Archival Recording and Salvage Report to the Department, the OEH, Heritage Council of NSW, Relevant Council(s), relevant local libraries and local historical societies in the local government area.	Table 6-2 Section 7 Section 8.3.2	A Heritage Archival Recording and Salvage Report of items identified for demolition or modification has been prepared prior to demolition or modification of items referred to in Condition A1. This recording was undertaken by an experienced heritage consultant. This has been included in Table 6-2 and as mitigation measure H9 in Table 7-1. The archival recording and salvage process are detailed in Section 8.3.2.

CoA No.	Condition Requirements	Document Reference	How Addressed
E71	The Proponent must salvage material from heritage items identified in Condition E70. Following archival recording, the Proponent must identify options for sympathetic reuse of salvaged material (including integrated heritage displays) on the project or for other options for repository, reuse and display. Suitable repository location(s) must be established in consultation with Relevant Council(s) (or Registered Aboriginal Parties, where relevant). For any State Heritage-listed items or elements suitable for salvage, suitable repository location(s) must be determined in consultation with the Heritage Division of the OEH. Any residual items and materials (where appropriate) are to be made available, through a process to be developed by the Proponent in consultation with the relevant council(s), to landowners within the locality from where the material originated.	Section 8.3.3	The Heritage Archival Recording and Salvage Report identifies salvage and options for the sympathetic reuse of heritage fabric (including integrated heritage displays) on the project or other repository, reuse and display options. Fabric of high and exceptional heritage significance is to be listed in a salvage schedule within a salvage scheme for the project. Suitable repository locations are to be identified in consultation with the Heritage NSW, DPIE, Relevant Council(s) and Registered Aboriginal Parties (where relevant). This process will inform the preferred options for reuse, repository and display of salvaged material.
E72	Before works within Zones 1 and 2 Historical Archaeological Management Unit (HAMU), the Proponent must engage a suitably qualified archaeologist whose experience complies with the NSW Heritage Council's <i>Criteria for Assessment of Excavation Directors</i> (July, 2011) (referred to as the Excavation Director) to oversee and advise on matters associated with historical archaeology (i.e. non-Aboriginal) and to prepare a Historical Archaeological Research Design and Excavation Methodology. Where the unexpected heritage finds procedure required by Condition E62 is triggered in a zone 3 location, the Excavation Director must oversee its implementation.	Table 6-3 Section 8	A suitably qualified archaeologist has been engaged to oversee the Project and prepare a Historical Archaeological Research Design and Excavation Methodology (HARD). The requirements of this condition are addressed in Table 6-3 and Section 8.

CoA No.	Condition Requirements	Document Reference	How Addressed
E73	The Historical Archaeological Research Design and Excavation Methodology must to be submitted to the Heritage Council of NSW (or its delegate) for review and comment before finalisation. The Historical Archaeological Research Design and Excavation Methodology must: (a) be consistent with NSW Heritage Council Guidelines including: i) Archaeological Assessments (1996); ii) Assessing Significance for Historical Archaeological Sites and Relics (2009), iii) Skeletal Remains (1998), and iv) Historical Archaeological Code of Practice (2009); (b) include provision for early physical investigation of areas of impact identified as likely to contain State significant archaeology in the research design to inform detailed design in these areas to avoid State significant archaeology. This must include, but not be limited to: i) St Patrick's Roman Catholic Cemetery; ii) Ancient Aboriginal and Early Colonial Landscape / Robin Thomas Reserve; and iii) The Parramatta Town Drains (where these alignments are unclear); (c) provide for the detailed analysis of any archaeological relics discovered during the investigations; (d) include management options for discovered archaeological relics (including options for avoidance, salvage, and display or interpretation); (e) include procedures for notifying the Heritage Council of NSW (or its delegate) and Secretary of any relic as required under s146 of the <i>Heritage Act 1977</i>; and (f) if the findings of the investigations are significant, provide for the preparation and implementation of a heritage interpretation strategy.	Section 4 Table 6-3 Section 8	The HARD (current version June 2020) has been prepared and submitted to the Heritage Council as detailed in Section 4. The requirements of this condition are addressed in Table 6-3 and Section 8.

CoA No.	Condition Requirements	Document Reference	How Addressed
E74	Where excavation works are required in the vicinity of potential archaeological sites, the Excavation Director must be present to advise on archaeological issues and oversee excavation works. The Excavation Director must be given the authority to advise on the duration and extent of oversight required during excavation.	Section 8.2.4	Excavation works in the vicinity of potential archaeological sites are to be undertaken under the presence of the Excavation Director. The Excavation Director will determine if excavation works are in the vicinity of potential archaeological sites. Regular updates on the construction schedule and proposed activities will be provided to the Excavation Director to assist in this determination. This requirement will be communicated to personnel through the site induction, toolbox talks, pre-starts, applicable EWMS and ECMs.
E75	In the event that non-Aboriginal or post-contact archaeological relics are discovered, the Proponent must prepare an Archaeological Excavation Report containing the findings of any excavations, including artefact analysis and the identification of a final repository of any relics. The report must be submitted to the Secretary, for information, within 12 months of completing all archaeological investigations, unless otherwise agreed with the Secretary. The Archaeological Excavation Report must also be submitted to the NSW Heritage Council, the local library and the local Historical Society in the local government area. A copy of the Archaeological Excavation Report must be provided with the relics.	Section 8.2.10	The requirement to prepare an Archaeological Excavation Report is addressed in Section 8.2.10.

CoA No.	Condition Requirements	Document Reference	How Addressed
E76	The Proponent must not harm, modify or otherwise impact Aboriginal objects associated with the CSSI except as authorised by this approval.	Section 7	Aboriginal objects will not be destroyed, modified or physically affected, unless authorised by the Planning Approval. Boundary fencing will be erected around the exclusion zones and these will be documented on EWMSs and ECMs. This has been included as a mitigation measure H1 and H16 in Section 7.
E77	Where previously unidentified Aboriginal objects are discovered during construction of the CSSI, all work should stop in the affected area and a suitably qualified and experienced Aboriginal heritage expert should be contacted to provide specialist heritage advice. The measures to consider and manage this process must be specified in the Heritage Management Sub-Plan required by Condition C3 and, where relevant, include registration in the OEH's Aboriginal Heritage Information Management System (AHIMS) register.	Section 7, Table 7-1 Section 8.2.8 Appendix A	In the event of unexpected finds, the Unexpected Heritage Finds Procedure included in Appendix A and summarised in Section 8.2.8 will be followed. This has been included as mitigation measure H11 in Section 7 (Table 7-1).
E78	The Excavation Director must oversee and advise on work in the following locations: (a) Cumberland Hospital East; (b) Harris Street Footpath / Robin Thomas Reserve; (c) PLR AFT 2; and (d) Sydney Turf Club Carpark. Note: Work in the locations referenced in Condition E78 (a) - (d) that impacts Aboriginal archaeological sites is construction as defined in this approval. Any mitigation and salvage measures required to manage or mitigate impacts must be specified in the Heritage Management Sub-Plan required by Condition C3 .	Section 7	The Excavation Director will oversee and advise on works in Cumberland Hospital East, Harris Street Footpath/Robin Thomas Reserve, PLR AFT 2 and Sydney Turf Club Carpark. This has been included as mitigation measures H14 and H15 in Section 7. Environmental Design Review Reports will detail the recommendations of the heritage architect/engineer and how those recommendations have been considered and actioned.

CoA No.	Condition Requirements	Document Reference	How Addressed
E79	Any Aboriginal objects discovered must be identified in the Heritage Interpretation Strategy required by Condition E64 and, where relevant, include registration in the OEH's Aboriginal Heritage Information Management System (AHIMS) register.	Section 7 Table 7-1 Appendix A	A Heritage Interpretation Strategy has been prepared by GML Heritage (current version September 2020) and will be updated throughout construction if additional objects are identified. The incorporation of the strategy has been outlined as mitigation measure H6 in Table 7-1. The Unexpected Heritage Finds Procedure provided in Appendix A will be implemented throughout construction.
E80	The Proponent must design and construct the CSSI in a manner that reduces visual and heritage setting impacts and ensures consolidation and rationalisation of kerbside infrastructure to avoid visual clutter.	LTWMP, Section 6 – Mitigation Measure TW13	Controls have been included in Section 6 of the Landscape and Temporary Works Management Sub-plan (LTWMP) to maintain a tidy workplace and establish signage for wayfinding and significant heritage items. The temporary project footprint will be minimised to mitigate impacts to heritage and the visual setting.
E84	The Proponent must investigate the feasibility of wire-free running along 'Eat Street', across Lennox Bridge, past Riverside Theatres and Prince Alfred Park and through the Parramatta North precinct with the objective of minimising visual impacts to the heritage values and physical impacts to the heritage fabric of these items. The Proponent must provide the results of the feasibility investigation to the Secretary, for information, before construction commences in these locations. If a decision is made not to provide wire-free running in the identified locations, supporting evidence must be provided in the feasibility assessment.	n/a	This assessment is has been prepared by TfNSW. Outcomes will be included in management plans where relevant.

CoA No.	Condition Requirements	Document Reference	How Addressed
E85	The Proponent must investigate the feasibility of grass track treatment running through the Parramatta North precinct and Ancient Aboriginal and Early Colonial Landscape/Robin Thomas Reserve with the objective of minimising visual impacts to the heritage values and physical impacts to the heritage fabric of these items. The Proponent must provide the results of the feasibility investigation to the Secretary, for information, before construction commences in these locations. If a decision is made not to provide grass track treatment in the identified locations, supporting evidence must be provided in the feasibility assessment.	n/a	This assessment has been prepared by TfNSW. Outcomes will be included in management plans where relevant.
E89	Construction of light rail stops, tracks and associated facilities must not commence before the Urban Design Requirements Report has been approved by the Secretary. The detailed design development of light rail stops and associated light rail infrastructure within or in proximity to Heritage listed items must be undertaken in consultation with the Heritage Council (or its delegate).	n/a	The Urban Design Requirements Report (UDRR) was developed as a combined deliverable from the Infrastructure Works (Package 4) and SOM works (Package 5). The UDRR was approved by the Planning Secretary prior to construction of stops, tracks and associated facilities. The UDRR was presented to the Design Review Panel for review prior to submission to the DPIE. Heritage NSW has a standing invitation to the PLR Design Review Panel meetings (CoA E90 to E96) as an observer. Observers are given the opportunity to raise concerns and/or opportunities about design issues for consideration by the Design Review Panel. During detailed design development, consultation is to be carried out with Heritage NSW (i.e. through presentations and correspondence) regarding for light rail stops and associated light rail infrastructure within or in proximity to heritage listed items.

3.3 Environmental Mitigation and Management Measures

Relevant REMMMs are listed in Table 3-2 below. This includes references to required outcomes, the timing of when the commitment applies, relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table 3-2: Revised Environmental Mitigation and Management Measures relevant to this HMP

Ref #	Commitment	Timing	Document Reference	How Addressed
Non-Aboriginal Heritage				
HE-1	Three archaeological management zones have been developed for the project to manage archaeology with varying levels of significance throughout the project corridor. The general mitigation and management measures to be applied to each management zone are outlined below. The precinct-specific measures identify which management zone(s) measures apply to each archaeological management unit (HAMU) within a precinct.	Pre-construction Construction	Table 6-3 Section 7 Table 7-1	Mitigation and management measures are outlined in Table 7-1 and Table 6-3. Measures will be implemented throughout construction.
HE-1	The following mitigation and management measures would be implemented for Zone 1 – State significant historical archaeology: - A heritage induction would be carried out for all contractors, to be developed as part of the Heritage Management Plan. - An Historical Archaeological Research Design (HARD) will be prepared by a qualified archaeologist in accordance with	Pre-construction Construction	Table 6-2 Table 6-3 Section 7 Section 8	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Tables 6-2 and 6-3 detail site-specific Zone 1 HAMU mitigation measures. The requirements of the HARD have been included as mitigation measure H8. Section 8 outlines risk management strategies relating to Non-Aboriginal heritage.

Ref #	Commitment	Timing	Document Reference	How Addressed
	Heritage Division requirements, prior to the commencement of works. The HARD would outline a methodology for the investigation, monitoring and/or salvage of archaeological resources. • An excavation director who meets the NSW Heritage Division requirements for directing State significant archaeological investigations must manage the works. • Impact or removal is generally unacceptable for State significant archaeology identified as being highly intact and if proposed should be justified appropriately by the excavation director. • In situ retention of archaeological remains will be considered in accordance with the ARD as required. • The NSW Heritage Division would be notified should intact State significant relics be unexpectedly identified. • Public engagement, such as open days or media releases, would be considered where feasible to inform the public of the archaeological findings and proposed management measures. • Post-excavation reporting, artefact analysis and relics conservation would be carried out if relics are identified.			

Ref #	Commitment	Timing	Document Reference	How Addressed
HE-1	The following mitigation measures would be implemented for Zone 2 – Locally significant historical archaeology: • A heritage induction would be carried out for all contractors, to be developed as part of the Heritage Management Sub-Plan. • An ARD will be prepared by a qualified archaeologist in accordance with Heritage Division requirements, prior to the commencement of works. The ARD would outline a methodology for the investigation, monitoring and/or salvage of archaeological resources. • Archaeological monitoring would be carried out by a suitably qualified excavation director, followed by open area salvage (if required). • Impact or removal is likely to be considered acceptable if appropriate mitigation and management measures are followed as outlined in the ARD. • Public engagement, such as open days, would be considered where feasible to inform the public of the archaeological findings and proposed management measures. • Post-excavation reporting, artefact analysis and relics conservation would be carried out if relics are identified.	Pre-construction Construction	Section 7	Section 7 details mitigation measures to be undertaken to reduce impacts on heritage items. Table 7-1 details site specific Zone 2 HAMU mitigation measures to be implemented during pre-construction and construction phases of the Project. The requirements of the HARD have been included as mitigation measure H8.

Ref #	Commitment	Timing	Document Reference	How Addressed
HE-1	The following mitigation and management measures would be implemented for Zone 3 – Nil-low archaeological resource present: - A heritage induction would be carried out for all contractors, to be developed as part of the Heritage Management Sub-Plan. - Works are unlikely to impact on significant archaeological resources; however, an archaeologist would be engaged should any unexpected potential archaeological remains be encountered in accordance with an unexpected finds procedure.	Pre-construction Construction	Section 7 Appendix A	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Table 7-1 details site specific Zone 3 HAMU mitigation measures to be implemented during pre-construction and construction phases of the Project. HARD requirements have been included as mitigation measure H8. The Unexpected Heritage Finds Procedure is provided in Appendix A.
HE-2	Archaeological salvage excavation would not be carried out prior to the preparation of an Historical Archaeological Research Design (HARD). For this project, it is likely that the HARD would recommend archaeological salvage in the following instances: Where detailed archival research and understanding of modern disturbance (such as information to show the extent of previous sub-surface excavation, for example plans or drawings of a building's basement level(s)) needs to be supplemented with more site-specific (on-ground) information to better define the archaeological potential and/or significance of the site.	Pre-construction	Table 6-2 Section 7 Section 8	Section 7 details mitigation measures to be undertaken, including salvage, in order to reduce impacts on heritage items. Table 6-2 details site specific salvage measures to be implemented during the Project. A salvage process has been developed and is outlined in Section 8. Salvage would not be undertaken until the HARD is prepared.

Ref #	Commitment	Timing	Document Reference	How Addressed
	- In areas where access for excavation activities is not restricted by buildings or other structures. - Salvage excavation would generally be recommended in areas where there is a moderate to high potential for relics of local or State significance to be present. It would involve locating and recording any relics found prior to their removal by construction. Staged salvage excavation could only be carried out after project approval.			
HE-3	Archaeological monitoring (i.e. the monitoring of construction excavation activities by a qualified archaeologist) would be carried out as required by the Historical Archaeological Research Design (HARD). Examples of where archaeological monitoring may be required include: - Low impact construction activities (such as narrow trenching) in areas of moderate to high potential for local or State significant relics. - Areas with low potential to contain remains of State significance.	Construction	Section 7 Section 8	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Archaeological monitoring measures have been included as mitigation measure H8. Section 8 outlines risk management strategies relating to Non-Aboriginal heritage.
HE-4	As detailed design progresses, opportunities to avoid or further minimise impacts to identified archaeological sites of State and local	Pre-construction Construction	Section 7 Section 8	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items.

Ref #	Commitment	Timing	Document Reference	How Addressed
	significance would be considered and documented in the design report. The project design would be sympathetic to identified potential archaeological resources items (i.e. in archaeological management Zones 1 and 2) and, where reasonable and feasible, minimise impacts to those resources. The detailed design for sections of the project that would impact on known archaeological resources would be developed in consultation with a qualified archaeologist and relevant stakeholders as advised (e.g. the OEH and City of Parramatta Council).			The project design will be sympathetic to potential archaeological resource items in accordance with mitigation measures H3 and H8. Section 8 outlines risk management strategies relating to Non-Aboriginal heritage. Environmental Design Review Reports will detail the recommendations of the heritage architect/engineer and how those recommendations have been considered and actioned.
HE-5	An Exhumation Policy and Guideline would be prepared prior to construction as part of the Heritage Management Sub-plan and would inform the unexpected finds procedure in relation to the unexpected discovery of human remains. It would be developed in accordance with the Guidelines for Management of Human Skeletal Remains (NSW Heritage Office, 1998).	Pre-construction	Exhumation Management Plan	Due to an inconsistency between the Planning Approval (CoA E61) and the SPIR (REMMM HE-5), the JV has prepared an Exhumation Management Plan (August 2020) as a standalone document prior to conducting construction works in sensitive archaeological areas as defined by the Excavation Director (i.e. St. Patrick's Cemetery). The Exhumation Management Plan was developed in accordance with the <i>Guidelines for Management of Human Skeletal Remains</i> (NSW Heritage Office, 1998) and in consultation with Heritage NSW. The final Exhumation Management Plan is to be provided to the DPIE for information. Following finalisation of the Exhumation Management Plan, the Unexpected Heritage Finds Procedure was reviewed to confirm consistency in process.

Ref #	Commitment	Timing	Document Reference	How Addressed
				This requirement is included in Table 7-1 as mitigation measures H12 and H13.
HE-6	The mitigation measures for Zone 1 – State significant historical archaeology will apply to the following HAMU: - HAMU 4 – Cumberland Hospital (east) - HAMU 8 – Roman Catholic Cemetery - HAMU 13 – Prince Alfred Square - HAMU 18 – The Town Drain – Macquarie Street and Barrack Lane - HAMU 20 – Robin Thomas - HAMU 21 – Commissariat and barracks (George Street east) - HAMU 31 – Grave of Elinor Magee and Child.	Pre-construction Construction	Table 6-3 Section 7 Section 8	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Additional mitigation measures for Zone 1 HAMUs are detailed in Table 6-3. Section 8 outlines risk management strategies relating to Non-Aboriginal heritage.
HE-6	The mitigation measures for Zone 2 – Locally significant historical archaeology will apply to the following HAMUs: - HAMU 1 – Eastern side of Hawkesbury Road including the road corridor - HAMU 2 – Western side of Hawkesbury Road including the road corridor - HAMU 3 – Cumberland Hospital (west) - HAMU 5 – Factory Street	Pre-construction Construction	Table 6-2 Section 7 Section 8	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Table 6-2 details additional site-specific mitigation measures to be implement during the Project. Section 8 outlines risk management strategies relating to Non-Aboriginal heritage.

Ref #	Commitment	Timing	Document Reference	How Addressed
	- HAMU 7 – Church Street - HAMU 9 – Parramatta North Public School - HAMU 10 – Church Street west (between Fennel and Harold Street) - HAMU 11 – Royal Oak Hotel - HAMU 12 – Parramatta North off-corridor works - HAMU 14 – Phillip Street - HAMU 15 – George Street - HAMU 16 – Macquarie Street - HAMU 17 – Horwood Place - HAMU 19 – Barrack Lane - HAMU 22 – Smith Street - HAMU 23 – Charles Street - HAMU 24 – Parramatta CBD off-corridor works - HAMU 25 – Tramway Avenue - HAMU 27 – Carlingford Railway Line - HAMU 28 – Sandown Line - HAMU 29 – Rosehill Gardens Racecourse - HAMU 32 – Female Orphan School			

Ref #	Commitment	Timing	Document Reference	How Addressed
	- HAMU 33 – The Ponds and Rydalmere Station - HAMU 34 – Dundas Railway Station - HAMU 35 – Carlingford Stock Feeds.			
HE-6	The mitigation measures for Zone 3 – Nil-low archaeological resource present will apply to the following HAMUs: - HAMU 6 – Westmead off-corridor works - HAMU 25 – The former Wunderlich Tile Factory - HAMU 26 – James Ruse Drive.	Construction	Table 6-2 Section 7 Section 8	Section 7 and Table 6-2 detail mitigation measures to be undertaken in order to reduce impacts on items of Heritage, including those within Zone 3 HAMUs. Section 8 outlines risk management strategies relating to Non-Aboriginal heritage.
HE-7	In relation to HAMU 4 – Cumberland Hospital (east), the following mitigation and management measures would be implemented: - Thorough archaeological investigation of potential archaeological remains associated with Mrs Bett's House and the Lunatic Asylum would be required prior to the proposed excavation works commencing in these areas as required in accordance with the Zone 1 archaeological management measures. - Alternative construction methods would be identified and considered for the Grose Street Drain (local significance). Should impact to a section of the drain be unavoidable, archaeological investigation of this area	Pre-construction Construction	Table 6-3 Section 7 Section 8	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Additional mitigation measures for HAMU 4 have been included in Table 6-3. Section 8 outlines risk management strategies relating to Non-Aboriginal heritage.

Ref #	Commitment	Timing	Document Reference	How Addressed
	would be carried out prior to excavation works.			
HE-8	In relation to HAMU 18 – The Town Drain – Macquarie Street and Barrack Lane, alternative construction methods would be investigated and considered for works in the location of the town drain in George Street in order to retain this section of the drain where feasible.	Pre-construction	Table 6-3 Section 7 Section 8	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Additional mitigation measures for HAMU 18 have been included in Table 6-3. Section 8 outlines risk management strategies relating to Non-Aboriginal heritage.
HE-9	Appropriate heritage interpretation would be incorporated into the detailed design of the project and would include results of archaeological investigations. An Interpretation Plan would be prepared for the project in accordance with the <i>NSW Heritage Manual</i>, the <i>NSW Heritage Office's Interpreting Heritage Places and Items: Guidelines</i> (August 2005), and the <i>NSW Heritage Council's Heritage Interpretation Policy</i>. This would apply across the project, in particular in relation to the following items: • Cumberland District Hospital Group. • Royal Oak Hotel and Stables (<i>and potential archaeological site</i>). • Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve).	Pre-construction Construction	Table 6-2 Section 7	Table 6-2 and Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. A Heritage Interpretation Strategy was prepared by GML Heritage (current version April 2020). Heritage interpretation will be incorporated into detailed design as appropriate. This commitment is included as a mitigation measure H6 in Table 7-1.

Ref #	Commitment	Timing	Document Reference	How Addressed
	- Camellia Underbridge Abutments (south and north). - Dundas Railway Station Group. - Carlingford Stock Feeds. <i>*Note: It is noted that Condition E64 also requires heritage interpretation for:</i> <i>Parramatta Female Factory and Institutions Precinct within the Cumberland District Hospital Group</i> <i>Lennox Bridge</i> <i>St Patrick's Roman Catholic Cemetery</i> <i>The Convict Lumberyard (Arthur Phillip High School site)</i> <i>Queen's Wharf Reserve and stone wall and potential archaeological site</i> <i>Prince Alfred Square (and potential archaeological site)</i> <i>Clyde Carlingford Rail Bridge abutments (Northern)</i> <i>Clyde Carlingford Rail Bridge abutments (Southern).</i>			
HE-10	The platforms, stops and substations would be designed to remain non-obtrusive with limited bulk to minimise visual impacts on heritage items	Pre-construction	Section 7 Table 7-1	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. These site-specific mitigation measures will be implemented during pre-construction and construction phases of the Project.

Ref #	Commitment	Timing	Document Reference	How Addressed
	in the vicinity to respect the historical landscape of the project. Form, fabric and palette would respond to place and context, and respect the heritage values of the area. Where possible, the recommendations of the Interpretation Plan would be incorporated into design. Ancillary works required by the project related to power supply, drainage facilities, railway tracks, OHW and any other works would be designed to minimise impacts on heritage items and areas of archaeological potential as much as feasible within the context of the project. This would apply across the project, in particular, with respect to the following heritage items: • Western Sydney University • Cumberland District Hospital Precinct • Alfred Square (and potential archaeological site) • Lennox Bridge • Anthony Malouf and Co • St Peter's Uniting Church and studio theatre • Shop (and potential archaeological site) (item I663) • Shop (item I662) • Shop (item I661)			These commitments are included as mitigation measure H2 in Table 7-1.

Ref #	Commitment	Timing	Document Reference	How Addressed
	- Parramatta House (and potential archaeological site) - Westpac Bank - Warders Cottages - Convict Barracks Wall - Dundas Railway Station Group - Carlingford Stock Feeds.			
HE-11	During detailed design and construction planning, opportunities to minimise impacts on the Cumberland District Hospital Precinct would be explored including: - Considering a wire-free design in this area to reduce visual impacts. - Design of the Parramatta North Bridge to minimise visual impacts and retain significant views and vistas to the nineteenth century heritage landscape. A high-quality design would be prepared in consultation with an experience heritage architect. - The light rail stop would be designed to minimise visual impacts. Appropriate tree plantings would be included in the design to soften the relationship of the light rail stop in the existing environment. - Design of roadworks would seek to prioritise the retention and protection of kerbing.	Pre-construction	Section 7 Table 6-2	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Table 6-2 addresses site specific mitigation measures for the Cumberland Distinct Hospital Precinct to be implemented during pre-construction and construction phases of the Project. Mitigation measure H3 in Table 7-1 includes provisions for the Heritage architect to review the detailed design.

Ref #	Commitment	Timing	Document Reference	How Addressed
	Impacts to significant trees and plantings would be avoided where possible. The Heritage Division (as delegate of the NSW Heritage Council) would be consulted during detailed design.			
HE-12	An appropriately qualified and experienced heritage architect to provide independent review periodically throughout detailed design in relation to the following heritage items: - Cumberland District Hospital Precinct - Alfred Square (and potential archaeological site) - Lennox Bridge - Dundas Railway Station Group. The detailed design report(s) prepared for the project would document how the recommendations of the heritage architect / engineer have been considered and actioned.	Pre-construction Construction	Table 6-2 Section 7 Table 7-1 CEMP, section 1.5.3	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Table 6-2 includes additional measures to be implemented for various heritage items during pre-construction and construction phases of the Project. Independent review of the detailed design will be provided periodically for the listed heritage items. This commitment is included as mitigation measure H3 in Table 7-1.
HE-13	A moveable heritage item strategy would be prepared by a suitably qualified heritage consultant and include a comprehensive record of all moveable heritage. The moveable heritage item strategy will form part of a broader interpretation strategy for the project and will include the following items: Cumberland District Hospital Precinct	Pre-construction Construction	Section 7 Table 6-2	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Table 6-2 addresses additional mitigation measures and recommendations for various heritage items. Following completion of archaeological testing and design, the Interpretation Strategy is to be revised to capture a moveable heritage item strategy. This commitment is included as mitigation measure H7 in Section 7.

Ref #	Commitment	Timing	Document Reference	How Addressed
	- Royal Oak Hotel and stables - Dundas Railway Station Group.			
HE-14	Prior to the commencement of construction, photographic archival recording and reporting would be carried out in accordance with the NSW Heritage Office's <i>How to Prepare Archival Records of Heritage Items</i> (1998), and <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (2006). The record would be prepared by a suitably qualified heritage consultant using archival-quality material. Records for State Heritage Register (SHR) listed items would be held at the NSW Heritage Council, the State Library and the owner of the asset. Records for locally-listed items would be held by the local council, the local library/studies and the owner of the asset. Specific items subject to archival recording would be documented as part of the Heritage Management Sub-plan and would include: - Cumberland District Hospital Precinct - St Patrick's Roman Catholic Cemetery - Royal Oak Hotel and Stables - Alfred Square (and potential archaeological site) - Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve)	Pre-construction	Table 6-2 Section 7 Table 7-1	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Table 6-2 addresses additional mitigation measures and recommendations for the listed heritage items. Archival recording and reporting will be carried out prior to demolition or modification and is included as mitigation measure H9 in Table 7-1.

Ref #	Commitment	Timing	Document Reference	How Addressed
	- Camellia Underbridge Abutments (south and north) - Dundas Railway Station Group.			
HE-15	Prior to total or partial demolition of heritage items or elements located within the boundaries of a heritage item, heritage fabric would be identified for salvage and reuse opportunities considered. Components of high and exceptional significance recommended for conservation and reuse would be listed within a salvage schedule to be incorporated within a Salvage Scheme for the project. The scheme would indicate appropriate storage locations as well as appropriate types of buildings and structures where the salvaged elements may be reused. This would apply to the following items: - Cumberland District Hospital Precinct. - Stone kerbing and trees (I362). - Stone kerb and gutter (I353). - Stone kerb and gutter (I329). - Camellia Underbridge Abutments (south and north). - Dundas Railway Station Group (platforms).	Pre-construction	Table 6-2 Section 8 Table C-2 Table C-1	Table 6-2 addresses potential construction heritage impacts, management measures, and recommendations, including salvage opportunities for the listed items. Table C-2 addresses the unaffected items and Table C-1 provides further information on project impacts to the items. A salvage scheme for Non-Aboriginal archaeology and heritage is detailed in Section 8.
HE-16	For State Heritage Register items, existing Conservation Management Plans (CMPs) would inform the design and construction methodology in that area. Where impacts to SHR items would	Pre-construction	Section 7 Table 6-2	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Table 6-2

Ref #	Commitment	Timing	Document Reference	How Addressed
	modify the item or impact significant elements, updated CMPs would be prepared which would include recommendations on amendments to curtilage. This would apply to the following items: • Cumberland District Hospital Precinct • St Patrick's Roman Catholic Cemetery • Alfred Square (and potential archaeological site) • Lennox Bridge • Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve) • Sewage Pumping Station 67 • Rydalmere Hospital Precinct (former) • Dundas Railway Station Group.		Table C2	details additional management measures and recommendations, including for the listed items. Existing CMPs will inform the design and construction methodology for State Heritage Register items and are included as mitigation measure H10 in Section 7. Table C2 lists the unaffected items.
HE-17	During detailed design and construction planning, opportunities to reduce direct impacts on trees where they contribute to the heritage character of a location would be investigated in accordance with the tree mitigation and management measures, including trees and plantings associated with the following heritage items: • Cumberland District Hospital Precinct. • Street trees along O'Connell Street that form part of heritage item (I362).	Pre-construction	Table 6-2 Table C1	Opportunities to reduce direct impacts on trees that contribute to a location's heritage character will be identified and implemented where feasible. A Tree Register will be developed and maintained by the Independent Arborist (IA). A design review for impacts to trees will be completed and included in the Environmental Design Review Report for each design package (refer to the CEMP, Section 1.5.3). Tree Protection Plans will be prepared for all retained trees by the JV Arborist and approved by the IA.

Ref #	Commitment	Timing	Document Reference	How Addressed
	- St Patrick's Roman Catholic Cemetery. - Alfred Square (and potential archaeological site). - Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve). - Queen's Wharf Reserve and stone wall and potential archaeological site. - Wetlands. - Trees in median strip. - Rydalmere Hospital Precinct.			Table 6-2 details additional management measures and recommendations, including noting opportunities for the retention of trees within the vicinity of the listed items. Table C1 provides further information on Project impacts to the items.
HE-18	During detailed design and construction planning, opportunities to appropriately reuse the Camellia underbridge abutments would be explored in consultation with a heritage architect.	Pre-construction	Table 6-2 Section 8	A salvage scheme for Non-Aboriginal archaeology and heritage is detailed in Section 8. This commitment is also reflected in Table 6-2.
HE-19	During detailed design and construction planning, opportunities to reduce impacts on Dundas Railway Station Group would be explored including improving the interface design between the proposed light rail infrastructure and the existing heritage infrastructure, including the potential adaptive reuse of original heritage infrastructure as part of the light rail stop. Any adaptive reuse would be developed in consultation with a heritage architect.	Pre-construction	Table 6-2 Section 7 Table 7-1	Detailed design and construction planning will be used to identify any options to reduce impacts to Dundas Railway Station Group. This commitment is included as a mitigation measure in Table 6-2. Throughout detailed design, an appropriately qualified and experience heritage architect will periodically provide independent review. This has been included as mitigation measure H3 in Table 7-1.

Ref #	Commitment	Timing	Document Reference	How Addressed
HE-21	An Aboriginal and non-Aboriginal Management Plan would be prepared as described in AB-2. In addition, archaeological monitoring of construction excavation activities would be carried out by a qualified archaeologist based on the Historical Archaeological Research Design to record any significant remains uncovered by excavation (in accordance with HE-3). Examples of where archaeological monitoring may be required include: • Low impact construction activities (such as narrow trenching) in areas of moderate to high potential for local or State significant relics. • Areas with low potential to contain remains of State significance.	Pre-construction Construction	Section 7 Section 10.3	This Sub-plan has been developed to address both Aboriginal and Non-Aboriginal impacts. Mitigation measures to minimise impacts are outlined in Section 7. Monitoring requirements have been outlined in Section 10.3.
HE-22	The construction methodology (including for demolition of existing buildings and/or structures) would be developed to minimise direct and indirect impacts on adjacent and/or adjoining heritage items. This would include consideration of potential vibration related impacts, where identified in the Construction Noise and Vibration Management Plan.	Pre-construction	Section 7 Noise and Vibration Management Sub-plan (Section 9.1)	The construction methodology is to consider potential impacts to heritage items. Specifically, a Construction Noise and Vibration Impact Statement (CNVIS) is to be prepared and implemented for each construction site before construction noise and vibration impacts commence and include specific mitigation measures identified through consultation with affected sensitive receivers. Where works are located adjacent and/or adjoining to heritage items, mitigation measures will focus on vibration impacts. These will be communicated through the site induction, toolbox talks and pre-starts and documented on relevant EWMS and ECMs.

Ref #	Commitment	Timing	Document Reference	How Addressed
				This commitment is included as mitigation measure H5 in Section 7.
HE-23	In relation to HAMU 31 – Grave of Elinor Magee and Child, the grave site would be identified in the Environmental Control Maps and protected and avoided during construction works.	Construction	Table 6-2 Table 6-3	ECMs will be prepared and communicated to workers. An appropriate exclusion zone will be established and documented on the ECMs. This commitment is included as a mitigation measure in Tables 6-2 and 6-3.
Aboriginal Heritage				
AB-1	Aboriginal heritage interpretation would be incorporated into the design of the project in consultation with registered Aboriginal stakeholders.	Pre-construction	Section 7	An Interpretation Strategy has been prepared (GML Heritage, current version April 2020) and will be incorporated into detailed design. This commitment is included as mitigation measure H6 in Section 7.
AB-2	An Aboriginal and non-Aboriginal Heritage Management Plan would be prepared as part of the CEMP. Specific measures would be identified in consultation with NSW Office of Environment and Heritage (OEH) and other relevant government agencies. As relevant, the Plan would be developed in consultation with Registered Aboriginal Parties. The objectives and strategies of the Plan would include the following: - Minimise impacts on items or places of heritage value. - Procedures for carrying out salvage or excavation of Aboriginal objects or sites	Pre-construction	Section 2 Section 4 Section 7 Section 10	This Sub-plan has been developed as part of the CEMP. Consultation has been undertaken, and a summary provided in Section 4. Objectives and targets of this Sub-plan are outlined in Section 2.2 and 2.3. Section 7 outlines the Environmental Mitigation and Management Measures, including the requirement to prepare a Heritage Archival Recording and procedures for the reinstatement of impacted areas of heritage value. Processes to implement this Sub-plan, and ensure its effectiveness are outlined in Section 10.

Ref #	Commitment	Timing	Document Reference	How Addressed
	(where relevant) and any recordings of Aboriginal objects or sites prior to works commencing that would impact the heritage relic or site. • Procedures for interpretation of heritage values uncovered during salvage or excavation during detailed design. • Details on management measures to be implemented to prevent and minimise impacts on heritage items (including further heritage investigations, archival recordings and/or measures to protect unaffected sites during construction works in the vicinity). • Procedures for unexpected heritage finds, including procedures for dealing with human remains (and burials). The Transport for NSW Unexpected Heritage Finds Guideline (2014) would be implemented. • Procedures for the reinstatement of areas of heritage value that would be temporarily impacted by construction following the completion of construction. • Heritage monitoring and auditing requirements.			
AB-3	Archaeological salvage excavation (in accordance with the methodology detailed in <i>Technical Paper 4 – Parramatta Light Rail: Aboriginal Cultural Heritage Assessment</i>) would	Pre-construction	Table 7-1 Section 9.3	Salvage excavation will be undertaken at these sites under the management of the Excavation Director. This procedure will be communicated through the site induction, toolbox talks and pre-starts.

Ref #	Commitment	Timing	Document Reference	How Addressed
	be carried out for the following sites prior to the commencement of construction: • Cumberland Hospital East • Harris Street Footpath/Robin Thomas Reserve • PLR AFT 2 (formerly PLR PAD 4*) • Sydney Turf Club car park. <i>[*Note: The SPIR refers to PAD 2, however the correct reference is PAD 4 as per the EIS, Technical Paper 4, CHAR]</i>			This commitment is included as mitigation measure H15 in Table 7-1.
AB-4	Exclusion zones would be established during construction for the following partially impacted sites to protect the portion of the site located outside the project construction disturbance boundary: • Cumberland Hospital East. • Harris Street Footpath/Robin Thomas Reserve. Suitable controls would be identified in the Heritage Management Sub-plan and shown on the Environmental Control Maps (refer Transport for NSW Guide to Environmental Control Map), which may include barrier fencing to delineate the exclusion zones.	Construction	Section 7	Barrier fencing and exclusion zones will be in place within Cumberland Hospital East and Harris Street Footpath/Robin Thomas Reserve, and these will be outlined on relevant EWMS and ECMS. This commitment is included as mitigation measure H16 in Section 7.
Visual and landscape character				

Ref #	Commitment	Timing	Document Reference	How Addressed
VL-2	An UDLP would be prepared for the project. The plan would include: - Integration with the adjacent built environment. - Design detail that responds to the amenity and character of the local area and heritage items located within or adjacent to the project area, including for the following sites / items: - Cumberland District Hospital Precinct. - North Parramatta Conservation Area. - Stable (and potential archaeological site). - Ancient Aboriginal and Early Colonial Landscape. - Sewage Pumping Station 67. - Rydalmere Hospital Precinct. - Dundas Railway Station Group. - Carlingford Stock Feeds. - Materials and finishes. - Location and design of proposed project elements including footpaths and active transport, street furniture, bicycle storage and lighting. - Proposed plantings. - Opportunities for locations to display public art. The UDLP would be prepared in	Pre-construction	Urban Design Requirements Report	The requirements of this condition are addressed in the Urban Design Requirements Report. Assurance that the requirements will be achieved is provided by the compliance tracking systems for the Project, including INX and Requirements Verification Traceability Matrix (RVTM) (refer to Section 1.5.3 of the CEMP).

Ref #	Commitment	Timing	Document Reference	How Addressed
	consultation with local council and other relevant stakeholders.			
VL-4	Detailed design of new bridges would be carried out in accordance with Bridge Aesthetics: Design guidelines to improve the appearance of bridges in NSW (RMS, 2012).	SDR, PDR, DDR and AFC design package submissions	Bridge design packages	The referred guidelines are part of the SPR design requirements. This will be addressed in each bridge design package submission. As detailed in Section 3.9.5 of the CEMP, assurance that these requirements will be achieved is provided by the compliance tracking systems for the Infrastructure Works, including INX and RVTM.
VL-6	During detailed design, opportunities would be investigated where feasible to retain vegetation in order to screen and visually integrate the project with the surrounding area, and where required, additional tree planting and landscaping would be provided to screen views in order to soften the visual impact of the project including: • Along Hawkesbury Road. • Within the Cumberland Hospital (east and west). • Riparian areas in the vicinity of bridge crossings. • Along the O'Connell Street perimeter of the Parramatta Gaol. • St Patrick's Roman Catholic Cemetery. • Within Prince Alfred Square. • Within Robin Thomas Reserve. • Within Queen's Wharf Reserve.	Design	Section 7 of the FFMP Appendix A of the FFMP	Opportunities to retain vegetation will be considered during detailed design as per Section 7 of the FFMP.

Ref #	Commitment	Timing	Document Reference	How Addressed
	- Along the boundary of the stabling and maintenance facility site. - Along the site boundary with the Western Sydney University campus. - Along the Carlingford Line.			
VL-7	During detailed design, opportunities would be investigated for grass track treatments to mitigate visual impact on sections of the alignment, for example through key heritage areas such as: - Cumberland Hospital (east). - Robin Thomas Reserve.	Design	Grass Track Feasibility Assessment	A Grass Track Feasibility Assessment has been prepared by TfNSW to investigate opportunities for grass track treatments to mitigate visual impact on sections of the alignment such as Cumberland Hospital (east) and Robin Thomas Reserve. The Feasibility Assessment is to be submitted to the Planning Secretary for information before construction commences in the nominated locations.
VL-8	During detailed design, opportunities would be investigated for wire-free sections of the alignment through key locations such as: - Cumberland Hospital (east). - Parramatta CBD precinct. - Robin Thomas Reserve (Ancient Aboriginal and Early Colonial Landscape).	Design	Wire-free Feasibility Assessment	A Wire-Free Feasibility Assessment has been prepared by TfNSW to investigate opportunities for wire-free sections of the alignment through key locations such as Cumberland Hospital (east), the CBD and Robin Thomas Reserve. The Feasibility Assessment is to be submitted to the Planning Secretary for information before construction commences in the nominated locations.
VL-9	During detailed design, where feasible opportunities would be investigated to refine the project footprint in order to reduce impact on key heritage areas such as: - St Patrick's Roman Catholic Cemetery. - Prince Alfred Square. - Robin Thomas Reserve.	Design	Section 7	Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Archaeological investigations are to be undertaken to inform detailed design so project impacts can be minimised as feasible and reasonable. The outcomes of the archaeological investigations and recommendations of the Excavation Director will be reflected in the Environmental Design Review Reports.

Ref #	Commitment	Timing	Document Reference	How Addressed
VL-13	Measures to minimise direct and visual impacts on heritage items from works within the curtilage of or in the vicinity of heritage items.	Construction		Section 7 details mitigation measures to be undertaken in order to reduce impacts on heritage items. Mitigation measure H5 details specific considerations to minimise direct and indirect impacts on adjacent and/or adjoining heritage items.
Trees				
TR-1	The detailed design and construction planning would demonstrate in the design report that they have sought to avoid direct impacts to trees located near or on the alignment and minimise the level of impact identified in the EIS. Particular consideration would be given to those trees that: - Are large trees, as defined in the Transport for NSW Vegetation Offset Strategy. - Are medium or high retention value trees, as identified via application of the Significance of a Tree Assessment and Rating System endorsed by the Institute of Australian Consulting Arboriculturalists.	Design Construction	Sections 7.1.1, 7.1.2 and 7.1.3 of the FFMP	A Tree Register will be developed and maintained by the Independent Arborist (IA). A design review for impacts to trees will be completed and included in the Environmental Design Review Report for each design package. Tree Protection Plans will be prepared for all retained trees by the JV Arborist and approved by the IA.
TR-6	Temporary tree protection measures would be installed prior to construction works commencing in accordance with AS 4970-2009 - Protection of Trees on Development Sites as required for any trees to be retained within active construction sites.	Pre-construction	Section 7.1.3 of the FFMP Table 7-1 of the FFMP	This measure will be detailed in the Tree Protection Plans approved by the IA. This commitment has been included as mitigation measure VM20 of the FFMP.

Ref #	Commitment	Timing	Document Reference	How Addressed
TR-7	Where activities which could cause soil compaction within the tree protection zone (TPZ) of trees to be retained cannot be avoided (e.g. due to space constraints), opportunities to raise construction facilities (e.g. demountable) above the ground level or use of suitable ground protection measures beneath site access tracks (e.g. geotextile fabric) would be investigated and implemented, where feasible, so as to avoid impacting on the underlying tree roots, in accordance with Australian Standard AS 4970 Protection of Trees on Development Sites	Construction	Table 7-1 of the FFMP	Table 7-1 of the FFMP details mitigation measures to be undertaken to reduce impacts on flora and fauna. This commitment has been included as mitigation measure VM21 of the FFMP.

3.4 Environmental Performance Outcomes

Relevant EPOs are listed in **Table 3-3** below. This includes reference to required outcomes, the timing of when the commitment applies relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table 3-3: Environmental Performance Outcomes relevant to this HMP

ID Ref#	Environmental Performance Outcome	Timing	HMP reference	How Addressed
EPO-HE-1	The design of the project would reflect the input of an independent heritage architect and, for Lennox Bridge, a heritage engineer, at key locations and relevant stakeholders.	Pre-construction	Table 6-2	The design of the Infrastructure Works will include consultation with an independent heritage architect and/or engineer where appropriate. Specifically, an appropriately qualified and experienced heritage architect will provide independent review throughout detailed design. This is specific to the following heritage items:

ID Ref#	Environmental Performance Outcome	Timing	HMP reference	How Addressed
				• Lennox Bridge • Cumberland District Hospital Group • St. Patricks Roman Catholic Cemetery • Prince Alfred Square • Robin Thomas Reserve • Queen's Wharf Reserve and stone wall and potential archaeological site • Dundas Railway Station Group. This has been reflected against relevant heritage items in Table 6-2 and included in Table 7-1 as mitigation measure H3. Environmental Design Review Reports, prepared as part of the design process, will detail the recommendations of the heritage architect/ engineer and how those recommendations have been considered and actioned. In addition, the advice of a suitably qualified heritage architect or heritage engineer will be sought before installing acoustic treatment at any heritage item. This has also been included in Table 7-1 as mitigation measure H4.
EPO-HE-2	The project would be sympathetic to heritage items and, where feasible and reasonable, avoid and minimise impacts to non-Aboriginal heritage items and archaeology.	Pre-construction/ Construction	Table 6-2	The project and its construction will be sympathetic to items of heritage and seek to reduce impacts to non-Aboriginal heritage items and archaeology. This EPO has been addressed in Table 6-2.

ID Ref#	Environmental Performance Outcome	Timing	HMP reference	How Addressed
EPO-AB-1	The project would be sympathetic to heritage items and, where feasible and reasonable, avoid and minimise impacts on Aboriginal heritage items and archaeology.	Pre-construction/ Construction	Section 7	Section 7 details mitigation measures to be undertaken in order to avoid, minimise or manage construction impacts to Aboriginal heritage items and archaeology. This EPO has been addressed in Section 7.
EPO-AB-2	Appropriate Aboriginal heritage interpretation would be incorporated into the design of the project in consultation with registered Aboriginal stakeholders.	Pre-construction/ Construction	Section 7	Section 7 details mitigation measures to be undertaken in order to avoid, minimise or manage construction impacts to Aboriginal heritage items and archaeology. This performance outcome is reflected in Section 7.

4 Consultation

4.1 Consultation requirements under the Infrastructure Approval

Reflecting the requirements of CoA C3, the HMP has been prepared in consultation with the Heritage NSW and relevant Council(s).

This Sub-plan has been endorsed by the Environmental Representative (ER) and was submitted to the DPIE for approval no later than one month before the commencement of construction activities. This Sub-plan as accepted by DPIE, including any minor amendments approved by the ER, will be implemented for the duration of construction.

Condition A5, detailed as follows, outlines how consultation should be documented:

Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken in consultation with identified parties, evidence of the consultation undertaken must be submitted to the Secretary with the document or monitoring program or review. The evidence must include:

- (a) documentation of the engagement with the party(ies) identified in the relevant condition of approval before submitting the document for approval;*
- (b) log of the points of engagement or attempted engagement with the identified party(ies) and a summary of the issues raised by the identified party(ies);*
- (c) documentation of any follow-up with the identified party(ies), where feedback has not been provided, to confirm that the identified party(ies) has none or has failed to provide feedback after repeated requests;*
- (d) outline of the issues raised by the identified party(ies) and how they have been addressed, including evidence that the party(ies) is satisfied the issues have been addressed; and*
- (e) a description of any outstanding issues raised by the identified party(ies) and the reasons why.*

In accordance with CoA A5, consultation with the following stakeholders has been undertaken during the preparation of this HMP:

- Department of Planning, Industry and Environment (DPIE)
- Heritage NSW
- The Environmental Representative (ER) for the Project
- City of Parramatta Council (CoPC)
- Cumberland Council
- Registered Aboriginal Parties (as identified in the EIS).

Appendix B summarises the matters raised during consultation with the above stakeholders and how they have been addressed. Construction works will not commence until written approval of all relevant plans, including the HMP, have been received from the Planning Secretary.

A summary of consultation undertaken during the preparation of this HMP is provided below. Detailed consultation log and response to comments is provided in Appendix B.

Table 4-1 Summary of Consultation and Approval

Agency	Requirement	Status	Response	Date
Heritage NSW	Addition of mitigation measures relevant to Heritage. Updates to Table 6-2. Comments on Exhumation Policy Stage 1.	Addressed	Closed	31/10/2019
City of Parramatta Council	Produce an integrated Interpretation Strategy in consultation with relevant stakeholders. Need to investigate opportunities to minimise impact on the Royal Oak Hotel during detailed design is supported by CoPC.	Addressed	Closed	09/8/2019
Cumberland Council	No comments	Addressed	Closed	17/07/2019
Kamilaroi Yankuntjatjara Working Group RAP	Further details regarding the management of the PSB. Focus on highly significant Aboriginal site at Cumberland Hospital.	Addressed	Closed	26/07/2019
Muragadi RAP	No comments	Addressed	Closed	26/07/2019
Murra Bidgee Mullangari RAP	No comments	Addressed	Closed	23/07/2019
Tocomwall RAP	Implementation of APIC Policy during delivery stage	Addressed	Closed	16/07/2019
Walbunja RAP	No comments on the HMP. Information was requested regarding Aboriginal archaeological works performed to date and Aboriginal procurement strategy for the project.	Addressed	Closed	03/09/2019

Agency	Requirement	Status	Response	Date
Darug Land Observations RAP	No comments	Addressed	Closed	22/08/2019
Widescope Indigenous Group RAP	No comments	Addressed	Closed	23/08/2019
Darug Aboriginal Land Care RAP	No comments	Addressed	Closed	03/09/2019

4.2 Aboriginal Consultation

Consultation with Registered Aboriginal Parties (RAPs) was undertaken during preparation of the Heritage Management Sub-plan. Details on issues raised and how they have been addressed can be found on Appendix B. Consultation opportunities will also be provided to the RAPs during the development of Infrastructure Package media releases that involve Aboriginal heritage and culture.

Aboriginal Representatives participated in the Aboriginal archaeological testing activities and will also be present during archaeological salvage activities.

In compliance with the Project Deed and to assist with Aboriginal consultation, the JV will engage with an Aboriginal Focus Group (AFG) to provide updates on the progress of the works and forthcoming activities and provide updates on the progress of commitments made in the Aboriginal Cultural Heritage Assessments Report prepared for the EIS. AFG meetings will be scheduled in conjunction with key activities or PLR Stage 1 milestones.

Options for the repository, reuse or display of heritage items unearthed during the Infrastructure Works will be developed by the JV and provided to RAPs (as appropriate) in addition to Councils and the Department of Premiers and Cabinet (former OEH). Further consultation with both the RAPs and the AFG will occur following salvage activities.

5 Existing Environment

5.1 Non-Aboriginal Heritage

Non-Aboriginal heritage within and adjacent to the footprint of the Infrastructure Works was identified in the EIS through a search of relevant State and federal statutory heritage registers (**Appendix C**). The key reference documents are the Parramatta Light Rail Built Heritage Impact Assessment prepared by Artefact (August 2017), the Parramatta Light Rail Non-Aboriginal Archaeological Assessment prepared by Artefact (August 2017) which accompanied the EIS, and the SPIR.

It is noted that some items have multiple heritage values including built heritage, archaeological and Aboriginal cultural heritage. Relevant examples include the Cumberland District Hospital Group, Parramatta Female Factory Precinct, St Patricks Roman Catholic Cemetery, Royal Oak Hotel, Prince Alfred Square, Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve), Queen's Wharf Reserve and Carlingford Stock Feeds.

All non-Aboriginal heritage items are captured within the Project Geographical Information System (GIS) and included in relevant Environmental Control Maps.

5.1.1 Non-Aboriginal Heritage Items

The non-Aboriginal (built) Heritage Assessment identified a high density of heritage items within or in the immediate vicinity of the Project area and provided an assessment of the potential impact of the Project on these items.

Appendix C (Table C-1) provides a summary of the affected heritage items identified, including places, buildings, works, relics, moveable objects and precincts. Of the heritage items identified, it has been assessed that the Infrastructure Works will result in minor impacts to fifty-five heritage items (twenty-eight of which are potential indirect impacts), moderate impacts to five items and major impacts to three of the identified heritage items.

Additional heritage items that are not affected by the Project, but located on or near the alignment, are detailed in **Appendix C (Table C-2)**.

Should further impacts to heritage items be identified during detailed design, these are to be assessed by the Heritage Consultant, who will recommend mitigating measures for adverse impacts and identify implications for compliance with the Conditions of Approval.

5.1.2 Historical Archaeology

The Archaeological Assessment² identified known and potential archaeological sites of State and local significance within the Project area and identified the works with the potential to impact these sites. The sites have been divided into Historical Archaeological Management Units (HAMUs), which were developed in the EIS based on land-use history, historic plans, pre-existing studies and previous archaeological investigations in the vicinity of the Project area.

Appendix C (Table C-3) provides a summary of the items identified at EIS stage and updated through the development of the HARD³.

² Parramatta Light Rail. Non-Aboriginal Archaeological Assessment. Report to WSP/Jacobs on behalf of Transport for NSW (Artefact, August 2017)

³ Historical Archaeological Research Design and Excavation Methodology (GML, August 2019).

5.2 Aboriginal Heritage

The following sections summarise what is known about Aboriginal archaeology within and adjacent to the footprint of the Infrastructure Works. The key reference document is the Parramatta Light Rail Aboriginal Cultural Heritage Assessment Report (ACHAR) prepared by Kelleher Nightingale Consulting Pty Ltd (August 2017) which accompanied the EIS and the PLR Aboriginal Archaeological Assessment prepared by Artefact (August 2017).

5.2.1 Aboriginal Archaeological Sites

The cultural assessment and consultation process undertaken for the EIS identified five Aboriginal archaeological sites (**Table 5-1** and **Appendix C, Table C-4**). The location of these items is shown on the locality maps (**Appendix D**), the Project GIS and the Environmental Control Maps.

In addition to the sites identified through the EIS, the Parramatta Sand Body (PSB) is predicted to contain further high value Aboriginal sites dated between 40,000 years and the contact period. The PSB is a clayey sand sheet located either side of the Parramatta River. The Project alignment traverses east to west across the PSB south of the river. The whole PSB is therefore identified as a potential Aboriginal archaeological deposit.

The presence and location of Aboriginal sites within the PSB in connection with the Project will require additional assessment as outlined in Section 9 of this Sub-plan.

Table 5-1: Aboriginal archaeological sites (adapted from Kelleher, 2017)

Name	Location	Significance ⁴	Impact Assessment
Cumberland Hospital East	Parramatta North Precinct	Moderate-High	Partial impact
Harris Street Footpath / Robin Thomas Reserve	Parramatta CBD Precinct	Moderate-High This site is part of the Robin Thomas Reserve, which is listed on the State Heritage Register (id:01863)	Partial impact
PLR AFT 1	Parramatta CBD Precinct	Low	Total impact
PLR AFT 2	Rosehill and Camellia Precinct	Moderate	Total impact
Sydney Turf Club Carpark	Rosehill and Camellia Precinct	Moderate	No impact

⁴ Significance refers to the scientific significance of Aboriginal heritage values as identified in The Burra Charter (Australia ICOMOS 2013). As detailed in Kelleher (2017) the identification of significance relating to the archaeological sites was developed in consultation with the registered Aboriginal stakeholders.

6 Environmental Aspects and Impacts

An environmental risk assessment process was undertaken to identify the key aspects and potential impacts in relation to the management of Aboriginal and non-Aboriginal heritage. These are summarised in Table 6-1 and provided in Section 3.1 of the CEMP.

Table 6-1: Aspects and Impacts Summary

Aspects	Potential Impacts
Known non-Aboriginal heritage items	Temporary alteration or permanent disturbance/destruction to known archaeological and built heritage items and/or curtilage.
Known Aboriginal heritage items	Partial and/or permanent disturbance/destruction to identified Aboriginal heritage items.
Unexpected finds	Disturbance or destruction of unidentified archaeological and built heritage sites/items.
Modifications to design and construction footprint	Construction activities in areas not previously assessed to be impacted resulting in disturbance or destruction of sites/items.
Cultural landscape	A loss of cultural landscape recognition and connection along the PLR route, consequent of treating Aboriginal heritage as isolated separate archaeological sites.
Intangible values	An absence of understanding social, historical and aesthetic values associated with the PLR route.

As the spatial extent and distribution of sub-surface archaeological deposits are often unknown, the potential impacts can be broadly separated into two sections; potential impacts to known heritage and potential for unexpected finds.

Intangible and cultural landscape values are not connected with any one site, but traverse the whole of Parramatta, connecting Aboriginal places with the known stories, and the ancient, traditional and contemporary aesthetics of Parramatta. The PLR represents an opportunity to connect these landscapes, stories and aesthetics together. This would contribute toward the Aboriginal heritage strategic goals under the City of Parramatta's '*Culture and Our City. A cultural plan for Parramatta's CBD 2017-2022.*'

Typical construction activities associated with the Infrastructure Works that may result in impacts to Aboriginal and non-Aboriginal heritage are outlined in Section 6.1 and were used as the basis of the risk assessment. As construction design progresses this risk assessment will require updating.

6.1 Construction Activities

Key aspects of the Infrastructure Works that could result in adverse impacts to heritage include:

- Early works including non-substantial construction activities such as services relocations
- Initial clearing and/or grubbing of vegetation
- Initial removal of topsoil

- Construction of site compounds
- Planned salvage of Aboriginal archaeological sites and non-Aboriginal heritage items
- Earthworks, including those in previously undisturbed areas or at a depth below modern disturbance and road/footpath surfaces
- Temporary access roads during construction.

6.2 Heritage Impacts

6.2.1 Non-Aboriginal Heritage Impacts

This section describes the identified actual and potential impacts and their management measures in relation to known Non-Aboriginal heritage recordings, landscapes, items and places.

The heritage items listed in Table 6-2 have been identified as key heritage items and as such, site-specific mitigation and management measures have been developed. These measures are in addition to the controls detailed in Section 7 which apply to all heritage items.

The environmental control maps (ECMs) for the project will incorporate adequate and appropriate mitigation measures and controls, including those from the HMP. They also identify key procedures to be used concurrently with the ECMs.

Table 6-2: Key Non-Aboriginal Heritage Items - Impacts, Management Measures and Recommendations

Item	Project Impact	Mitigation and Management Measures and Recommendations
Parramatta North Precinct		
Cumberland District Hospital Group	The proposed Project alignment, Cumberland Hospital stop, Westmead compound and Parramatta North compound will be located within this item. This involves the construction of a new bridge over Parramatta River, to the south of the existing bridge. A number of buildings within Cumberland District Hospital Group (East campus) have been identified for removal as part of the CSSI works (as part of Package 2). The Project will also involve removal of trees on the site, ranging from low to high significance. Sections of sandstone kerbs along the alignment will be removed, with potential for reuse within the site. The road alignments will be mostly retained, with the exception of the new bridge over Parramatta River. The Factory Street easement will be opened to its original form. The proposed works will introduce a new visual element into the precinct and alter the cultural landscape of the area, which could be mitigated in detailed design.	• Early archaeological investigations within this precinct are required in accordance with the HARD to inform the detailed design and respect and respond to State significant archaeology (CoA E65 and E68). Archival recordings will be undertaken by an experienced heritage consultant, in accordance with the guidelines issued by the Heritage Council of NSW (CoA E70, REMMM HE-14) • Outcomes from the Heritage Archival Recording and Salvage Report for the Westmead Precinct Works (Package 2) shall be considered in the Historical Interpretation Strategy regarding salvaged items • Items and fabric of heritage value will be salvaged and options for sympathetic re-use on the project, or other options for repository, re-use and display will be explored (REMMM HE-15) • The Cumberland District Hospital Group will be included in the Heritage Interpretation Strategy (CoA E64 and REMMM HE-9) • Consider a wire-free design to reduce visual impacts (REMMM HE-11) • Prepare the design of the Parramatta North Bridge in consultation with a heritage architect to minimise visual impacts and retained significant views (REMMM HE-11, VL-4) • Design the light rail stop to minimise visual impacts (REMMM VL-2); retain and/or incorporate tree plantings to soften the interface with the surrounds (REMMM HE-11, VL-6) • An appropriately qualified and experienced heritage architect will provide independent review throughout detailed design in relation to Cumberland District Hospital Group and consultation will be undertaken with the Heritage NSW (CoA E68). The heritage architect will be supported by an appropriate qualified and experienced heritage specialist and multidisciplinary team that will provide the necessary input to the design review process (CoA E68 and REMMMs HE-11 and HE-12, EPO-HE-1)

Item	Project Impact	Mitigation and Management Measures and Recommendations
	Overall, the Project will result in moderate direct and visual impacts, and minor potential indirect impacts, with minor positive impacts resulting from re-instated views. This item would continue to meet the threshold for State significance.	• The Cumberland District Hospital Group will be included in the Movable Heritage Strategy (REMMM HE-13) • Existing CMPs will inform the design and construction methodology and updated State Heritage Inventory data sheets will be prepared where SHR items are impacted or significant elements are modified. Construction methodology to be developed to minimise direct and indirect impacts on adjacent and/or adjoining heritage items (REMMM HE-16, HE-22) • Opportunities to reduce direct impacts on trees will be investigated through the design review process and documented in the Environmental Design Review Reports, including tree and root protection measures (REMMM HE-17, TR-6, TR-7)
Parramatta Female Factory Precinct (component of Cumberland District Hospital Group)	The Parramatta Female Factory gazetted on 14 November 2017 for National Heritage listing. The preferred alignment proposed in the EIS was selected to avoid impact on this heritage item, however the proposed works will have minor impacts to cultural landscape elements within the broader setting of this item.	• The Parramatta Female Factory Precinct will be included in the Heritage Interpretation Strategy (CoA E64 and REMMM HE-9). • Impacts of setting changes, including obscuration, on National Heritage values to be assessed and mitigated through wire-free design, green track and interpretation.
Stone kerbing and tree planting Stone kerb and gutter	Some trees and sandstone kerbs of heritage landscape value would likely be removed (I362, I353, and I329). During detailed design, opportunities to minimise impact on this item would be investigated. Where avoidance is not possible, heritage kerbing would be salvaged and reused.	• Prioritise the retention and protection of kerbing in the design of roadworks (REMMM HE-11). • Opportunities to reduce direct impacts on trees will be investigated, including tree and root protection measures (REMMM TR-6, TR-7). Items and fabric of heritage value will be salvaged and options for sympathetic re-use on the project, or other options for repository, re-use and display will be explored (REMMM HE-15).

Item	Project Impact	Mitigation and Management Measures and Recommendations
St Patrick's Roman Catholic Cemetery	Significant early cemetery with potential for undocumented burials outside the current boundaries. During the preparation of the HARD, it was determined that the historic boundaries of the cemetery were altered in the 1920's/1930's to allow widening of Church Street. St Patricks was used for paupers, convicts, infants and other poor people from Parramatta institutions, which traditionally were not buried in the main cemetery. The proposed project alignment would result in a direct impact to a small section of the north-western corner of the cemetery. Trees would be removed that are located outside the curtilage of the item beyond the current fence line along Church Street. A small section of the heritage curtilage of the cemetery would be partially impacted between the existing fence and Church Street. This would result in a minor direct impact to the item.	• Project approval does not allow impact, modification or harm to human remains (CoA E61). Procedure for discovery of suspected human remains is detailed in Section 7.1. • Ground Penetrating Radar (GPR), followed by ground truthing/ test excavations will be utilised to identify burials, or potential for burials, in the Project area to inform the program and detailed design. These early investigative actions and methodologies are included in the HARD • Additional approvals will be required if human remains are identified and redesign to avoid impact cannot be achieved. An Exhumation Management Plan will be prepared in accordance with the <i>Guidelines for Management of Human Skeletal Remains</i> (NSW Heritage Office, 1998) prior to conducting construction works in the vicinity of St. Patrick's Roman Catholic Cemetery • An appropriately qualified and experienced heritage architect will provide independent review throughout detailed design in relation to St. Patrick's Roman Catholic Cemetery (CoA E68). The heritage architect will be supported by an appropriate qualified and experienced heritage specialist and multidisciplinary team that will provide the necessary input to the design review process • Opportunities to reduce direct impacts on trees, including opportunities to incorporate tree plantings to soften the interface with the supports, will be investigated through the design review process, including tree and root protection measures (REMMM HE-17, VL-6) • Detailed design will have regard to this item to ensure that the design respects and responds to the heritage value and, where possible, refine the project's footprint to reduce impact to heritage items (CoA E68, REMMM VL-9) • A Heritage Archival Recording and Salvage Report will be undertaken by an experienced heritage consultant, in accordance with the Guidelines issued by the Heritage Council of NSW (CoA E70 and REMMM HE-14) • Existing CMPs will inform the design and construction methodology and updated State Heritage Inventory data sheets will be prepared where SHR items are impacted or significant elements are modified. (REMMM HE-16)

Item	Project Impact	Mitigation and Management Measures and Recommendations
		• St. Patrick's Roman Catholic Cemetery will be included in the Heritage Interpretation Strategy (CoA E64 and REMMM HE-9) • Opportunities to reduce direct impacts on trees will be investigated (REMM HE-17) • Retain and/or incorporate tree plantings to soften the interface with the surrounds (REMM VL-6).
Royal Oak Hotel	The proposal in the EIS is the demolition of the hotel portion, retention of rear stables, and construction of the light rail track through the site. The removal of the main building within the 'Royal Oak Hotel and stables (and potential archaeological site)' would result in a major direct impact to the heritage item. Much of the heritage significance and heritage fabric would be lost. While the item would still meet the threshold for local significance under the criteria, revision of its heritage curtilage on the Parramatta LEP would be required. There is considerable community objection to the demolition of this heritage item, and it is expected that by the removal of the historic fabric there will be a permanent loss of its historic, aesthetic and representative values, as well as deterioration of Church Street streetscape presence.	• Archaeological salvage excavation will be undertaken prior to construction impacts. The archaeological investigations will be in accordance with the HARD (REMM HE-2) • A Heritage Archival Recording and Salvage Report (CoA E70 and REMMM HE-14) will be undertaken including interiors; features, fixtures and fittings, painted artworks/murals (if remaining), etc. • Design the light rail stop to minimise visual impacts (REMM VL-2). The Royal Oak Hotel, stables and any findings from the archaeological excavations will be included in the Heritage Interpretation Strategy (CoA E64 and REMMM HE-9) • The Royal Oak Hotel will be included in the Movable Heritage Strategy (REMM HE-13) including any plaques, trophies, photographic collection, and framed jerseys.

Item	Project Impact	Mitigation and Management Measures and Recommendations
	The proposed Ross Street compound will be built at the site of this item.	
Parramatta CBD Precinct		
Prince Alfred Square	Prince Alfred Square was listed in the State Heritage Register on 28 August 2017. The proposed project alignment and Prince Alfred Square light rail stop would be adjacent to Prince Alfred Square. The construction of light rail stop would require the removal of the current footpath in the north-eastern corner of the item to make way for the required platform. The footpath would be reconstructed further west into its heritage curtilage. This would require the removal of a section of the park boundary wall and a row of mature rose bushes. The significant war memorial would be retained.	- Archaeological investigations in accordance with the HARD will be undertaken. This includes test excavations to identify if archaeological remains of the First and Second Parramatta Gaol are within the Project area and inform design to avoid impact to these State significant remains - A Heritage Archival Recording and Salvage Report will be undertaken as required by an experienced heritage consultant, in accordance with the Guidelines issued by the Heritage Council of NSW (CoA E70 and REMMM HE-14) - An appropriately qualified and experienced heritage architect will provide independent review throughout detailed design in relation to Prince Alfred Square. The heritage architect will be supported by an appropriate qualified and experienced heritage specialist and multidisciplinary team that will provide the necessary input to the design review process (CoA E68, REMMM HE-12 and EPO-HE-1) - Prince Alfred Square will be included in the Heritage Interpretation Strategy (CoA E64 and REMMM HE-9) - Existing CMPs will inform the design and construction methodology and updated State Heritage Inventory data sheets will be prepared where SHR items are impacted or significant elements are modified. (REMM HE-16) - Opportunities to reduce direct impacts on trees will be investigated through the design review process and documented in the Environmental Design Review Reports, including tree and root protection measures (REMM HE-17) - Retain and/or incorporate tree plantings to soften the interface with the surrounds (REMM VL-6)

Item	Project Impact	Mitigation and Management Measures and Recommendations
		Detailed design will have regard to this item to ensure that the design respects and responds to the heritage value and, where possible, refine the project's footprint to reduce impact to heritage items (CoA E68, REMMM VL-9).
Lennox Bridge	The alignment across Lennox Bridge would result in a direct impact within the heritage curtilage. As the alignment would be located on the non-significant bitumen deck, which was assessed as low significance in the CMP, the Project is unlikely to have substantial impacts on significant heritage fabric. The bridge would continue to be used as a transport corridor (a key heritage value), and the historical use of the bridge by trams would be reinstated. It is understood that the structure of the bridge was recently strengthened as part of a pedestrian access project. Provided that the structural ability of the bridge to withstand the PLR on a long-term basis is confirmed, the project would result in a moderate direct impact on the heritage bridge. This assessment assumes impacts to original fabric would be avoided including operational impacts such as excessive vibration.	- Slot trenching will be conducted on the bridge to identify its structural elements so they can be avoided during construction - An appropriately qualified and experienced heritage architect and heritage engineer will provide independent review throughout detailed design in relation to Lennox Bridge (CoA E68, REMMM HE-12 and EPO-HE-1) - Vibration will be monitored during construction and operation - Lennox Bridge will be included in the Heritage Interpretation Strategy (CoA E64 and REMMM HE-9) - Existing CMPs will inform the design and construction methodology and updated State Heritage Inventory data sheets will be prepared where SHR items are impacted or significant elements are modified. (REMM HE-16) - Construction methodology to be developed to minimise direct and indirect impacts on adjacent and/or adjoining heritage items (REMM HE-22).

Item	Project Impact	Mitigation and Management Measures and Recommendations
	Overall, Lennox Bridge would continue to meet the threshold for State significance.	
Convict Barracks Wall and archaeological site	The Convict Barracks Wall is a State significant heritage item listed on the Parramatta LEP adjacent to Barrack Lane. The Arthur Phillip High School public domain area on Barrack Lane contains conserved State significant convict barracks archaeological remains. The project off corridor works and substation works in Barrack Lane have potential for some direct and indirect impact. Removal of the State significant archaeological remains would be a major direct impact on the Arthur Phillip High School convict barracks site	- Detailed design will have regard to this item to ensure that the design respects and responds to the heritage value (CoA E68) - Avoid impact within the Arthur Phillip High School Public Domain on Barrack Lane during off corridor and substation works - Install solid hoarding at the Barrack Lane substation during demolition and substation construction to avoid impact to the Convict Barracks Wall - Impact or removal of State significant remains is generally unacceptable and would need to be appropriately justified. If State significant archaeological remains are uncovered, redesign options to avoid impact will be investigated. Additional mitigation measure will also apply including the reassessment of significance, notification to NSW Heritage Division and potential re-design or change in construction methodologies to allow for in situ retention. (CoA E73, REMMM HE-1, REMMM HE-4) - Where redesign to avoid impact to archaeology is not possible, thorough and detailed archaeological salvage excavations will be undertaken prior to construction excavation works. Post-excavation analysis and reporting on the results will be undertaken. Significant archaeological finds will be considered for heritage interpretation, including artefact displays. Public engagement opportunities during the archaeological works will be undertaken where feasible. The archaeological investigation results will be made available to the public. (CoA E64 + 64A, CoA E73, CoA E75, REMMM HE-1, REMMM HE-4, REMMM HE-6, REMMM HE-7, REMMM HE-9). - Convict Barracks Wall and archaeological site will be included in the Heritage Interpretation Strategy (CoA E64 and REMMM HE-9)
Ancient Aboriginal and Early Colonial Landscape	Along this section of the alignment the road reserve is not wide enough to accommodate the light rail infrastructure and traffic lanes. As	Early archaeological investigations of this item will be undertaken in accordance with the HARD to inform design development and seek opportunities for in situ conservation

Item	Project Impact	Mitigation and Management Measures and Recommendations
(Robin Thomas Reserve)	Harris Street is part of the inner ring road it plays an important role in the local and regional traffic network, and the number of traffic lanes could not be reduced without a substantial traffic impact. Therefore, the proposed project alignment would be located within the heritage curtilage of this item and run along part of its western and northern boundaries. The alignment would involve the removal of seven significant trees and landscape elements, such as part of the open grassed area. This would result in the reduction of the heritage curtilage along the eastern side and the landscape values of the item would be diminished.	• A Heritage Archival Recording and Salvage Report will be undertaken by an experienced heritage consultant, in accordance with the Guidelines issued by the Heritage Council of NSW (CoA E70 and REMMM HE-14) • An appropriately qualified and experienced heritage architect will provide independent review throughout detailed design in relation to Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve). The heritage architect will be supported by an appropriate qualified and experienced heritage specialist and multidisciplinary team that will provide the necessary input to the design review process (CoA E68, REMMM HE-12 and EPO-HE-1) • The Robin Thomas Reserve will be included in the Heritage Interpretation Strategy (CoA E64 and REMMM HE-9) • Detailed design will have regard to this item to ensure that the design respects and responds to the heritage value (CoA E68) • Existing CMPs will inform the design and construction methodology and updated State Heritage Inventory data sheets will be prepared where SHR items are impacted or significant elements are modified. (REMM HE-16) • Opportunities to reduce direct impacts on trees will be investigated through the design review process, including tree and root protection measures (REMM HE-17) • Design the light rail stop to minimise visual impacts (REMM VL-2) • Retain and/or incorporate tree plantings to soften the interface with the surrounds (REMM VL-6) • Detailed design will have regard to this item to ensure that the design respects and responds to the heritage value and, where possible, refine the project's footprint to reduce impact to heritage items (CoA E68, REMMM VL-9).
Queen's Wharf Reserve and stone wall	The alignment is constrained between Robin Thomas Reserve and Queens Wharf Reserve.	• The archaeological methodologies in the HARD will be applied to works affecting the Queen's Wharf reserve

Item	Project Impact	Mitigation and Management Measures and Recommendations
	The road reserve is not wide enough to accommodate the light rail infrastructure and traffic lanes without impinging on Queens Wharf Reserve or the northern edge of Robin Thomas Reserve. Therefore, strip impacts were not able to be avoided. The proposed works will result in minor direct, minor visual and minor indirect impacts on Queens Wharf Reserve.	• Opportunities to reduce direct impacts on trees will be investigated through the design review process, including tree and root protection measures (REMMM HE-17) • Queen's Wharf Reserve and stone wall will be included in the Heritage Interpretation Strategy (CoA E64 and REMMM HE-9) • Detailed design will have regard to this item to ensure that the design respects and responds to the heritage value (CoA E68) • Retain and/or incorporate tree plantings to soften the interface with the surrounds (REMMM VL-6). • An appropriately qualified and experienced heritage architect will provide independent review throughout detailed design in relation to Queen's Wharf Reserve and stone wall (E68). The heritage architect will be supported by an appropriate qualified and experienced heritage specialist and multidisciplinary team that will provide the necessary input to the design review process.
Rosehill and Camellia Precinct		
Sewage Pumping Station 67	The proposed project alignment would extend across the south section of the heritage curtilage of this item, and will slightly reduce the heritage curtilage of this item. This section of the heritage item does not include buildings or elements of heritage significance. A mature tree would be impacted by the proposed alignment which would result in a minor impact to the landscape values of the item.	• Sydney Water will be engaged in relation to the future use and maintenance of their asset. Boundary/retention walling will be coordinated with owner requirements • Existing CMPs will inform the design and construction methodology and updated State Heritage Inventory data sheets will be prepared where SHR items are impacted or significant elements are modified. (REMMM HE-16) • Construction methodology to be developed to minimise direct and indirect impacts on adjacent and/or adjoining heritage items (REMMM HE-22) • Design the light rail stop to minimise visual impacts (REMMM VL-2).

Item	Project Impact	Mitigation and Management Measures and Recommendations
Grave of Elinor Magee and child	The proposed project alignment would be adjacent to this item and would encroach into its heritage curtilage, resulting in minor direct, minor visual and minor indirect impacts. This item is south of the proposed Parramatta River Bridge (south) compound. Access around this site will be needed to construct a drainage path to Parramatta River.	- The Magee grave will be avoided. The ECM will establish a locked exclusion zone and appropriate signage ('No Entry' or similar) prior to construction in this location to prevent any impact to existing grave fabric (REMMM HE-23) - In accordance with the HARD, the surrounding area is identified as a potential archaeological site and Zone 1 archaeological management applies.
Wetlands	The works on the current Camellia Bridge over Parramatta River would encroach on the heritage curtilage of the item. Trees are to be removed to allow for construction compounds on either side of the bridge. This would result in a minor direct impact to the overall significance of the wetlands.	Opportunities to reduce direct impacts on trees will be investigated through the design review process and documented in the Environmental Design Review Reports, including tree and root protection measures (REMMM HE-17)
Carlingford Precinct		
Camellia (Parramatta River) Underbridge Abutments/Clyde Carlingford Rail Bridge abutments (southern)	The brickwork abutments were designed for an older single-track width bridge. The abutments no longer provide any structural support, as they were replaced by new concrete headstocks and approach spans when the bridge was replaced in approximately 1995.	- A Heritage Archival Recording and Salvage Report will be undertaken by an experienced heritage consultant, in accordance with the Guidelines issued by the Heritage Council of NSW (CoA E70 and REMMM HE-14) - Items and fabric of heritage value will be salvaged and options for sympathetic re-use on the project, or other options for repository, re-use and display will be explored (REMMM HE-15 and HE-18) - The Camellia Underbridge Abutments will be included in the Heritage Interpretation Strategy (CoA E64 and REMMM HE-9).

Item	Project Impact	Mitigation and Management Measures and Recommendations
	The proposed project alignment would require complete removal of the Camellia underbridge abutments to allow for a double track across the bridge.	An appropriately qualified and experienced heritage architect will explore the opportunity to reuse the abutments in-situ.
Camellia (Parramatta River) Underbridge Abutments/Clyde Carlingford Rail Bridge abutments (northern)	See above <i>Camellia (Parramatta River) Underbridge Abutments/Clyde Carlingford Rail Bridge abutments (southern)</i> above.	See above: <i>Camellia (Parramatta River) Underbridge Abutments/Clyde Carlingford Rail Bridge abutments (southern)</i> .
Rydalmere Hospital Precinct (former)	The Project Alignment is within the existing Carlingford Line rail corridor, which minimises impacts on heritage items outside of the corridor. The Parramatta River (north) compound and the Vineyard Creek compound are located with the heritage curtilage of this item.	- Opportunities to reduce direct impacts on trees will be investigated through the design review process and documented in the Environmental Design Review Reports, including tree and root protection measures (REMMM HE-17) - Existing CMPs will inform the design and construction methodology and updated State Heritage Inventory data sheets will be prepared where SHR items are impacted or significant elements are modified. (REMMM HE-16) - Design the light rail stop to minimise visual impacts (REMMM VL-2) - Prepare the modifications of the five bridge structures along the Carlingford Line in consultation with a heritage architect to minimise visual impacts and retain significant views (REMMM VL-4) - Retain and/or incorporate tree plantings to soften the interface with the surrounds (REMMM VL-6).
Dundas Railway Station Group	The proposed Project alignment will go through the curtilage of Dundas	The Dundas Railway Station Group will be included in the Heritage Interpretation Strategy (CoA E64 and REMMM HE-9)

Item	Project Impact	Mitigation and Management Measures and Recommendations
	Railway Station Group. The current design proposed in the EIS retains the original 1896 platform of the station. The platform is the only remaining original element of the station and its retention will result in a positive heritage outcome. The timber platform building will be retained. Level adjustments and new paving to be installed around the timber building.	• During detailed design, opportunities to reduce impacts will be explored including improving the interface between new elements and the existing infrastructure. Adaptive reuse will be developed in consultation with a heritage architect (CoA E68 and REMMM HE-19) • A Heritage Archival Recording and Salvage Report will be undertaken including interiors prior to adaptation works, platform and tracks (CoA E70 and REMMM HE-14) • The Dundas Railway Station Group will be included in the Movable Heritage Strategy (REMM HE-13) including any plaques, railway mechanisms and memorabilia, etc. • Items and fabric of heritage value will be salvaged and options for sympathetic re-use on the project, or other options for repository, re-use and display will be explored (REMM HE-15) • Existing CMPs will inform the design and construction methodology and updated State Heritage Inventory data sheets will be prepared where SHR items are impacted or significant elements are modified. (REMM HE-16) • Design the light rail stop to minimise visual impacts (REMM VL-2) • An appropriately qualified and experienced heritage architect will provide independent review throughout detailed design in relation to the Dundas Railway Station Group (REMM HE-12 and EPO-HE-1).
Carlingford Stock Feeds (Carlingford Produce Store)	The Carlingford Station compound is located within the curtilage of this item.	• The Carlingford Stock Feeds will be included in the Heritage Interpretation Strategy (REMM HE-9) • Design the light rail stop to minimise visual impacts (REMM VL-2) • Retain and/or incorporate tree plantings to soften the interface with the surrounds (REMM VL-6).

6.2.2 Historical Archaeology Impacts

This section describes the identified actual and potential impacts and their management/mitigation measures in relation to known non-Aboriginal (historical) archaeology (**Table 6-3**) and Aboriginal archaeology (**Table 6-4**). The site-specific mitigation and management measures listed in **Table 6-3** are focussed on Zone 1 HAMU sites and are in addition to the controls detailed in **Section 7**. Mitigation measures for Zone 2 HAMUs are detailed in Section 7.1

Table 6-3: Zone 1 HAMU – Impacts, Mitigation and Management Measures

HAMU	Potential archaeological resource	Project Activities	Mitigation and management measures, and recommendations
4	Cumberland District Hospital Group (includes the indicative curtilage of the National Heritage Listed Parramatta Female Factory). Smith's 1792 land grant, contact archaeology, Government Mill races, Marsden's Mill Dam Farm, Mrs Betts' House, former Parramatta Lunatic Asylum, Superintendent's house, Gross Street brick drain and early road construction.	The construction of light rail track with associated adjustments to road and footpath. The construction of light rail track, associated adjustments to road and footpath and construction of Cumberland Hospital stop within the former alignment of Factory Street.	• Early archaeological test excavations will be carried out to determine the nature and extent of remains within the Cumberland Hospital to inform design and respect and respond to state significant archaeology (CoA E65 and E68). The test excavation will also inform requirements for further archaeological management and mitigation measures. Archaeological investigations will be undertaken prior to the proposed construction excavation works (CoA E72, CoA E73, REMMM HE-1, REMMM HE-6, REMMM HE-7) • In addition to archaeological testing, archaeological monitoring of all early design investigations and construction related excavation works will be undertaken in the HAMU. Archaeological finds will be managed in accordance with the CoA, REMMM and the HARD methodologies (CoA E73, CoA E74, REMMM HE-3) • Impact or removal of State significant remains is generally unacceptable and would need to be appropriately justified. If State significant archaeological remains are uncovered, redesign options to avoid impact will be investigated. Additional mitigation measure will also apply. These will include reassessment of significance, notification to NSW Heritage Division and potential re-design or change in construction methodologies to allow for in situ retention. (CoA E73, REMMM HE-1, REMMM HE-4) • Where redesign to avoid impact to archaeology is not possible, thorough and detailed archaeological salvage excavations will be undertaken prior to construction excavation works. Post-excavation analysis and results reporting will be undertaken. Significant archaeological finds will be considered for heritage interpretation, such as artefact displays. Public engagement opportunities during the archaeological works will be undertaken where feasible. The archaeological investigation results will be made available to the public (CoA E64, CoA E64A, CoA E73, CoA

HAMU	Potential archaeological resource	Project Activities	Mitigation and management measures, and recommendations
			E75, REMMM HE-1, REMMM HE-4, REMMM HE-6, REMMM HE-7, REMMM HE-9) Alternative construction methods will be considered for the Grose Street Drain (local significance). If impact to a section of the drain is unavoidable, archaeological investigation of this area will be undertaken prior to excavation works (CoA E73, CoA E75, REMMM HE-4, REMMM HE-7).
8	St Patrick's Roman Catholic Church. Evidence of original grave yard boundary, intact or truncated burials and related archaeological remains, intact and displaced human remains, early road construction.	Construction of light rail track, with associated adjustments to road and footpath along Church Street.	- Project approval does not include harm, modification or impact to human remains (CoA E61) - An Exhumation Management Plan will be prepared as a standalone document prior to conducting construction works in sensitive archaeological areas as defined by the Excavation Director (i.e. St. Patrick's Cemetery) to define the process for exhumation of human remains (REMM HE-5). The Exhumation Management Plan will be developed in accordance with the <i>Guidelines for Management of Human Skeletal Remains</i> (NSW Heritage Office, 1998) in consultation with the Heritage Council (or its delegate) and provided to DPIE for information. - Early archaeological investigations, including GPR and ground truthing/test excavations will be undertaken to determine if there are archaeological remains of the former cemetery or burials, or likelihood of burials, within the Church Street footpath and road reserve adjacent to the cemetery. The archaeological investigations will inform redesign options to avoid impact to burials (CoA E65 and E68). Archaeological investigations will be undertaken prior to the proposed construction excavation works (CoA E72, CoA E73, REMMM HE-1, REMMM HE-6, REMMM HE-7) - Archaeological monitoring of all early design investigations and construction related excavation works will be undertaken within this HAMU. Archaeological finds will be managed in accordance with the CoA,

HAMU	Potential archaeological resource	Project Activities	Mitigation and management measures, and recommendations
			REMMM and the HARD methodologies (CoA E73, CoA E74, REMMM HE-3) If human remains are discovered during works, the NSW Police and the NSW Heritage Division will be notified immediately (CoA E62) in accordance with Section 7.1. Additional mitigation measures will apply, including investigating redesign options to avoid impact
13	Prince Alfred Square. First and Second Parramatta Gaol (1796-1837), village green and WWII air raid shelter.	Construction of Prince Alfred Square light rail stop.	- Archaeological monitoring of all early design investigations and construction related excavation works will be undertaken within this HAMU. Archaeological finds will be managed in accordance with the CoA, REMMM and the HARD methodologies (CoA E73, CoA E74, REMMM HE-3) - The proposed rail alignment is adjacent to Prince Alfred Square, though only minor encroachment is anticipated. Should an intact State significant archaeological resource associated with the convict era, or the former gaol and factory complex, be unexpectedly encountered during these works, impacts will be avoided or minimised. In this instance, re-design or change in construction methodologies will be assessed to avoid or minimise impact on State significant archaeological remains (CoA E68) - Where redesign to avoid impact to archaeology is not possible, thorough and detailed archaeological salvage excavations will be undertaken prior to construction excavation works. Post-excavation analysis and reporting on the results will be undertaken. Significant archaeological finds will be considered for heritage interpretation, including artefact displays. Public engagement opportunities during the archaeological works will be undertaken where feasible. The archaeological investigation results will be made available to the public (CoA E64, CoA E64A, CoA E73, CoA E75, REMMM HE-1, REMMM HE-4, REMMM HE-6, REMMM HE-7, REMMM HE-9).

HAMU	Potential archaeological resource	Project Activities	Mitigation and management measures, and recommendations
18	The Town/Convict Drain – Macquarie Street and Barrack Lane	Construction of light rail track. Public domain and utilities adjustment.	• Early archaeological test excavations will be undertaken to determine the location and condition of the Town Drain in Macquarie Street, Smith Street and Barrack Lane. The investigations will inform design and clarify requirements for further archaeological management and mitigation measures. (CoA E65) Archaeological investigations will be undertaken prior to the proposed construction excavation works (CoA E72, CoA E73, REMMM HE-1, REMMM HE-6, REMMM HE-7) • Alternative construction methods will be considered to avoid impact to the Town Drain, particularly in Macquarie Street. In addition, a suitable buffer will be established where feasible to prevent impact to the structure from vibration during construction works • Where redesign to avoid impact to archaeology is not possible, thorough and detailed archaeological salvage excavations will be undertaken prior to construction excavation works. Post-excavation analysis and reporting on the results will be undertaken. Significant archaeological finds will be considered for heritage interpretation, including artefact displays. Public engagement opportunities during the archaeological works will be undertaken where feasible. The archaeological investigation results will be made available to the public (CoA E64, CoA E64A, CoA E73, CoA E75, REMMM HE-1, REMMM HE-4, REMMM HE-6, REMMM HE-7, REMMM HE-9).
16a	Macquarie Street, near Harris Street. Early land leases and Crooks property (c1800s).	Construction of light rail track, with associated adjustments to utilities, road and footpath.	• Archaeological monitoring of all early design investigations and construction related excavation works will be undertaken within this HAMU. Archaeological finds will be managed in accordance with the CoA, REMMM and the HARD methodologies (CoA E73, CoA E74, REMMM HE-3) • Should an intact State significant archaeological resource associated with the convict era, or the former gaol and factory complex, be unexpectedly encountered during works, impacts will be avoided or minimised where possible. In this instance, re-design or change in construction

HAMU	Potential archaeological resource	Project Activities	Mitigation and management measures, and recommendations
			methodologies will be assessed to avoid or reduce impact on State significant archaeological remains Where redesign to avoid impact to archaeology is not possible, thorough and detailed archaeological salvage excavations will be undertaken prior to construction excavation works. Post-excavation analysis and reporting on the results will be undertaken. Significant archaeological finds will be considered for heritage interpretation, including artefact displays. Public engagement opportunities during the archaeological works will be undertaken where feasible. The archaeological investigation results will be made available to the public (CoA E64, CoA E64A,, CoA E73, CoA E75, REMMM HE-1, REMMM HE-4, REMMM HE-6, REMMM HE-7, REMMM HE-9).
15	Queens Wharf Reserve	Construction of light rail track on the southern side of Queen's Wharf Reserve with associated adjustments to road and footpath, as well as utilities relocations.	- Archaeological monitoring of all early design investigations and construction related excavation works will be undertaken within this HAMU in accordance with the HARD. Archaeological finds will be managed in accordance with the CoA, REMMM and the HARD methodologies (CoA E73, CoA E74, REMMM HE-3) - Early archaeological test excavations in accordance with the HARD will be undertaken where proposed construction works have potential to encounter and impact state significant archaeological remains within Queens Wharf Reserve. The investigations will inform design and clarify requirements for further archaeological management and mitigation measures (CoA E65). Archaeological investigations will be undertaken prior to the proposed construction excavation works (CoA E72, CoA E73, REMMM HE-1, REMMM HE-6, REMMM HE-7) - Should an intact State significant archaeological resource associated with the early colonial wharf and military be encountered during works, impacts will be avoided or minimised where possible. In this instance, re-design or change in construction methodologies will be assessed to avoid

HAMU	Potential archaeological resource	Project Activities	Mitigation and management measures, and recommendations
			or reduce impact on State significant archaeological remains (CoA E65 and E68) Where redesign to avoid impact to archaeology is not possible, thorough and detailed archaeological salvage excavations in accordance with the HARD will be undertaken prior to construction excavation works. Post-excavation analysis and reporting on the results will be undertaken. Significant archaeological finds will be considered for heritage interpretation, including artefact displays. Public engagement opportunities during the archaeological works will be undertaken where feasible. The archaeological investigation results will be made available to the public (CoA E64, CoA E64A, CoA E73, CoA E75, REMMM HE-1, REMMM HE-4, REMMM HE-6, REMMM HE-7, REMMM HE-9).
20 20a	Former Soldiers District (Robin Thomas Reserve, east Macquarie Street, Harris and George Streets) Contact archaeology, Soldiers' District, Rum Corps barracks, provision stores, nineteenth century urban development, and Purchase Nursery.	Construction of light rail track on the western side of Robin Thomas Reserve between Macquarie and George Streets with associated adjustments to road and footpath.	- Impacts within Robin Thomas Reserve will be avoided where possible in order to retain its significant cultural heritage and archaeological significance (CoA E65) - Archaeological investigations will include integrated historical and Aboriginal archaeological methodologies as this HAMU contains the PSB - Early archaeological test excavations will be undertaken in this HAMU. The investigations will inform design for avoidance of impacts where possible. (CoA E68) It will also clarify requirements for further archaeological management and mitigation measures. Archaeological investigations will be undertaken prior to the proposed construction excavation works (CoA E72, CoA E73, REMMM HE-1, REMMM HE-6, REMMM HE-7) - Archaeological monitoring of all early design investigations and construction related excavation works will be undertaken within this HAMU. Archaeological finds will be managed in accordance with the CoA, REMMM and the HARD methodologies (CoA E73, CoA E74, REMMM HE-3)

HAMU	Potential archaeological resource	Project Activities	Mitigation and management measures, and recommendations
			Where redesign to avoid impact to archaeology is not possible, thorough and detailed archaeological salvage excavations will be undertaken prior to construction excavation works. Post-excavation analysis and results reporting will be undertaken. Significant archaeological finds will be considered for heritage interpretation, such as artefact displays. Public engagement opportunities during the archaeological works will be undertaken where feasible. The archaeological investigation results will be made available to the public (CoA E64, CoA E64A, CoA E73, CoA E75, REMMM HE-1, REMMM HE-4, REMMM HE-6, REMMM HE-7, REMMM HE-9).
21	Commissariat and barracks (George Street east).	Construction of light rail track on George Street with associated adjustments to utilities, road and footpath.	- Impacts to State significant archaeology will be avoided where possible - Early archaeological test excavations will be undertaken to determine the nature and extent of the archaeological resources in this HAMU. The investigations will inform design and clarify requirements for further archaeological management and mitigation measures. (CoA E65) Archaeological investigations will be undertaken prior to the proposed construction excavation works (CoA E72, CoA E73, REMMM HE-1, REMMM HE-6, REMMM HE-7) - Archaeological monitoring of all early design investigations and construction related excavation works will be undertaken within this HAMU. Archaeological finds will be managed in accordance with the CoA, REMMM and the HARD methodologies (CoA E73, CoA E74, REMMM HE-3) - Where redesign to avoid impact to archaeology is not possible, thorough and detailed archaeological salvage excavations will be undertaken prior to construction excavation works. Post-excavation analysis and results reporting will be undertaken. Significant archaeological finds will be considered for heritage interpretation, such as artefact displays. Public engagement opportunities during the archaeological works will be undertaken where feasible. The archaeological investigation results will

HAMU	Potential archaeological resource	Project Activities	Mitigation and management measures, and recommendations
			be made available to the public (CoA E64, CoA E64A, CoA E73, CoA E75, REMMM HE-1, REMMM HE-4, REMMM HE-6, REMMM HE-7, REMMM HE-9).
31	Evidence and remains associated with the Magee hut and the grave of Elinor Magee and Child.	Establishment of Parramatta River Bridge (south) compound/laydown area (minimal excavation).	- The Magee grave will be avoided. The ECM will establish a locked exclusion zone and appropriate signage ('No Entry' or similar) to prevent any impact to existing grave fabric (CoA E65, REMMM HE-23) - Archaeological remains of the Magee hut are State significant. The Parramatta River Bridge (south) compound is proposed for the site, however, as minimal excavation is required for the establishment of the compound site, archaeological remains will not be impacted. Zone 1 mitigation measures, however, will apply to any excavation required. In the unexpected event that human skeletal remains or burials are encountered within the HAMU, it is recommended that they be conserved in situ. In this scenario re-design or change in construction methodologies will be assessed to avoid impacts. - There is no approval to harm, modify, or otherwise impact human remains uncovered during the construction and operation of the CSSI. This has been included as mitigation measure H13 and will be communicated through relevant EWMS, ECMS, Toolbox talks, Project induction and daily pre-starts.

6.2.3 Aboriginal Heritage Impacts

Table 6-4 describes the identified actual and potential impacts of the construction program and management measures in relation to known Aboriginal archaeological sites (as identified in the EIS and subsequent investigations) and other heritage aspects. Each of the sites detailed below is reflected in the locality maps (**Appendix D**).

Table 6-4: Aboriginal Archaeological Sites (partially adapted from Kelleher, 2017)

Name	Impact Assessment	Management Recommendations
Cumberland Hospital East	Partial impact	Archaeological salvage excavation of impacted portion of site will be undertaken in accordance with the process detailed in Section 8.2.3 Barrier fencing will be erected on the project approval boundary for the extent of the site to ensure that construction impacts do not extend unnecessarily. The portion of site area outside of project boundary will be identified on the ECM's as environmentally sensitive no-go zone.
Harris Street Footpath / Robin Thomas Reserve	Partial impact	Archaeological salvage excavation of the impacted portion of site will be undertaken in accordance with the process detailed in Section 8.2.3 Barrier fencing will be erected on the project approval boundary for the extent of the site to ensure that construction impacts do not extend unnecessarily. The portion of site area outside of project boundary will be identified on the CEMP as an environmentally sensitive no-go zone.
PLR AFT 1	Total impact	Disturbed – no salvage warranted.
PLR AFT 2	Total impact	The EIS recommended that archaeological salvage excavation of impacted portion of site be undertaken in accordance with the process detailed in Section 8.2.3. In response to the detailed design, archaeological testing has been undertaken. The results have determined that archaeological salvage is no longer required.
Sydney Turf Club Carpark	No impact	There is no archaeological impact is proposed by the project.

Name	Impact Assessment	Management Recommendations
B14.10d (Cumberland Hospital)	No impact	Opportunities to avoid impact to Aboriginal Archaeological site B14.10d (Cumberland Hospital, immediately north of Parramatta River, west of Bridge Road. Temporary Land TL-02) will be identified in consultation with an Aboriginal heritage expert. Specifically, the import of suitable fill materials will be undertaken to ensure the proposed use of the site as an Ancillary Facility will not impact on the Aboriginal archaeology. It is noted that there are no excavation works proposed to be undertaken on this site.
The PSB and its archaeological sensitivity	Potential impact	Investigations into the extent and integrity of the PSB will be undertaken (detailed in Section 9). Archaeological investigations will include integrated historical and Aboriginal archaeological methodologies. All reasonable and feasible attempts to avoid previously unknown Aboriginal sites within the PSB will be undertaken (Section 9.1). Any previously unknown Aboriginal site within the PSB, which cannot be avoided by PLR works, will need to be subject to archaeological salvage excavation to mitigate impact (Section 9.2).
The wider cultural landscape and intangible values	Potential impact through an absence of recognition	Development of the Interpretation Strategy considering the full range of Aboriginal values and contemporary connections. Connection with the City of Parramatta Councils heritage strategy ' <i>Culture and Our City. A cultural plan for Parramatta's CBD 2017-2022.</i> '

7 Environmental Mitigation and Management Measures

The mitigation and management strategies outlined in **Table 7-1** will be implemented to minimise and avoid potential impacts on Aboriginal and non-Aboriginal heritage items and areas of archaeological potential.

Table 7-1: Heritage Management and Mitigation Measures

ID	Measure/Requirement	How Implemented	When to implement	Responsibility	Reference
General Aboriginal and Non-Aboriginal Management/Mitigation Measures					
H1	Except for the heritage relics and Aboriginal objects identified in the EIS as being affected by the Project, relics/objects will not be destroyed, modified or otherwise physically affected.	Principal Risk Assessment	Pre-construction	Design Manager	CoA E60 CoA E66 CoA E76 EPO-AB-1
H2	The Project will be designed to remain non-obtrusive with limited bulk to minimise visual impacts on all heritage items in the vicinity. This would also apply to ancillary works which have the potential to impact on areas of archaeological potential.	Principal Risk Assessment Design drawings	Pre-construction	Design Manager	REMMM HE-10 REMMM AB-2 EPO-AB-1 VL-2
H3	An appropriately qualified and experienced heritage architect (built heritage specialist) will provide independent review periodically throughout detailed design. This guidance will inform the Environmental Design Review Report as relevant (refer to the CEMP, Section 1.5.3) and guide the reinstatement of areas of heritage value temporarily impacted by construction.	Environmental Design Review Report	Pre-construction Construction	Design Manager Heritage Architect	REMMM HE-4 REMMM HE-4 REMMM HE-11 REMMM HE-12 REMMM HE-18 REMMM HE-19 REMMM AB-2 REMMM VL-3 REMMM VL-4 REMMM VL-10 EPO-HE-1
H4	The advice of a suitably qualified heritage architect or heritage engineer will be sought before installing acoustic treatment at any heritage item identified in the EIS. The Acoustics Advisor will be consulted in relation to minimising the impact of vibration generating activities that have the potential to impact heritage items.	Principal Risk Assessment	Pre-construction	Property Manager Heritage Architect/ Engineer	CoA E68 VL-2

ID	Measure/Requirement	How Implemented	When to implement	Responsibility	Reference
H5	Direct and indirect impacts (including visual impacts) on adjacent and/or adjoining heritage items would be minimised through the construction methodology. The construction methodology would also be analysed (when required) by a heritage architect/engineer. Measures to be considered include: • Height and position of temporary structures • Hoarding design (including heritage treatment of construction hoardings) • Lighting position and usage (e.g. restriction of use to agree hours, direction of lighting and use of deflection screens) • Material storage and laydown locations • Vibration impacts and controls as identified through the CNVIS.	Environmental Design Review Report EWMS ECMs CNVIS	Pre-construction Construction	Construction Manager Heritage Architect/Engineer	REMMM HE-22 REMMM VL-13 CoA E44
H6	Locations for heritage interpretation will be incorporated into the detailed design in accordance with the Interpretation Strategy (GML Heritage, September 2020) and Heritage Interpretation Implementation Plan. The strategy addresses significant Aboriginal and non-Aboriginal heritage items as detailed in CoA E64 and CoA E78. The Interpretation Strategy will be updated within six months of the completion of any archaeological excavation and archival recording and shall identify any Aboriginal objects discovered (including registration in the OEH's AHIMS register, when relevant).	Interpretation Strategy	Pre-construction	Design Manager	CoA E64 CoA E64A CoA E77 CoA E78 CoA E79 REMMM HE-9 REMMM AB-1 EPO-AB-2

ID	Measure/Requirement	How Implemented	When to implement	Responsibility	Reference
H7	Following completion of archaeological testing and design, the Interpretation Strategy will be revised to capture the moveable heritage item strategy. The strategy will provide a comprehensive record of all impacted moveable heritage including items contained within station and platform buildings as well as of any other significant equipment within the curtilage of the heritage railway stations.	Moveable Heritage Item Strategy	Pre-construction	Environment & Sustainability Manager Heritage Consultant	REMMM HE-13
H8	Conduct excavation works in accordance with the HARD – refer to Section 7.1.1.	HARD Environmental Control Maps	Pre-construction Construction	Environment & Sustainability Manager	CoA E72 CoA E74 CoA E75 REMMM HE-1 REMMM HE-2 REMMM HE-3 REMMM HE-4 REMMM HE-6 REMMM HE-7 REMMM HE-8
H9	A Heritage Archival Recording and Salvage Report will be prepared to document impacted heritage items prior to demolition or modification of: • Cumberland District Hospital Precinct • St Patrick's Roman Catholic Cemetery • Royal Oak Hotel and Stables • Alfred Square (and potential archaeological site) • Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve) • Camellia Underbridge Abutments (south and north)	Heritage Archival Recording and Salvage Report	Pre-construction	Environment & Sustainability Manager	CoA E70 REMMM HE-14 REMMM HE-15

ID	Measure/Requirement	How Implemented	When to implement	Responsibility	Reference
	Dundas Railway Station Group. Heritage fabric will be identified for salvage and reuse opportunities considered.				
H10	Updated State Heritage Inventory data sheets will be prepared where SHR items are impacted or significant elements are modified. The data sheets would be provided to relevant agencies to inform the revision of Conservation Management Plans.	State Heritage Inventory data sheets	Pre-construction	Environment & Sustainability Manager	REMMM HE-16
H11	In the event that unexpected archaeological remains, relics, potential heritage items or Aboriginal objects are discovered during construction, all works in the immediate area will cease, and the Unexpected Heritage Finds Procedure will be implemented (Appendix A). Unexpected finds will be internally reported to the Design team to ensure impacts to State significant archaeology are avoided or minimised where feasible. Early archaeological investigations of Zone 1 HAMUs will be undertaken prior to construction excavation works. Archaeology within Zone 2 HAMUs will be identified during archaeological monitoring of construction works. The Excavation Director will oversee implementation if triggered in a Zone 3 location.	Environmental Control Maps Unexpected Heritage Finds Procedure	Construction	Environment & Sustainability Manager	CoA E62 CoA E72 CoA E77
H12	In the event that a potential burial site or potential human skeletal material is exposed during	Unexpected Heritage Finds Procedure	Construction	Environment & Sustainability Manager	REMMM HE-5

ID	Measure/Requirement	How Implemented	When to implement	Responsibility	Reference
	construction, the Unexpected Heritage Finds Procedure will apply. Refer to Section 7.1	Exhumation Management Plan Environmental Control Maps			
H13	Ensure that human remains that are uncovered during construction are not harmed, modified, or otherwise impacted.	Unexpected Heritage Finds Procedure Environmental Control Maps	Construction	Environment & Sustainability Manager	E61
Site Specific Aboriginal Heritage Management/Mitigation Measures					
H14	The Excavation Director will oversee and advise on Archaeological testing works (Phase 1) at Cumberland Hospital East, Harris Street Footpath/Robin Thomas Reserve, PLR AFT 1 and Sydney Turf Carpark. The Excavation Director will be supported by a suitably qualified and experienced Aboriginal heritage expert.	Environmental Work Method Statements Environmental Control Maps	Pre-construction	Environment & Sustainability Manager Excavation Director	CoA E78 REMMM AB-2
H15	The Excavation Director will oversee and advise on salvage excavation (Phase 2) and all remaining works in Cumberland Hospital East, Harris Street Footpath/Robin Thomas Reserve, PLR AFT 1 and Sydney Turf Carpark. The Excavation Director who will be supported by a suitably qualified and experienced Aboriginal heritage expert.	Environmental Work Method Statements Environmental Control Maps	Pre-construction Construction	Excavation Director	CoA E78 REMMM AB-2 REMMM AB-3

ID	Measure/Requirement	How Implemented	When to implement	Responsibility	Reference
H16	Barrier fencing will be erected on the Project boundary within Cumberland Hospital East and Harris Street Footpath/Robin Thomas Reserve. These areas are exclusion zones and would be documented in the Environmental Control Maps.	Environmental Control Maps	Construction	Environment & Sustainability Manager Excavation Director	CoA E76 REMMM AB-4
H17	Conduct archaeological testing of the PSB to confirm the presence of Aboriginal archaeological sites prior to construction.	Environmental Work Method Statements Environmental Control Maps	Pre-construction	Environment & Sustainability Manager Aboriginal heritage expert	CoA E76 CoA E77 REMMM AB-2
H18	Opportunities to avoid impact to Aboriginal Archaeological site B14.10d (Cumberland Hospital, immediately north of Parramatta River, west of Bridge Road. Temporary Land TL-02) will be identified in consultation with an Aboriginal heritage expert. Specifically, the import of suitable fill materials will be undertaken to ensure the proposed use of the site as an Ancillary Facility will not impact on the Aboriginal archaeology. It is noted that there are no excavation works proposed to be undertaken on this site (to be included in the relevant ECM). In addition, an exclusion zone will be established around the site with fencing and signage (refer to Appendix D for site boundary). Refer to the Parramatta North Growth Centre, Aboriginal Archaeological Cultural Heritage Plan for additional details on the site (Comber Consultants, December 2018).	Environmental Work Method Statements Environmental Control Maps	Pre-construction	Environment & Sustainability Manager Aboriginal heritage expert	Best practice

7.1 Unexpected Human Remains

In the event that construction works encounter possible human skeletal remains during excavation works, the following procedure will be followed:

- All works in the immediate vicinity of the skeletal remains cease immediately
- Excavation Director conducts a preliminary assessment of the remains
- Notify TfNSW and ER
- Consult a physical or forensic anthropologist to assess the remains
- Advise the NSW Police if the human remains are forensic (less than 100 years) and notify the Coroner's Office
- Notify Heritage NSW, AFG, TfNSW and DPIE if the human remains are archaeological (more than 100 years old) and likely to be Aboriginal
- Notify Heritage NSW, TfNSW and DPIE if the human remains are archaeological (more than 100 years old) and likely to be non-Aboriginal
- Works in the affected area will not recommence until the requirements of the NSW Police, NSW Health, Heritage NSW and DPIE are met
- Photos will not be taken unless requested by the Excavation Director or Environment and Sustainability Manager.

These steps form part of the Exhumation Management Plan which was developed in accordance with the *Guidelines for Management of Human Skeletal Remains* (NSW Heritage Office, 1998) and in consultation with Heritage NSW. The final Exhumation Management Plan is to be provided to DPIE for information.

Following consultation with Heritage NSW and NSW Health, the Exhumation Management Plan was finalised and the Unexpected Heritage Finds Procedure was reviewed to confirm consistency in process. If human remains are discovered and impact cannot be avoided (e.g. through design amendment), approval to exhumate human remains would be sought from NSW Health in accordance with the Exhumation Management Plan.

7.2 Sustainability

The Project will implement an integrated approach to sustainability to ensure effective implementation and tracking of initiatives. This approach includes the identification of requirements in sub-plans for clarity of objectives and transparency in implementation. While the Delivery Phase Sustainability Management Plan details the overall requirements and targets for the Infrastructure Works, the table below summarises the sustainability requirements for heritage specific aspects.

Table 7-2: Heritage specific sustainability targets

ISCA Reference	Requirement	Project Target
Her-1 Effective assessment of baseline targets	• Identification of heritage values through consultation and studies • Minimisation of impacts to heritage • Participation of key stakeholders in heritage studies • Interpretation of heritage values	Identification of relevant heritage values, inclusion of stakeholders in management of heritage and interpretation to result in an enhancement of heritage values through education and design.

ISCA Reference	Requirement	Project Target
and mitigation of impacts	• Opportunities for enhancement of heritage values	The Heritage Interpretation Strategy will guide the project in realising opportunities for enhancement of heritage values.
Her-2 Effective monitoring of heritage during the Project	• Monitoring of heritage throughout the Project • Modelling to demonstrate maintenance/enhancement of heritage values	Monitoring of heritage sites/items throughout construction leads to the enhancement of values and where possible, enhance values through interpretation and design.

Monitoring will be overseen by a suitably qualified professional, whom has a formal cultural heritage qualification and minimum of five years' experience.

More details on sustainability initiatives and implementation for the Infrastructure Works is provided in the Delivery Phase Sustainability Management Plan. Overarching sustainability objectives for all of Parramatta Light Rail – Stage 1 is provided in the Sustainability Strategy (TfNSW, November, 2018) (available at: <http://parramattalightrail.nsw.gov.au/library>).

8 Non-Aboriginal Heritage Risk Management

8.1 Built and Landscape Heritage

The area of the works includes buildings, places and landscape elements, some of which are listed as heritage items or are within heritage conservation areas. Condition of Approval E65 requires that:

Identified impacts to heritage items and heritage conservation areas must be minimised through both detailed design and construction in consultation with the Heritage Council (or its delegate). The measures to manage this must be detailed in the Heritage Management Sub-Plan required by Condition C3.

In turn, condition of Approval E89 requires that:

The detailed design development of light rail stops and associated light rail infrastructure within or in proximity to Heritage listed items must be undertaken in consultation with the Heritage Council (or its delegate).

REMMM HE-4 requires that:

As detailed design progresses opportunities to avoid or further minimise impacts to identified archaeological sites of State and local significance would be considered and documented in the design report. The project design would be sympathetic to identified potential archaeological resources items (i.e. in archaeological management Zones 1 and 2) and, where reasonable and feasible, minimise impacts to those resources. The detailed design for sections of the project that would impact on known archaeological resources would be developed in consultation with a qualified archaeologist and relevant stakeholders as advised (e.g. the OEH and City of Parramatta Council).

The design and construction team will include a heritage architect (built heritage specialist). The heritage architect will be supported by an appropriately qualified and experienced heritage specialist and multidisciplinary team that will provide the necessary input to the design review process.

Together with a heritage structural engineer (where relevant), the following actions will be undertaken:

- Prepare a Heritage Archival Recording and Salvage Report (Condition E71) of areas impacted by the Infrastructure Works, specifically, Cumberland District Hospital Precinct, St Patrick's Roman Catholic Cemetery, Royal Oaks Hotel and Stables, Alfred Square (and potential archaeological site), Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve), Camellia Underbridge Abutments (south and north) and Dundas Railway Station (Condition E70)
- Prepare a Heritage Interpretation Strategy (Condition E64) and Moveable Heritage Item Strategy (REMMM HE-13)
- Provide input into the Urban Design Requirements Report (Condition E87)
- Provide input to Environmental Design Review Reports
- Review design development at stage milestones to identify additional heritage impacts and more detailed mitigating measures
- Review design changes to identify additional heritage impacts and more detailed mitigating measures
- Assess impacts on and advise on resolution through mitigating measures at State Heritage Register listed places

- Assess impacts on and advise on resolution through mitigating measures of local heritage items, Section 170 register items and elements within local heritage conservation areas
- Assist and liaise through TfNSW with the DPIE, Heritage NSW and City of Parramatta Council to confirm impacts and advise on variations to the project and necessary approvals
- Attend regular project and site meetings during construction.

8.2 Historical Archaeology

8.2.1 Overview

The Parramatta area is a significant archaeological landscape dating back thousands of years. There is potential for Aboriginal and historical archaeology within the Stage 1 alignment.

Historical archaeology refers to archaeology resources relating to occupation and activities dating from 1788. It includes ‘contact archaeology’ – evidence of interactions between Aboriginal people and the European colonists, as well as convict and colonial archaeology, evidence of institutions, defence, urban development and commerce, agriculture and industry, and life in Parramatta and NSW between the late eighteenth and early twentieth centuries.

8.2.2 HAMUs and Management Zones

The Stage 1 area is divided into 31 project-specific Historical Archaeological Management Units (HAMU). The HAMU are based on a combination of historical land use, potential archaeological resources and construction activities.

The HAMU are grouped into three (3) management zones based on the significance of the archaeology and the level of potential. The zones are:

- Zone 1 (red)—HAMUs with known, or potential for, State significant archaeology
- Zone 2 (yellow)—HAMUs with known, or potential for, locally significant archaeology and low potential for State significant archaeology
- Zone 3 (green)—HAMUs unlikely to contain significant archaeology.

8.2.3 Methodologies

The HARD provides details of the archaeological methodologies and research framework to manage and mitigate impacts to historical archaeology. Broadly the HARD methodologies include:

- Archaeological fieldwork – testing, design review, salvage, monitoring, unexpected finds
- Post-excavation analysis – cataloguing, artefact and ecofact analysis, measured drawings and interpretive illustrations, stratigraphic and technical reports
- Public outcomes and interpretation – public engagement during archaeological fieldwork and post-excavation analysis, integrating archaeological findings into heritage interpretation and artefact displays
- Final report preparation – research, synthesis of post-excavation analysis, response to research questions, digital archive
- Archaeological collections management – long-term care and storage of the archaeological collection including artefacts, sampled materials, site archive and report.

8.2.4 Excavation Director

Where excavation works are required in the vicinity of potential archaeological sites, the Excavation Director will be present to advise on archaeological issues and oversee excavation works. The

Excavation Director will determine if excavation works are in the vicinity of potential archaeological sites. Roles and responsibilities also include preparation of the HARD and the authority to advise on the duration and extent of oversight required during excavation.

The nominated Excavation Director, Abi Cryerhall of GML Heritage, meets the Heritage Council of NSW's criteria at a State level for State significant archaeological sites and at a local level for locally significant archaeological sites.

8.2.5 Zone 1 HAMUs – State Significant Archaeology

Impact to State significant archaeology will be avoided or minimised where feasible. Early archaeological investigations of Zone 1 HAMUs will be undertaken prior to construction excavation works.

The HARD provides the detailed archaeological methodologies for Zone 1 HAMUs and in summary they are:

- Archaeological test excavation in accordance with the HARD and the site-specific Work Method Statement (WMS) will be undertaken
- Archaeological monitoring will be undertaken during all early design investigations and construction excavation works within Zone 1 HAMUs
- In accordance with Section 146 of the Heritage Act, the NSW Heritage Division will be notified when archaeological 'relics' are discovered
- Design will be reviewed to avoid or minimise impact where State significant archaeology is identified during testing, monitoring or other works
- Where redesign is not possible, detailed archaeological salvage excavation in accordance with the HARD will be undertaken. Salvage excavations will be undertaken prior to construction excavation works
- Archaeological findings will be subject to post-excavation analysis and final reporting in accordance with the HARD
- Significant archaeological findings will be made available to the public and included in the heritage interpretation strategy.

8.2.6 Zone 2 HAMUs – Locally Significant Archaeology and Low Potential for State Significant Archaeology

Construction is likely to impact locally significant archaeology. Generally, archaeology within Zone 2 HAMUs will be identified during archaeological monitoring of construction works.

The HARD provides the detailed archaeological methodologies for Zone 2 HAMUs and in summary they are:

- Archaeological monitoring will be undertaken during early design investigations and construction excavation works within Zone 2 HAMUs as specified in the HARD
- In accordance with Section 146 of the Heritage Act, the NSW Heritage Division will be notified when archaeological 'relics' are discovered
- If archaeological remains are identified, construction works will cease in the affected area and detailed salvage excavation in accordance with the HARD will be undertaken
- If State significant archaeological are identified, then Zone 1 archaeological mitigation measures apply, including reviewing the design to avoid or minimise impacts
- Archaeological findings will be subject to post-excavation analysis and final reporting in accordance with the HARD

- Significant archaeological findings will be made available to the public and included in the heritage interpretation strategy.

8.2.7 Archaeological Fieldwork

Historical archaeological fieldwork methodologies include testing, monitoring and salvage excavations. The fieldwork will be undertaken by a team of archaeologists including a qualified Excavation Director.

Testing refers to excavation of small-scale test trenches to confirm the presence and extent of archaeology. Testing will be undertaken in Zone 1 HAMUs as part of early investigations and prior to construction excavation works. The purpose of the testing is to locate State significant archaeology and to inform the design review process to avoid or minimise impact. The testing methodology is outlined in Section 5.3.3 of the HARD. The design review process is outlined in Section 5.3.5 of the HARD.

Monitoring refers to supervision of ground disturbance and excavation works within areas of archaeological potential. Monitoring will be undertaken in Zone 1 and nominated Zone 2 HAMUs during early design investigations and construction works. The monitoring methodologies are outlined in Section 5.3.4 and Section 5.3.7 of the HARD.

Salvage refers to detailed archaeological excavation and recording. It will be undertaken in Zone 1 HAMUs and Zone 2 HAMUs where archaeology is identified and redesign to avoid impact is not possible. Salvage excavation may also be required for unexpected finds in Zone 3 HAMUs. The salvage methodologies are outlined in Section 5.3.6 of the HARD.

Historical archaeological excavations (testing and salvage) will be integrated with Aboriginal archaeological excavations at the sites identified in Table 7-2 and as needed during the investigations. The integrated archaeological methodology is provided in Section 5.3.8 of HARD.

All archaeological findings will be recorded in detail following the methodologies outlined in Section 5.3.11 in the HARD. Artefacts will be retrieved following the strategy provided in Section 5.3.9 and archaeological samples taken in accordance with the strategy provided in Section 5.3.10 of the HARD.

8.2.8 Unexpected Heritage Finds – Historical Archaeology

The Unexpected Heritage Finds Procedure is detailed in **Appendix A** and summarised as follows:

- Cease activity in the affected area and secure/protect the suspected archaeological find from impact
- Contact the Excavation Director to assess the suspected archaeological find and develop a mitigation strategy
- Notification of the TfNSW Environment and Planning Manager
- Historical archaeological finds will be managed in accordance with the HARD and notification requirements (see Section 5.3.14 of HARD)
- Aboriginal archaeological finds will be managed in accordance with the Aboriginal ARD
- Construction work in the affected area can recommence once any additional regulatory requirements are met and archaeological impact mitigation (through the design process) is complete.

The procedure for notification under Section 146 of the *Heritage Act* is as follows:

- The Excavation Director will assess the archaeological find and determine if they are ‘relics’ and require notification under Section 146 of the *Heritage Act*

- If archaeological 'relics' are confirmed, then a Section 146 Notification form with the supporting statement and mitigation strategy will be prepared in consultation with TfNSW and submitted to the Heritage Division (as a delegate of the Heritage Council of NSW)
- Where additional approval is required, the archaeological finds will not be impacted until the Heritage Division confirms the mitigation strategy and the requirements of the HARD are met.

8.2.9 Post-Excavation Analysis

The post-excavation analysis will commence immediately on completion of the fieldwork or phases of fieldwork. It will include input from the Excavation Director and archaeological team, artefact specialists and archaeological scientists. The post-excavation phase will overlap with the final report preparation. Details of the post-excavation methodology are provided in Section 5.4 of the HARD.

In summary the post-excavation analysis will include the following:

- Preparation of an initial archaeological findings summary report
- Analysis of environmental and building materials samples
- Artefact cataloguing and analysis
- Preparation of detailed stratigraphic (trench) reports
- Preparation of detailed measured drawings of archaeological findings.

8.2.10 Final Reporting (Archaeological Excavation Report)

Preparation of a final report on the archaeological investigations is required by the CoA (Archaeological Excavation Report). The final report is to include details of the excavation, post-excavation analysis and artefacts catalogue, a response to the research design and a reassessment of archaeological significance. It must also include details of the archaeological collection (artefacts and archive) long-term storage location and how the archaeological information has been made available to the public and researchers.

The final report will present the archaeological investigation results. It will include a plain English synthesis of the post-excavation analysis, technical and specialist reports. It will be presented within a framework based on the key historical themes and archaeological research outcomes.

The final report is based on standard archaeological permit requirements and will include the following:

- a plain English summary of the archaeological findings
- overview of the archaeological investigation program and methodology
- historical background including additional primary or secondary source research if required
- a discussion of the archaeological investigation results and response to the research questions
- illustrations including photographs, scale drawings and interpretive graphics
- a reassessment of archaeological significance and the further research potential of the archaeological collection
- details of the archaeological collection repository, long-term management and access.

Technical and specialist reports, detailed site plans and survey drawings, context and site registers, artefacts and samples catalogue, and site photograph contact sheets will be included as appendices.

Within 12 months of completing all archaeological investigations, the final report will be submitted with the relics and to the following agencies and groups for information:

- DPIE

- NSW Heritage Council
- Local library
- Local Historical Society in the local government area.

8.2.11 Public Outcomes and Interpretation

Information about the site's history, archaeological significance and investigation process will be provided to the public during the archaeological investigation where appropriate. Public engagement initiatives that may be suitable for the archaeological fieldwork program include:

- Poster and pamphlets containing information about the archaeological investigation being placed on the site's hoarding or interpretive hoarding
- Updates on the archaeological excavation process and findings being published on the project website or social media
- Preparation of a media release on the archaeological excavations and findings. The nature of archaeological findings will determine whether a media release is warranted. The media release will be in conjunction with any planned open days (see below)
- Holding a public open day during the archaeological excavation. Accessibility and the nature of archaeological findings will determine whether an open day is feasible or beneficial
- Information on the archaeological investigation results will be made available to the public and researchers
- The final archaeological investigation report will be lodged with the Department of Planning, Industry and Environment, the Heritage Division, City of Parramatta Council and other local libraries and historical societies
- The archaeological results could be presented to local and specialist interest groups where possible. These could include the local historical society, heritage centre and archaeological conferences. There is also opportunity to publish research papers in industry and academic journals. These would be subject to approval from TfNSW.

The City of Parramatta Council is currently working on an LGA-wide initiative to make archaeological finds and data relevant and accessible to members of the public.

The PLR Stage 1 archaeological investigations are a good opportunity to provide a 'snapshot' of the archaeology across the Parramatta LGA. There is opportunity to liaise with the City of Parramatta Council and submit the archaeological data within their archaeological collection management framework.

8.2.12 Artefact Collections Management

Following commencement of construction, a repository for the safe keeping of artefacts recovered from the site will be nominated. The repository for the archaeological collection—artefacts, samples, paper archive and digital files—could be a secure location within a TfNSW or JV provided facility. Alternative options could be the City of Parramatta Council's Heritage Centre or a similar facility. These would likely require formal agreement.

The archaeological collection will be prepared for long-term storage, including:

- Artefacts and samples will be bagged, tagged and placed in archival standard boxes by material type and context
- If required, significant artefacts will be treated and stabilised by a conservation specialist
- Paper and digital copies of the artefact catalogue and excavation data will be included in the archive boxes.

The archaeological collection and archive will be submitted to the nominated long-term storage location once the artefacts and archive have been prepared and the final report is complete.

8.3 Non-Aboriginal Heritage Salvage and Archival Recording

8.3.1 Overview

The Parramatta area has many items of local, State and world heritage significance. Unavoidable impacts to heritage items in the Parramatta area have been identified in the design of Infrastructure Works. Impacts range from negligible indirect impacts to direct impacts of demolition.

Heritage items identified for modification or demolition in the construction of the Infrastructure Works requires archival recording and a salvage report in accordance with CoA E70. Materials salvaged as a result need to be sympathetically reused, displayed or stored.

8.3.2 Heritage Archival Recording

The Infrastructure Works require the modification or demolition of heritage items, including items of local and State heritage significance. NSW heritage guidelines and best practice require that an archival recording of an item is made before any changes occur. It is a requirement that these be documented as part of the Heritage Management Sub-plan.

Specific items that are to be modified include:

- Cumberland District Hospital Precinct
- St Patrick's Roman Catholic Cemetery
- Royal Oak Hotel and Stables
- Alfred Square and potential archaeological sites
- Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve)
- Camellia Underbridge Abutments (south and north)
- Dundas Railway Station Group.

Archival recordings must be:

- Completed prior to the commencement of demolition or modification of the item
- Carried out by a suitably qualified heritage consultant in accordance with the NSW Heritage Office's How to Prepare Archival Records of Heritage Items (1998), and Photographic Recording of Heritage Items Using Film or Digital Capture (2006)
- Prepared using archival-quality material and deposited within 12 months with relevant groups:
 - Records for State Heritage Register (SHR) listed items would be held at the NSW Heritage Council, the State Library and the owner of the asset
 - Records for locally-listed items would be held by the local council, the local library/studies and the owner of the asset

Within 12 months of completing the archival recording, the JV will distribute copies to the following groups and stakeholders:

- DPIE
- Heritage NSW
- Heritage Council of NSW
- Relevant Council(s)

- State Library
- Relevant local libraries
- Local historical societies in the local government area
- Owner of the asset.

8.3.3 Heritage Salvage Process and Report

Opportunities and options for the sympathetic reuse of salvaged material (including integrated heritage displays) will be identified through the Environmental Design Review process via the Heritage Impact Report. As detailed in Section 1.5.3 of the CEMP, the Environmental Design Review process is managed by the Environment and Sustainability Manager to ensure design documentation complies with the Planning Approval, REMMMs, EPOs and contractual requirements (outlined in the Deed).

Heritage items which will be modified or demolished, as identified in the Environmental Design Review process and included in CoA E70, will be captured in the Historical Archival Recording and Salvage Report. Submitted as part of the Photographic Archival recording, the Salvage Report will:

- Identify fabric of the items to be modified or demolished that is of heritage significance
- Identify salvage and options for the sympathetic reuse of heritage fabric (including integrated heritage displays) on the project or other repository, reuse and display options. Fabric of high and exceptional heritage significance is to be listed in a salvage schedule within a salvage scheme for the project.

Suitable repository locations for material salvage from heritage items identified in CoA E70 will be identified in consultation with TfNSW, Heritage NSW, relevant council(s) and Registered Aboriginal Parties (where relevant). Where relevant, the Salvage Scheme will also identify residual items and materials that are to be made available to local stakeholders and landowners. The process would be as per below:

- Residual materials are to be identified in the Salvage Scheme
- The following will be contacted to ascertain their interest in receiving the excess material:
 - CoPC
 - Landowners from the locality and interface contractors: in consultation with CoPC, expression of interest to be published via the PLR Facebook page and the monthly Electronic Direct Mail (EDM) for the project.

9 Aboriginal Heritage Risk Management

9.1 Aboriginal Archaeology – Parramatta Sand Body

The Parramatta Sand Body (PSB) is listed on the State Heritage Register (SHR) as 'Ancient Aboriginal and Early Colonial Landscape' (SHR Listing no 01863). The PSB contains cultural, archaeological and geomorphological values and its SHR Statement of Significance is as follows:

The Parramatta Sand Body is an important cultural landscape. Archaeological investigation of the sand body has uncovered a substantial archaeological record that has contributed to our understanding of pre-colonial Aboriginal occupation of the Parramatta area and more broadly, the Cumberland Plain. The antiquity of some of this archaeological record and evidence of change over time is significant to Australian archaeology generally. For the local Aboriginal people whose ancestors lived on and used the sand body for many thousands of years before the arrival of non-Aboriginal people, the sand body has special significance. The sand body is a tangible link with their cultural past.

The Parramatta Sand Body Conservation Area has the potential to provide further insight into the diet and lifestyle of Aboriginal people in pre-colonial times. Prior to non-indigenous settlement of the area, the site would have been an attractive location for Aboriginal people, as it had ready access to, two permanent water sources and mixed resources. Archaeological investigations of parts of the sand body in close vicinity to the conservation area, have revealed evidence of pre-colonial Aboriginal occupation.

From a geomorphic perspective, the sand body has the potential to provide insight into patterns of river flow and flood events that could lead to a better understanding of the formation of the Parramatta River Valley. On a broader scale, the sand body may be able to provide valuable information about sea level change in the Pleistocene period with implications for possible future sea levels and coastal geography under a warming climate.

The sand body also has the potential to provide insight into the natural environment of Parramatta CBD in the pre-colonial period. The fluvial sand terrace is evidence that Parramatta had a more dynamic and diverse natural environment that would otherwise have been known from historical accounts, which provide few details about the natural vegetation of the area. Pollen, which may be preserved within the sand body, could yield valuable information about the original vegetation of the area which is otherwise poorly documented by historical evidence.

(<https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?id=5061073>)

As part of the Environmental Design Review process, every effort will be made to avoid impact to the PSB (refer to Section 1.5.3 of the CEMP). In particular, this process will assess deep works associated with the Project which represent a key risk to Aboriginal heritage and geomorphological values within the PSB. The extent of known Aboriginal sites within the PSB means construction work will need to cease, under the Unexpected Heritage Finds Procedure, whenever Aboriginal archaeological deposits are identified.

A proposal to manage potential archaeological deposits across the PSB is to be developed by the Aboriginal heritage expert (refer to Section 9.3.3) and implemented prior to excavation of the track slab. The first stage is to develop a model of the PSB through a process of geomorphic and archaeological analysis, involving both geophysics and borehole soil analysis. This will be undertaken concurrently with detailed geotechnical works conducted as part of the design investigation program.

Archaeological and geomorphological analysis of geotechnical boreholes is to be used to provide detailed descriptions of the depth of fill, the presence and depths of PSB with archaeological potential and the extent of the PSB across the route.

Once this first step is finalised, further testing of the PSB will be undertaken in locations within the Project alignment that have not been subject to any prior archaeological testing to identify the presence of Aboriginal sites. A sonic drill rig will be used to collect samples at these locations in 20m spacings. The collected sample cores will then be sieved by Aboriginal heritage specialists and Aboriginal Representatives to determine if Aboriginal salvage is required prior to track slab works. The sampling methodology reflects the investigations of the PSB summarised in the Extent Heritage Services testing report (December 2019), as well as previous archaeological studies performed by other archaeological companies.

The above methodology for managing expected archaeological deposits across the PSB has been developed to meet the conditions of approval of CSSI and REMMMs. It is further noted that the testing methodology for Robin Thomas Reserve will need to be undertaken in conjunction with the Historical Archaeological investigations due to dual archaeological values of State significance being present.

9.2 Unexpected Heritage Finds – Aboriginal Archaeology

On discovery of an unexpected Aboriginal site, the Unexpected Heritage Finds Procedure (**Appendix A**) will be implemented. The extent, integrity and value of the site will then be assessed in line with the ACHAR and options for the sympathetic use of salvaged material will be presented to the Registered Aboriginal Parties (where pertinent) and, where relevant, include registration in the Aboriginal Heritage Information Management System (AHIMS) register.

If the site is of significant value, reasonable and feasible efforts will be made to avoid direct impacts to the site. Measures may include movement of services below the site (directional drilling), encasing the site in a protective frame and constructing around/above the site. These options will be detailed and planned in collaboration with the Aboriginal heritage expert.

Salvage excavation of an unexpected site with high value will only be considered as a final option once all avenues for conservation have been exhausted.

9.3 Aboriginal Archaeology Salvage

The following Salvage Excavation Methodology has been adapted from Kelleher (2017) and will be updated prior to the commencement of construction following further consultation with relevant stakeholders.

Salvage excavation will be undertaken at PLR AFT 2 and within the impacted portions of Harris Street Footpath/Robin Thomas Reserve and Cumberland Hospital East. The program will be conducted within the boundaries of the approved Project area and will aim to extract a representative sample of artefacts and geomorphic information related to activity areas. The salvaged material will then be analysed to gain knowledge and undertaking of the scientific and cultural information associated with the nominated sites.

To achieve a robust and comparable result, it was recommended by Kelleher (2017) that an open area salvage excavation be conducted over two phases, each of which is detailed in the sections that follow.

9.3.1 Phase 1

The purpose of Phase 1 is to establish the statistical boundaries of the previously identified archaeological deposit.

A series of one square metre squares will be excavated on a transect grid overlain on each site to confirm the extent of archaeological evidence and related geomorphic activity. The squares will be positioned to complement and augment the information from the previous test excavation program. Within the squares, archaeological bearing deposits are identified through:

- Significant quantities of artefacts (comparable to other dense Aboriginal sites in Parramatta)
- Variations in raw material
- Unusual artefacts
- Chronological material (e.g. charcoal or charcoal bearing deposit, sandy deposit suitable for Optically-Stimulated Luminescence or gravels) and/or taphonomic indicators including demonstrated intact portions of the PSB.

Where Phase 1 and previous test excavation has identified archaeological bearing deposit, Phase 2 excavation will be undertaken.

9.3.2 Phase 2

Reflecting the outcomes of the Phase 1 testing, open area salvage will be conducted within nominated one square metre excavation squares. It is anticipated that a total of 90 square metres will be excavated during the salvage program as shown in Table 9-1 below.

Table 9-1: Indicative Extent of Aboriginal Salvage Excavation

Site	Geomorphic Context and Possible Depth of Deposit	Approximate Phase 2 Excavation Extent
Cumberland Hospital East	• Lucas Heights residual soils • Likely depth of archaeology 300mm to 400mm	25m ²
Harris Street Footpath/Robin Thomas Reserve	• Parramatta Sand Sheet • Likely depth of archaeology 1m	50m ²
PLR AFT 2	• Parramatta Sand Sheet • Likely depth of archaeology 1m	15m ²
Sydney Turf Club Car Park	• Clay Cliff Creek Alluvium (west) and Blacktown residual soils (east) • Likely depth of archaeology 400mm to 500mm	0m ² (no archaeological impact is proposed)

The individual squares will be hand excavated in stratigraphic units (Unit A, Unit B, etc.) until the basal layer or culturally sterile deposit is reached. The excavated deposit will be sieved using nested 5.0mm and 2.5mm sieves.

The location of each excavated square will be identified on a surveyed plan of the site. Stratigraphic sections detailing the stratigraphy and features within the excavated deposit will be drawn and photographed. Soil samples as well as thin section profiles (where feasible) will also be collected. The stratigraphy of all excavated areas will be documented, and appropriate records archived.

9.3.3 Aboriginal Heritage Expert

The Aboriginal archaeological investigations will be directed and overseen by suitably qualified and experienced Aboriginal heritage expert. Roles and responsibilities also include the design of testing programs, advice on unexpected Aboriginal sites and direction of salvage activities.

9.4 Further Archaeological Salvage for Unexpected Finds

Any further Aboriginal sites identified within the PSB will need to be subject to the same methods of salvage excavation as detailed above. The extent of salvage for any single site will need to be determined on the basis of its content and size.

Following archaeological salvage, excavation areas are to be backfilled and reinstated, including disturbed landscape features. Salvaged Aboriginal objects are to be reburied on-site or kept in an off-site 'keeping place' as determined in consultation with RAPs.

9.5 Post Excavation Analysis

The analysis of artefacts will be used to assemble interpretations about sites including the location, age, cultural heritage values and the purpose of use. Various types of evidence will inform the analysis including:

- Field Data – Information gathered from the field includes pit ID, spit number, material type, number, and any significant technological characteristics (e.g. backing or bipolar techniques)
- Laboratory testing – Data will be recorded in matrices suitable for comparative analysis (e.g. multivariate and univariate) of the excavated assemblage on a local and regional basis
- Lithic characteristics – Recorded characteristic classes will be derived from A Record in Stone: The Study of Australia's Flaked Stone Artefacts (Holdaway and Stern, 2004) (Table 9-2).

Table 9-2: Sample Categories

Characteristics recorded		
Record Number	% Cortex	Flake Type
Pit ID	Length	Termination Type
Spit Number	Width	Core Type
Count	Thickness	Number of Scars (Core)
Raw Material	Weight	Scar Type (Core)
Colour	Modification	Shape of Flake
Quality	Reduction Type	Platform Type

10 Compliance Management

10.1 Roles and Responsibilities

The JV Project Team's organisational structure and overall roles and responsibilities are outlined in Section 3.2 of the CEMP. Specific responsibilities for the implementation of environmental controls are outlined in Section 7 of this Sub-plan.

10.2 Training

All employees, contractors and utility staff working on site will undergo induction training relating to Aboriginal and non-Aboriginal heritage management issues prior to construction commencement. Reflecting the requirements of REMMM HE-1, 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
- Identification and protection of heritage items
- 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 (refer **Appendix A**).

This induction will be subject to continual review to reflect the construction stage, significant risks and learnings from incidents or non-conformances.

Further details regarding staff induction and training are outlined in Section 3.4 of the CEMP.

10.3 Monitoring and Inspections

As per CoA C2 (e), environmental inspections will be undertaken for the duration of the Infrastructure Works. Inspections of sensitive areas and activities with the potential to impact Aboriginal and non-Aboriginal heritage will occur for the duration of the project. Environmental inspections will be undertaken by the Environment and Sustainability Team. Requirements and responsibilities in relation to monitoring and inspections are documented in the HARD and Section 3.8 of the CEMP.

Monitoring and inspection requirements relevant to heritage management are identified in Table 10-1.

10.4 Reporting

The JV is responsible for managing the environmental reporting program and arranging specialist consultants to prepare reports, as required. The environmental reporting requirements are detailed in Table 10-2.

Reporting in relation to heritage management for the Project will also capture any complaints or incidents relating to heritage management, including any responses provided or actions undertaken in response to the matter.

Additionally, in accordance with CoA E75, an Archaeological Excavation Report will be prepared. This will detail the results of archaeological investigation or salvage and artefact analysis. The report will

include a description of consultation undertaken in relation to these works and will be submitted to the Planning Secretary, for information, within 12 months of completing all archaeological investigations, unless otherwise agreed with the Planning Secretary.

10.5 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this Sub-plan, conditions of approval and other relevant approvals, licenses and guidelines. An Environmental Audit Program will be prepared at least one month prior to construction, or as otherwise agreed by the Planning Secretary. Internal auditing will be undertaken generally on a six-monthly basis throughout the Project.

Audit requirements are outlined in Section 3.8.4 of the CEMP.

Table 10-1: Inspection and Monitoring Requirements

Item	Scope	Timing	Frequency	Responsibility	Records / Reporting
Archaeological Monitoring (design investigations)	Supervision of ground disturbance and excavation works within areas of archaeological potential	Design Pre-Construction	During nominated works on Zone 1 and Zone 2 HAMUs as specified in the HARD	Excavation Director	Archaeological Monitoring Reports Section 146 Notification (if required)
Archaeological Testing	Excavation of small-scale test trenches to confirm the presence and extent of archaeology to inform design	Design Pre-Construction	Once only (prior to construction impacts in nominated areas)	Excavation Director Aboriginal heritage expert	Work Method Statements Archaeological Excavation Report Section 146 Notification (if required)
Salvage Excavation (Non-Aboriginal)	Detailed archaeological excavation and recording (in Zone 1 HAMUs, Zone 2 HAMUs and possibly for unexpected finds in Zone 3 HAMUs) where archaeology is identified and redesign to avoid impact is not possible	Design Pre-Construction	Prior to construction impacts in nominated areas	Excavation Director	Archaeological Excavation Report Section 146 Notification Heritage Interpretation Strategy

Item	Scope	Timing	Frequency	Responsibility	Records / Reporting
Salvage Excavation (Aboriginal)	Aboriginal archaeological excavation and recording will be undertaken at PLR AFT 2, Sydney Turf Club Carpark and within the impacted portions of Harris Street Footpath/Robin Thomas Reserve and Cumberland Hospital East	Design Pre-Construction	Prior to construction impacts in nominated areas	Excavation Director Aboriginal heritage expert	Archaeological Excavation Report Heritage Interpretation Strategy
Archaeological Monitoring (construction activities)	Archaeological monitoring of construction excavation activities would be carried out by a qualified archaeologist based on the Historical Archaeological Research Design	Construction	During nominated works on Zone 1 and Zone 2 HAMUs as specified in the HARD	Excavation Director	Archaeological Monitoring Reports Section 146 Notification (if required)
Maintenance of exclusion zones inspections	Inspection of barrier fencing to delineate heritage structures to be protected (Cumberland Hospital East and Harris Street Footpath/Robin Thomas Reserve)	Construction	Daily (when works occurring within 50m of no-go zone)	Site Supervisor	Site Diary
Maintenance of exclusion zones inspections	Inspection of barrier fencing to delineate heritage structures to be protected (Cumberland Hospital East and Harris Street Footpath/Robin Thomas Reserve)	Construction	Weekly	Environmental Coordinator or the JV's Heritage Architect/Engineer	Inspection records
Post Construction Heritage Inspections	Post-construction inspection of the protected heritage structures.	Within one month of the completion of Infrastructure Works	Once only	JV's Heritage Advisor	Inspection records

Table 10-2: Reporting Requirements

Report	Scope	Timing	Frequency	Responsibility	Submission
Environmental Design Review Reports	Detail the recommendations of the heritage architect/engineer and how those recommendations have been considered and actioned.	Design	With each stage of relevant design packages	Environment and Sustainability Manager with input from JV's Heritage Architect	Independent Certifier
Historical Archival Recording and Salvage Report	Photographic recording of heritage items which have been identified for demolition or modification. Identification of options for sympathetic reuse of salvaged material, or other options for repository, reuse and display.	Design/ Pre-Construction/ Construction	Once only	Heritage Consultant	TfNSW, DPIE, Heritage NSW, Relevant Council(s), relevant local libraries and local historical societies (within 12 months of completion of archival recording)
Heritage Interpretation Strategy (including moveable heritage item strategy)	Discussion of the key interpretive themes, stories, archaeological results, and messages proposed to interpret the history and significance of affected heritage items and heritage conservation areas. Prepared in consultation with the Heritage NSW.	Design Construction	Before work that impacts items identified in CoA E64 Updated within 6 months of completion of an archaeological excavation and archival recording	Heritage consultant	Planning Secretary

Report	Scope	Timing	Frequency	Responsibility	Submission
Historical Archaeological Research Design and Investigation Methodology	Outline a methodology for the investigation, monitoring and/or salvage of archaeological resources	Prior to archaeological salvage excavation	Once only	Excavation Director	Heritage NSW
Urban Design Requirements Report	Show the design responds to the character, setting and fabric of heritage elements and landscapes	Prior to construction of light rail stops, tracks and associated facilities	Once only	Environment and Sustainability Manager	Planning Secretary
Archaeological Excavation Report	Reports on findings during excavations (Aboriginal and Non-Aboriginal), including artefact analysis and identification of a final repository of any relics	Within 12 months of completing all archaeological investigations	Once only	Excavation Director	Heritage NSW
State Heritage Inventory data sheets	Update State Heritage Inventory data sheets where SHR items are impacted or significant elements are modified	Construction	Upon impact or modification of State significant elements	Excavation Director	Relevant agencies to inform the revision of Conservation Management Plans
Exhumation Management Plan	Provide guidance on managing the discovery of human skeletal remains	Pre-construction Construction	Once only	Excavation Director	Heritage NSW DPIE

Report	Scope	Timing	Frequency	Responsibility	Submission
Work Method Statements	Outline the archaeological work method statement (WMS) for historical and Aboriginal archaeological works	Pre-construction Construction	4 weeks prior to archaeological works	Excavation Director	Internal
Section 146 Reporting	Heritage Council will be notified when archaeological 'relics' are discovered	Post-excavation works/testing	When required (subsequent to finding of archaeological local or state significant 'relic')	Excavation Director	Heritage Council
Unexpected Finds Form	Report on unexpected finds. The report is to include a preliminary assessment of the need for redesign or salvage.	24-48 hours after any unexpected find	Whenever an unexpected find is unearthed	Excavation Director	Internal TfNSW
Unexpected Finds Register	Register of unexpected finds	To commence after the first unexpected find is unearthed	Fortnightly	Excavation Director	Internal
Unexpected Finds Reporting	Reporting on unexpected finds during works and proposed management activities as part of Contractors Monthly Report	To commence after the first unexpected find is unearthed	Monthly	Excavation Director	Internal TfNSW Heritage Council (as required)

11 Review and Improvement

11.1 Continuous Improvement

Continuous improvement of this Sub-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.

11.2 HMP Update and Amendment

The processes described in Section 3.11 of the CEMP may result in the need to update or revise this Sub-plan. This will occur as needed.

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

A copy of the updated Sub-plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 3.10.2 of the CEMP.

Appendix A –Unexpected Heritage Finds Procedure

Appendix B – Stakeholder and Agency Consultation

Table B-1: Log of consultation with Cumberland Council as per A5(b) and (c)

In / Out	Date and time	Method of contact	Details of contact
Out	19/06/19	Workshops	PLR Infrastructure Package CEMP and Sub-plan briefing sessions (attended).
Out	21/06/19, 18:40	Email	Issue of Heritage Management Sub-plan for review.
In	11/07/19, 17:01	Email	Response to CEMP and Sub-plans review received. No comments provided for the Heritage Management Sub-plan.
Out	16/07/19, 19:16	Email	Email requesting confirmation that Cumberland Council has no feedback on the Heritage Management Sub-plan.
In	17/07/19, 09:11	Email	Email confirming that Cumberland Council has no feedback on the Heritage Management Sub-plan.

Table B-2: Log of consultation with City of Parramatta Council (CoPC) as per A5(b) and (c)

In / Out	Date and time	Method of contact	Details of contact
Out	20/06/19	Workshops	PLR Infrastructure Package CEMP and Sub-plan briefing sessions (attended).
Out	21/06/19, 18:40	Email	Issue of Heritage Management Sub-plan for review.
In	05/07/19, 17:01	Email	Response to Heritage Management Sub-plan review with comments register.
Out	31/07/19, 13:18	Email	Return of updated comments register confirming that recommendations from CoPC had been incorporated into the plan.
In	09/8/19, 16:42	Email	Response confirming that City of Parramatta is satisfied with the response to the comments.

Table B-3: Log of issues raised by City of Parramatta Council (CoPC) as per A5 (d) and (e)

Ref	Comment	How addressed	Management plan reference location
1	Council acknowledges the E64 condition by OEH that requires Heritage Interpretation (page 23 HMP) and advocates for strategic and high-quality heritage interpretation, in line with the principles and policies of NSW OEH and NSW Heritage Council.	Noted. The JV will strive to achieve an integrated Interpretation Strategy through consultation with the relevant Stakeholders, including CoPC, OEH and HD. This is reflected in the 'How Addressed' column against condition E64 (Table 3-1) and again in Table 10-2.	Table 3-1, CoA E64, "How Addressed" column
2	Council birds-eye roll spanning the LGA involves; managing the delivery of heritage interpretation across the public domain; aligning the design of interpretation in private developments; and advocating with NSW OEH on interpretation within state significant developments.	Noted. The PLR project will provide the Heritage Interpretation Strategy (HIS) and consult with the CoPC in order to have an active role in achieving an integrated interpretation program for the Parramatta LGA.	N/A
3	Council requests a copy of the Draft Heritage Interpretation Strategy (Feb 2019) to review and offers to provide: - An outline of interpretation (existing and in planning) for sites that neighbour the PLR corridor – to enable the broader strategic context and user experience, and - timely feedback to TfNSW and OEH – to maintain efficiency and clarity of the goals.	The Stage 1 Heritage Interpretation Strategy was provided to CoPC on 20/09/2019 for review and comment. The JV would greatly welcome the offers made by the CoPC.	N/A
4	While COP understand the Alignment has been endorsed by State government and there is no opportunity to revise the alignment to reduce the impact on items such as the Royal Oak Hotel, COP notes the additional information in Table C1 (page 107) to investigate opportunities to minimise	Noted. A qualified heritage architect has been engaged to provide feedback on the detailed design in order to minimise heritage impacts as far as possible and feasible. The Environmental Design Review Report will detail the recommendations of the heritage architect/engineer and how those recommendations have been considered and actioned.	N/A

Ref	Comment	How addressed	Management plan reference location
	impact on the Royal Oak hotel during detailed design is supported.		

Table B-4: Log of consultation with Heritage NSW as per A5(b) and (c)

In / Out	Date and time	Method of contact	Details of contact
Out	20/06/19	Workshops	PLR Infrastructure Package CEMP and Sub-plan briefing sessions (attended).
Out	21/06/19, 18:40	Email	Issue of Heritage Management Sub-plan for review.
In	16/07/19	Email	Response to Heritage Management Sub-plan review with comments register.
Out	29/07/19; 11:25	Phone Call	Phone Call to Heritage NSW to discuss removal of Exhumation Policy from Heritage Management Plan (due to inconsistency between Planning Approval and SPIR) and production of an Exhumation Management Plan.
Out	31/07/2019, 12:44	Email	Return of updated comments register confirming that recommendations had been incorporated into the plan.
Out	14/08/19, 14:34	Email	Email to Heritage NSW seeking feedback regarding how comments on HMP were addressed by the JV.

In / Out	Date and time	Method of contact	Details of contact
In	14/08/19, 14:37	Phone Call	Phone Call from Heritage NSW in answer to email.
In	21/08/2019	Letter	Response confirming that Heritage NSW is satisfied that most of the comments provided by the Heritage Council have been addressed.
Out	02/10/2019	Email	Return of updated comments register confirming that recommendations had been incorporated into the Heritage Management Sub-plan.
Out	30/10/2019, 12:00	Meeting	Meeting with to discuss close-out of comments on HMP and comments on Historical Archaeological Research Design (HARD)
In	30/10/2019, 12:17	Letter	Response confirming that Heritage NSW is satisfied that the comments provided by the Heritage Council have been addressed. One additional comment was provided.
Out	31/10/2019, 08:28	Email	Email to Heritage NSW confirming the additional comment was to be included in the updated revision of the HMP and requesting confirmation that all the issues raised during consultation for the HMP were addressed to Heritage NSW's satisfaction.
In	31/10/2019, 10:21	Email	Confirmation that comments had been satisfactorily addressed.

Table B-5: Log of issues raised by Heritage NSW as per A5 (d) and (e)

Ref	Comment	How addressed	Management plan reference location
1	Purpose should include '...heritage will be protected and managed during ' detailed design and ' construction...' 21/08/19 Comment addressed.	Agreed. Text added to section 2.1.	Section 2.1
2	A note should be added stating that the heritage Interpretation Plans will be consistent and coordinated. 21/08/19 Comment addressed.	Agreed. The requested note has been added.	Section 3.2 - E64 - How addressed
3	Plans must be prepared for each area outlined in Condition E64. 21/08/19 Comment addressed.	Noted. Reference to the remaining locations identified in CoA E64 have been added to HE-9 for clarity and consistency.	Section 3.3, pg 43, HE-9 'How addressed'
4	Should refer to REMMMs VL-2, 3, 4, 6, 7, 8, 9, 10, 11, 12, TR-1, 6, 7. These are relevant to heritage and specific items. 21/08/19 Comment addressed.	REMMs VL-2, VL-4, VL-6, VL-9, TR-1, TR-6 and TR-7 have been added to Section 3.3. VL3, 10, 11, 12 have not been included as these are addressed by Package 5 (SOM). VL-7 and VL-8 are included for completeness, however, they are addressed by TfNSW.	Section 3.3

Ref	Comment	How addressed	Management plan reference location
5	A number of buildings within Cumberland District Hospital Group (East campus) have been identified for removal as part of the works. This should be noted within 'project impacts' and addressed in 'mitigation and management'. 21/08/19 Comment addressed.	This information has been added to the project impacts. However, it is noted that the removal of the buildings is within the scope Package 2 and is not addressed by the Infrastructure Works. Irrespective, the outcomes of the archival recording for Package 2 will be considered in the Interpretation Strategy for salvaged items. This has been added as a mitigation measure.	Table 6-2 Cumberland District Hospital, pg 65
6	Should include reference to REMMMs HE-22, VL-2, 3, 4, 6, 7, 8, TR-6, 7 as these are relevant. 21/08/19 Comment addressed.	Reference to REMMMs HE-22, VL-2, VL-4, VL-6, TR-6 and TR-7 have been added. VL-3 has not been included as these are addressed by Package 5 (SOM). VL-7 and VL-8 are included for completeness, however, they are addressed by TfNSW.	Table 3-2
7	The works within Cumberland District Hospital Group have the potential to impact on the broader cultural landscape including views to and from the adjacent Nationally listed Parramatta Female Factory Precinct. Mitigation measures for Cumberland District Hospital including REMMM HE-11 should take into account impacts to the Parramatta Female Factory Precinct as well. 21/08/19 Comment addressed.	Impacts of setting changes, including obscuration, on National Heritage values to be assessed and mitigated through wire-free design, green track and interpretation.	Table 6-2 Parramatta Female Factory pg 66
8	Should include reference to REMMMs TR-6, 7 as these are relevant. 21/08/19 Comment addressed.	Agreed. REMMMs TR-6 and 7 have been added to the Sub-plan.	Table 3-2

Ref	Comment	How addressed	Management plan reference location
9	Should include reference to REMMMs VL-6, 9. 21/08/19 Comment addressed.	Agreed. REMMMs VL-6 and V-L 9 have been added to the Sub-plan.	Table 3-2
10	Salvage of heritage fabric for reuse opportunities should be considered as part of the mitigation measures. Also VL-2 should be referred to. 21/08/19 Comment addressed.	Agreed. References have been added to Table 6-2 and REMMM VL-2 has been added to Table 3-2.	Table 3-2 Table 6-2 Royal Oak Hotel pg 68
11	Should refer to REMMMs VL-3, 6, 9. These are relevant to heritage. 21/08/19 Comment addressed.	Agreed. Reference to VL-6 and 9 have been added to Table 3-2 and Table 6-2. REMMM VL-3 has not been included as this is addressed by Package 5 (SOM).	Table 3-2 Table 6-2 Prince Alfred Square pg 69
12	Should refer to REMMM VL-10 and HE-22. These are relevant to heritage. 21/08/19 Comment addressed.	Reference to HE-22 has been added to Table 3-2 and Table 6-2. REMMM VL-10 has not been included as this is addressed by Package 5 (SOM).	Table 3-2 Table 6-2 Lennox Bridge pg 69
13	Should refer to REMMM VL-2, 3, 6, 7, 8, 9 as these are relevant to heritage. 21/08/19 Comment addressed.	References to VL-2, VL-6 and VL-9 has been added to Table 3-2 and Table 6-2. REMMM VL-3 has not been included as these are addressed by Package 5 (SOM). VL-7 and VL-8 are included for completeness, however, they are addressed by TfNSW.	Table 3-2 Table 6-2 Ancient Aboriginal and Early Colonial, pg 71

Ref	Comment	How addressed	Management plan reference location
14	Should refer to REMMM VL-6 as this is relevant to heritage. 21/08/19 Comment addressed.	Agreed. Reference has been added to Table 3-2 and Table 6-2.	Table 3-2 Table 6-2 Queen's Wharf Reserve, pg 72
15	Should refer to REMMMs VL-2, 3 and HE-22 as these are relevant to heritage. 21/08/19 Comment addressed.	Reference to HE-22 and VL-2 has been added to Table 3-2 and Table 6-2. REMMM VL-3 has not been included as this is addressed by Package 5 (SOM).	Table 3-2 Table 6-2 Sewer Pumping Station 67, pg 72
16	HE-18 '...opportunities to appropriately reuse the Camellia underbridge abutments...' refers to more than just salvaging items of fabric. Opportunities to reuse the abutments in-situ should be explored as part of the design development. 21/08/19 Comment addressed.	Mitigation measure H3 is triggered by REMMM HE-18, which specifies the requirement for the qualified heritage architect to review the design. Option for in situ reuse of these elements will be considered.	Table 6-2 Camellia (Parramatta River) Underbridge Abutments, pg 73
17	Should reference VL-2, 3, 4, 5, 6 as these are relevant to the site. 21/08/19 Comment addressed.	Reference to VL-2, VL-4 and VL-6 have been added to Table 3-2 and Table 6-2. REMMMs VL-3 and VL-5 have not been included as these are addressed by Package 5 (SOM).	Table 3-2 Table 6-2 Rydalmere Hospital Precinct (former) pg 74

Ref	Comment	How addressed	Management plan reference location
18	Should reference VL-2, 3, 5, 12 as these are relevant to the site. Also the statement of significance references the timber platform building as being significant despite being reconstructed. It is not clear from information provided what is happening to this building. The removal of this building would have a major impact on the significance of the item. 21/08/19 Comment addressed.	Reference to VL-2 has been added to Table 3-2 and Table 6-2. REMMMs VL-3, VL-5 and VL-12 have not been included as these are addressed by Package 5 (SOM). The timber building will be retained and will not be affected by the PLR design. However, there will be some level adjustments and new paving installed around the building. All works will be undertaken in consultation with the heritage architect.	Table 3-2 Table 6-2 Dundas Railway Station Group pg 74
19	Should reference VL-2, 3, 6, as these are relevant to the site. 21/08/19 Comment addressed.	References to VL-2 and VL-6 have been added to Table 3-2 and Table 6-2. REMMM VL-3 has not been included as this is addressed by Package 5 (SOM).	Table 3-2 Table 6-2 Carlingford Stock Feeds pg 75
20	Reference should include VL-2, 3. 21/08/19 Comment addressed.	Reference to VL-2 has been added to Table 3-2 and Table 6-2. REMMM VL-3 has not been included as this is addressed by Package 5 (SOM).	Table 3-2 Table 7-1 H2 pg 87
21	Reference should include VL-2, 3. 21/08/19 Comment addressed.	Reference to VL-2 has been added to Table 3-2 and Table 6-2. VL-3 has not been included as this is addressed by Package 5 (SOM).	Table 3-2 Table 7-1 H4 pg 87
22	Should include Salvage as a measure and refer to HE-15. 21/08/19 Comment addressed.	Salvage and reference to REMMM H-15 has been added to H9.	Table 7-1 H9 pg 89

Ref	Comment	How addressed	Management plan reference location
23	A number of buildings within Cumberland District Hospital Group (East campus) have been identified for removal as part of the works ranging from little to moderate significance. This is not noted within 'project impacts'. This should be noted and impacts should be revised to major direct impact. 21/08/19 Comment addressed.	This information has been added to the project impacts. However, it is noted that the removal of the buildings is within the scope Package 2 and is not addressed by the Infrastructure Works. Irrespective, the outcomes of the archival recording for Package 2 will be considered in the Interpretation Strategy for salvaged items. This has been added as a mitigation measure.	Table 6-2 Cumberland District Hospital, pg 65
24	Consideration of views into and out of the nationally listed should be taken into account when designing route through Cumberland District Hospital. Impact of works has the potential to have moderate to high impacts (depending on mitigation measures). 21/08/19 Comment addressed.	Views to be assessed against setting controls for local and National heritage values. Impacts to be mitigated.	Table C-1 Parramatta Female Factory Precinct pg 142
25	Visual impacts should also be noted. 21/08/19 Comment addressed.	Visual impacts noted.	Table C-1 Lennox Bridge pg 144
26	It should be noted that the removal of these abutments would result in major direct impacts. 21/08/19 Comment addressed.	Agreed and actioned.	Table C-1 Camellia, pg 147

Ref	Comment	How addressed	Management plan reference location
27	The statement of significance references the timber platform building as being significant despite being reconstructed. It is not clear from information provided what is happening to this building. If this is removed it would result in a major direct impact to the significance of the site. 21/08/19 Comment addressed.	The timber building will be retained and will not be affected by the PLR design. However, there will be some level adjustments and new paving installed around the building. All works will be undertaken in consultation with the heritage architect.	Table C-1 Dundas Railway Station Group pg 148
28	Add reference to Environmental Control Map. 21/08/19 Comment addressed.	Reference added.	Section 6.2
29	The Archaeological research design has not been finalised. It is referred to in the CEMP as a final document (GML May 2019). The Heritage Division commented version 2 of this ARD and has not been provided with a final version to understand how it responded to our comments of 3/4/2019. 21/08/19 The ARD is still being finalised, it is noted the CEMP has been revised to state this.	The HARD is currently being finalised in consultation with the Heritage NSW. The final document will be provided to Heritage NSW. 02/10/19 Noted. The final HARD (August) was submitted to the Heritage NSW on 15/08/2019.	Section 5
30	The reference documents should include the PLR Aboriginal Archaeological Assessment prepared by Artefact Aug 2017. It should also refer to the Preferred Infrastructure Report. 21/08/19 Comment addressed.	Reference to documents added to Section 5.1.	Section 5.1

Ref	Comment	How addressed	Management plan reference location
31	Regarding the Parramatta Sand Body. There is a relevant study prepared by GML Heritage in 2019 detailing results from the George Street Gatehouse of the Parramatta Park and Old Government House Site. This report is directly relevant to understanding and further investigation of the Ancient Aboriginal and early colonial landscape (Robin Thomas Reserve) and the Parramatta Sand Body located outside this SHR item. It is relevant to advise the consultants preparing the 'additional assessment' on the PSB as stated in paragraph 2 of section 5.2.1 of this report to address these findings in their investigation approach. 21/08/19 Section 9.1 (p100) does not clearly explain that the significance of the Parramatta Sand Body as it is listed on the State Heritage Register for its geomorphological values. This is in addition to its potential to retain physical evidence through Aboriginal archaeology. The CEMP focuses on the archaeology to the detriment of the sand body itself. Further to our previous comment (item 31), Section 9.1 does not consider that the PSB is being investigated through a separate project now by TfNSW and PCC to inform a masterplan. Several aspects discussed in this approach should be revised based on the proposed methodology for investigation under Heritage Act 1977 applications (s60 and s140) applications which are about to commence, as directed by archaeologists from Extent Heritage Services. The testing methodology for Robin Thomas Reserve will also need to be undertaken in conjunction with the Historical Archaeological investigations due to dual archaeological values of state significance being present.	Noted. This report is available to the JV. 02/10/2019 Additional text has been added to Section 9.1 to clearly explain the significance of the PSB for its geomorphological values. As part of the Environmental Design Review process, every effort will be made to avoid impact to the PSB, as outlined in Section 1.5.3 of the CEMP. This methodology for managing expected archaeological deposits across the PSB has been developed to meet the conditions of approval of CSSI and REMMMs. Due to timing of this HMP, the sampling methodology does not reflect the investigations of the PSB as directed by archaeologists from Extent Heritage Services. However, it is recognised that these works are being undertaken and the outcomes of the research will be reviewed to inform the Infrastructure Works methodology. The JV are in agreement that the testing methodology for Robin Thomas Reserve will need to be undertaken in conjunction with the Historical Archaeological investigations due to dual archaeological values of State significance being present. This aspect of the investigations is now reflected in Section 9.1	Section 5.2.1 Section 9.1

Ref	Comment	How addressed	Management plan reference location
32	CDHG: 1st point - early archaeological investigations within this precinct are required in accordance with the HARD (and site specific AWMS?) is required 'to determine the nature and extent of the remains' - NO. It is required to inform the detailed design and avoidance of significant fabric as required under E65 and E68 of COA. Noting please the results of test excavation from the CDHG testing results which are now available through the Heritage Division library. There needs to be a reference back to E65 and E68. 21/08/19 Noted. We will review the updated ARD prepared to support this part of the project.	Text amended. Note that the results from the PNUT investigations have informed the testing design for CDHG.	Table 6-2 (p65)
33	St Pat's RCC: 1st point - We have not been provided with a final version of the HARD. How will you deal with identification of human remains from this part of the cemetery, esp if grave cuts/vaults are identified during testing. Should the project be unable to modify the design and this generates a requirement for exhumations, how will this be managed in the CEMP? There is no current reference to this. Would it be included only following testing? This should be explained in the CEMP consistently (i.e. Table 6.3 (item 8, p68) states the project approval does not include harm, modification of impact to human remains (CoA E61) - please include the additional text from Table 6.3 into table 6.2 to resolve this. -refer to EXHUMATION POLICY STAGE 1 IS IN APPENDIX D 21/08/19 Noted that exhumation management plan will be separated from CEMP.	The HARD is currently being finalised in consultation with the Heritage NSW and the document will be provided to Heritage NSW (July 2019). Text amended to include reference to CoA E61. Additional clarification provided on the process of early investigations and Exhumation Management Plan preparation.	Table 6-2 (pg. 67)

Ref	Comment	How addressed	Management plan reference location
34	Each point which states 'early archaeological investigations are required in accordance with the HARD to determine the nature and extent of the remains' (e.g. Royal Oak Hotel, Robin Thomas reserve, CDHG) - why is this phrased in this way? Is it to address E65 and E68 to avoid impacts? or to guide detailed salvage? Noting the Royal Oak Hotel is not one of the items identified in Conditon E68 as requiring testing. Please be clear in these points. 21/08/19 Noted the approach to managing this archaeological site has been amended.	Clarified Royal Oak Hotel archaeology will be subject to salvage excavation prior to construction impacts. Text changed to 'inform design and avoidance of impact' where referring to testing at state significant archaeological sites throughout.	Table 6.2 (throughout the table)

Ref	Comment	How addressed	Management plan reference location
35	Lennox Bridge - 1st point - HD met with TfNSW/PLR during the assessment of this SSI project. TfNSW/PLR advised that physical investigation of the Lennox Bridge was required through additional geotechnical investigation AT THAT TIME, PRIOR TO APPROVAL to INFORM THE STRUCTURAL STABILITY OF THE BRIDGE. This point does not make sense. What additional investigation is needed to inform the detailed design? 21/08/19 The slot trenching may not be required where detailed physical intervention and dismantling of the bridge took place for the installation of the portals into the bridge. Seek the excavation report from Parramatta City Council and Annie Bickford. The slot trenching may need to be adjusted according to these results. Please ensure you obtain this information prior to commencing any physical works.	Slot trenching will be required to be conducted on the bridge to identify the structural elements and mitigate impact. The text in the first point has been amended to reflect this process. 02/10/19 The City of Parramatta Council has advised that they have not received the Lennox Bridge excavation report from Annie Bickford. The only available report (as provided by Council) is 'Non-Indigenous Archaeological Assessment Lennox Bridge and Environs' (Casey and Lowe, April 2011). The Casey and Lowe report does not provide any relevant information relating to the structure of the bridge. The slot trenching of Lennox Bridge is a critical input into the design process; the outputs will inform the necessary measures to ensure ongoing structural integrity of the bridge. The slot trenching is limited to the modern infills and provides information on the location of services which traverse the bridge. The slot trenching methodology has been endorsed by the Excavation Director and determined to not have an actual or potential impact on heritage.	Table 6.2 (p69)

Ref	Comment	How addressed	Management plan reference location
36	Prince Alfred Sq: 1st point - testing will be used to id archaeological remains of the 1st and 2nd gaol.... These investigations are reflected in the HARD. For what purpose will the testing be applied? To inform E65 and E68 to avoid impacts and disturbance? please be clear in the commitments outlined in the CHMP. 21/08/19 Noted that table 3-1 clarifies how the project will address E68. However table 6-3 does not reference requirements of E68 or E65. Instead it states 'should an intact state significant archaeological resource associated with the convict era, or the former gaol and factory complex, be unexpectedly encountered during works, impacts will be avoided or minimised where possible'. This is not appropriate for an SHR listed item based on its state significant archaeology. THIS RESOURCE IS EXPECTED. Amend Table 6-3 accordingly please	Agreed. First point amended to reflect that the objective of the testing is to inform design, and thus address the requirements in CoA E65 and E68. 02/10/19 The proposed rail alignment is adjacent to Prince Alfred Square though only minor encroachment is anticipated. The text in Table 6-3 has been revised to align with the requirements of CoA E65 and E68. Specifically, the phrase 'where possible' has been removed from the discussion on the former gaol and factory complex ('should an intact state significant archaeological resource associated with the convict era, or the former gaol and factory complex, be unexpectedly encountered during works, impacts will be avoided or minimised where possible').	Table 6.2 (p69)
37	Prince Alfred Sq: 3rd point - an appropriately qualified and experienced heritage architect may not be an appropriate choice and commitment given this item is a cultural landscape. 21/08/19 The advice is noted, however this statement is not evidenced in Section 8 of the HMP (p94), it states 'the design and construction team will include a heritage architect (built heritage specialist). Together with the heritage structural engineer (where relevant)'. This statement is also not addressed or evidenced elsewhere in the HMP.	The heritage architect is supported by an appropriately qualified and experienced heritage specialist and multidisciplinary team that will provide the necessary input to the design review process. 02/10/19 The above qualification has been added to Table 6.2 and Section 8.	Table 6.2 (pg. 69) Section 8

Ref	Comment	How addressed	Management plan reference location
38	Ancient Aboriginal and early colonial landscape: 1) 'to determine the nature and extent of the remains' it is unclear how this will be applied where the item is listed for the Parramatta Sand Body. Excavation of the PSB may not reveal further information about the extent of remains given there may or may not be evidence of Aboriginal occupation present within this part of the PSB. Perhaps rephrase to identify for this item - to determine the nature and extent of historical remains, and Aboriginal objects, to inform design development and seek opportunities for in situ conservation of these remains and the PSB unexcavated. These comments also apply to Table 6-3 (item 20/20a - p71). 21/08/19 Noted this is addressed in table 6-2 (p71) and Table 6-3 (p81).	Text amended.	Table 6.2 (p71)

Ref	Comment	How addressed	Management plan reference location
39	Queens Wharf Reserve - Include an item that early archaeological investigation of this item will be undertaken in accordance with the HARD to determine the nature and extent of the remains, inform detailed design development and seek opportunities for in situ conservation. Include ' where redesign to avoid impact to archaeology is not possible, thorough and detailed archaeological salvage excavations will be undertaken prior to construction excavation works. Post excavation analysis and reporting on the results will be undertaken. Significant archaeological finds will be included in heritage interpretation including artefact displays. Public engagement opportunities during the archaeological works will be undertaken where feasible. The archaeological investigations will be made available to the public. 21/08/19 Heritage DPC has not been provided with a copy of the finalised testing results for Queens Wharf Reserve. DPC attended site during the PLR Enabling Works and we note that the testing program did NOT go to a depth into the area of the Queens Wharf where remains of State significance were anticipated. The program designed for next phase works may require additional adjustment depending on depth of impacts to archaeology of State significance. Table 6-3 also needs to reference conditions E65 and E68.	Queens Wharf Reserve has been added to Table 6.2. Archaeological testing at Queens Wharf has been conducted as part of PLR Enabling Works. The resulting report has been made available to the JV. Archaeological monitoring of all early design investigations and construction related excavation works will be undertaken within this HAMU as per the HARD. Archaeological finds will be managed in accordance with the CoA, REMMM and the HARD methodologies (CoA E73, CoA E74, REMMM HE-3). 02/10/19 Additional text has been added to Table 6.3 to note that archaeological test investigations will be undertaken in the area of Queens Wharf where the proposed construction works have potential to encounter and impact State significant archaeological remains.	Table 6.2 (pg. 72)

Ref	Comment	How addressed	Management plan reference location
40	the PSB and its archaeological sensitivity - any salvage activity needs to employ an excavation methodology to manage and identify historical archaeological deposits associated with the convict barracks and the HARD program. It will also need to respond to detailed research questions outlined in point 4 of this spreadsheet (report prepared by GML for the PSB in the Parramatta Park/Old Gov House site). 21/08/19 Noted that you have access to this report. Please ensure this is addressed in the ARD referred to Heritage, DPC. To date no referral of the research design relevant to the Ancient Aboriginal and early colonial landscape has not been referred to DPC for comment. It is an SHR listed site, please refer this document.	Text amended. 02/10/19 Site specific research questions for Ancient Aboriginal and Early Colonial Landscape / Robin Thomas Reserve have been included in the final HARD. This has been submitted to the Heritage Division. Additional research questions may be included once testing is complete; these questions will be included in the Archaeological Excavation Report which will be submitted to the Heritage Division for information.	Table 6.4 (pg. 84)
41	H3 - recommend the heritage architect engaged can also address CULTURAL LANDSCAPES or have expertise to obtain this advice as required. - particularly for the CDHG, Prince Alfred Park and Robin Thomas Reserve. 21/08/19 This is not evidenced in Section 8 of the HMP (p94), it states 'the design and construction team will include a heritage architect (built heritage specialist). Together with the heritage structural engineer (where relevant)'. It is also not addressed elsewhere in the HMP.	The heritage architect is supported by an appropriate qualified and experienced heritage specialist and multidisciplinary team that will provide the necessary input to the design review process. 02/10/19 The above qualification has been added to Table 6.2 (CDHG, Prince Alfred Park and Robin Thomas Reserve) and Section 8.	Table 7-1 (pg. 87) Table 6-2 Section 8

42	H14 and H15 - the Excavation Director must be present for testing and salvage of ALL sites of State significance (all HAMUs identified in this way and as modified by the CoA), not just CDHG, Harris St Footpath/RTR/AFT1 and Sydney Turf Carpark. The way this is phrased the Excavation Director needs to be present for Aboriginal excavation, why is this the case? The Excavation Director is required to manage historical archaeology under CoA E72. This defines the Excavation Director as relevant to historical archaeology. However CoA E78 requires the same Excavation Director to oversee works for Cumberland District Hospital Group (this is appropriate) and for Harris Street Footpath/Robin Thomas Reserve (also appropriate) and for two Aboriginal sites (PLR AFT 2 and Sydney Turf Club carpark). It is unclear why this person would need to be present during this work, unless it is to ensure that appropriate historical/Aboriginal occupation evidence is managed at these sites. This requires clarification. 21/08/19 Table 10.1 is noted. However, the table is unclear whether the works would be guided by an Excavation Director who is a specialist in Historical or Aboriginal archaeology, or both. This would be dependent on the site in question being managed. The responsibility of the Historical archaeological research design and investigation methodology falls to the EXCAVATION DIRECTOR, not a generic 'heritage consultant', please amend this in Table 10.1. The Archaeological Excavation Report implies one report and one excavation director. The project includes two archaeological programs - Aboriginal and historical, are you saying a final report will not be prepared for the Aboriginal archaeological investigations or will one combined archaeological report will be produced for this project? The phrasing in other parts of the CEMP indicates separate monitoring reports would be prepared and separate salvage excavation reports. Condition E75 of the CoA requires one final excavation report prepared for the entire PLR project.	The role of the Excavation Director in testing, monitoring and salvage has been clarified in a new table (Table 10.1). Additional clarification has been added to H14 and H15 to specify that direction will be provided by the Excavation Director who will be supported by a suitably qualified and experienced Aboriginal heritage expert. 02/10/19 Due to confusion created by using the term 'Excavation Director' to describe two roles, the terminology of the Planning Approval has been adopted and the nominated roles within the HMP refers to an Excavation Director (historical archaeology) and an Aboriginal heritage expert (Aboriginal archaeology). Table 10-1 reflects the requirements of the Planning Approval (CoA E72 and E78). As such, the Excavation Director is responsible for testing and salvage of both historical archaeology and Aboriginal archaeology. However, this role will be supported by the Aboriginal heritage expert. The reference to the 'heritage consultant' in Table 10-2 has been revised to the Excavation Director. The requirement for an excavation report in Table 10-2 has been clarified to note that two reports would be prepared to satisfy the requirements. The JV will continue to work with TfNSW to coordinate reporting across the Parramatta Light Rail program.	Table 7-1 (pg. 91) Table 10-1 Table 10-2
----	---	---	---

Ref	Comment	How addressed	Management plan reference location
	This is a question for TfNSW in terms of how will they achieve a comprehensive final report for the project, whereas it is enough for the HMP to state final reporting will be an outcome of the work.		
43	Section 3.5 Public Health Act 2010 and Public Health Regulation 2012 (NSW) 'Exhumation approval from the NSW Health Department under the Public Health Regulation 2012 may not be required for human remains that are archaeological. This will be determined in consultation with the Local Health District.' (p11). The Public Health Regulation 2012 states under s69 'exhumation without approval prohibited' It is clear from s69(1) (a) and (b) that approval from either the Coroner or approved by the Secretary, that an approval must be obtained prior to exhumation of a body. The section written above in section 3.5 of Appendix D does not reflect the legislation and should be amended. Heritage also notes that there are recent precedents established by exhumations on other SSI projects. 21/08/19 Noted that the exhumation management plan separated from CEMP. Please refer Exhumation management plan for comment and review.	There is a conflict between CoA E61 which does not permit impact to human remains and REMMM H-5 which requires preparation of an Exhumation Policy and Guideline. In accordance with CoA A3, the Planning Approval prevails over the SPIR in the event of inconsistency. Therefore, the Exhumation Policy has been removed from the HMP. The JV is highly committed to achieve the best outcome possible regarding this highly sensitive issue. It is therefore proposed to prepare an Exhumation Management Plan in consultation with the Heritage NSW which addressed relevant comments in this submission. The HMP has been amended to reflect the above inconsistency and the preparation of the Exhumation Management Plan. Additionally, it is stated in the HMP that additional approvals will be required if human remains are identified and redesign to avoid impact cannot be achieved (Table 6-2). 02/10/19 Noted. The Exhumation Management Plan will be referred to the Heritage NSW for comment and review prior to implementation.	To be addressed in Exhumation Management Plan Table 6-2

Ref	Comment	How addressed	Management plan reference location
44	p12. Section 4.2 Discovery, There can be instances in which one bone could be animal and others could be human. Which bone is therefore photographed and SMSed to the ED could therefore be an issue. Recommend this is changed to state where there are multiple bones, the ED attends site to confirm if they are suspected human remains or not. Also noted this requires the ED to be a suitably qualified archaeologist in human bone id. If the ED is not available or does not have this skill, a suitably qualified archaeologist who has worked with human bones before will be required to undertake this ID or progress to section 4.3 Assessment as suspected human remains. 21/08/19 Noted that the exhumation management plan separated from CEMP. Please refer Exhumation management plan for comment and review.	This comment will be addressed in the Exhumation Management Plan. 02/10/19 Noted. The Exhumation Management Plan will be referred to Heritage NSW for comment and review prior to implementation.	To be addressed in Exhumation Management Plan
45	replace all references to OEH with Department of Planning, Industry and Environment or Department of Premier and Cabinet according to the legislation referenced. OEH no longer exists as an agency. This may cause confusion in notification procedures. 21/08/19 Noted that the exhumation management plan separated from CEMP. Please refer Exhumation management plan for comment and review.	References corrected in HMP. For Exhumation Policy, references will be amended in the Exhumation Management Plan. 02/10/19 Noted. The Exhumation Management Plan will be referred to Heritage NSW for comment and review prior to implementation.	HMP (also to be addressed in Exhumation Management Plan)

Ref	Comment	How addressed	Management plan reference location
46	Section 4.5 Approval - noted the CoA E61 states 'nothing in this approval permits the proponent to harm, modify, or otherwise impact human remains uncovered during the construction and operation of the CSSI. 'Exhumation approval from the NSW Health Dept under the Public Health Regulation 2012 may also be required for archaeological human remains (i.e remains that are over 100years of age and not Aboriginal in ancestry). This will be determined with the local health district if remains are found. The DPC notes for Sydney Metro this approval was indeed required and the Exhumation management plan prepared for the project updated to reflect the find. The Exhumation permit also required liaison with heritage DPC to ensure appropriate management of the remains. It is further noted that condition E68 requires avoidance in detailed design and this includes St Patrick's Roman Catholic cemetery, where such remains are anticipated. 21/08/19 Noted that the exhumation management plan separated from CEMP. Please refer Exhumation management plan for comment and review.	This comment will be addressed in the Exhumation Management Plan. 02/10/19 Noted. The Exhumation Management Plan will be referred to Heritage NSW for comment and review prior to implementation.	To be addressed in Exhumation Management Plan
47	Section 4.6.1 management summary for human remains - human remains confirmed archaeological (more than 100 years old non-Aboriginal) - include liaison with Heritage, DPC as necessary. Heritage notes that advice has been provided to NSW Health for such matters on other SSI projects. 21/08/19 Noted that the exhumation management plan separated from CEMP. Please refer Exhumation management plan for comment and review.	This comment will be addressed in the Exhumation Management Plan. 02/10/19 Noted. The Exhumation Management Plan will be referred to Heritage NSW for comment and review prior to implementation.	To be addressed in Exhumation Management Plan

Ref	Comment	How addressed	Management plan reference location
48	Section 4.6.2 conservation in situ - 'Changing the PLR alignment is unlikely to be possible. Archaeological exhumation of human remains, if found in Church Street adjacent to St Patrick's Roman Catholic Cemetery, will likely be required. This may also be the case for other parts of the PLR project area if archaeological human remains are unexpectedly encountered within the track alignment.' If changing the alignment is not possible and alternative options to avoid impact to human remains are not going to be meaningfully investigated why would you test then? Also removal of burials from an SHR Listed item (St Patrick's Cemetery) is not an acceptable heritage outcome. 21/08/19 Noted that the exhumation management plan separated from CEMP. Please refer Exhumation management plan for comment and review.	This comment will be addressed in the Exhumation Management Plan. 02/10/19 Noted. The Exhumation Management Plan will be referred to Heritage NSW for comment and review prior to implementation.	To be addressed in Exhumation Management Plan

Ref	Comment	How addressed	Management plan reference location
49	Reference to exhumation policy stage 2 (for temporary and permanent storage location to be identified), p16. This policy stage 2 is included as Section 5 of the Annexure, but not detail, only dot points of what needs to be done next. Presumably the Exhumation Policy will be revised once human remains are confirmed along the alignment. The Division notes at these critical points in time this detail is appropriate and needed in very short timeframes. The project should identify an appropriate forensic or physical anthropologist to be available for the project. This section should be prepared before the CEMP is closed off, or finalised and referred to Heritage, DPC for comment on its appropriateness as an addendum to the CEMP. 21/08/19 Noted that the exhumation management plan separated from CEMP. Please refer Exhumation management plan for comment and review.	This comment will be addressed in the Exhumation Management Plan. 02/10/19 Noted. The Exhumation Management Plan will be referred to Heritage NSW for comment and review prior to implementation.	To be addressed in Exhumation Management Plan
50	Figure 4.1 ('18) where is the effort to redesign evidenced in this table. It goes from notification to approval for exhumation with no feedback loop to address CoA E68 or E61. This is not acceptable and not best practice. Revise this flowchart. 21/08/19 Noted that the exhumation management plan separated from CEMP. Please refer Exhumation management plan for comment and review.	This comment will be addressed in the Exhumation Management Plan. 02/10/19 Noted. The Exhumation Management Plan will be referred to Heritage NSW for comment and review prior to implementation.	To be addressed in Exhumation Management Plan

Ref	Comment	How addressed	Management plan reference location
51	There is no advice in the Exhumation Policy to explain how to proceed if the remains are identifiable. If there is e.g. a name plate or other identifier this would be likely to change the response from the Dept of Health. It would need to be addressed in the stage 2 of the Exhumation Policy. Check if the form is correct in the annexure, it may not be up to date. 21/08/19 Noted that the exhumation management plan separated from CEMP. Please refer Exhumation management plan for comment and review.	This comment will be addressed in the Exhumation Management Plan. 02/10/19 Noted. The Exhumation Management Plan will be referred to Heritage NSW for comment and review prior to implementation.	To be addressed in Exhumation Management Plan
52	This Policy should NOT require the exhumation of the Magee family members. The Project has specifically argued this will be avoided. That is discussed in the EIS. The Annexure and CEMP should make this clear that although there is a known burial it will not involve exhumation. The advice in p73 of the CEMP (HAMU 31) reflects this. The inclusion of this item in the Exhumation Policy is concerning, although the text under 2.3.2 states 'the grave site will be protected during works. It is unclear why it has been included if that is the case in an exhumation policy document. 21/08/19 noted. The amended HARD has been received and comments will be made to TfNSW following its review. Reference to Environmental Design Review reports is noted. These must be meaningfully engage with an options analysis and justifications presented.	This comment will be addressed in the Exhumation Management Plan. 02/10/19 Noted.	To be addressed in Exhumation Management Plan

Ref	Comment	How addressed	Management plan reference location
53	E68 needs to be meaningfully addressed by this project, not as a tick the box exercise. E73 requires early physical investigation of areas identified as likely to retain State significant archaeology. It lists 3 sites which MUST be addressed, but implies all those of State significant archaeology will be investigated to inform design options. This is seen in table 6.3 supplied in the CEMP for the following items only (Arthur Phillip High School/Barracks Lane; CDHG; St Patrick's RC Cemetery; Prince Alfred Square; The Town Drain; Macquarie Street near Harris Street (early town leases); Robin Thomas Reserve/Former Soldier's District; Commissariat and Barracks/George St East. To meaningfully address these areas of redesign, the CEMP tables may require amendment following the early testing of these sites and reanalysis of the design and its impacts to the known archaeological resources. While the Division has not yet reviewed the final ARD proposed for this project, it is unclear if that will be further explained in this document or not. The CEMP is appropriate in terms of its explaining the need to test and guide next steps as set out, however there is no clear guidance or flagging in the CEMP where a redesign outcome has been achieved that revises this document to ensure areas where redesign has been achieved will result in avoidance and protection by the project. 21/08/19 Noted. The amended HARD has been received and comments will be made to TfNSW following its review. Reference to Environmental Design Review reports is noted. These must be meaningfully engage with an options analysis and justifications presented.	The HARD is currently being finalised to reflect feedback provided by the DPC Heritage. The Final version of HARD will be provided to Heritage NSW. The HMP will be updated as required following the early investigations and archaeological monitoring. As for matters regarding design/redesign for the project, these will be addressed in the Environmental Design Review Reports, which will detail the recommendations of the heritage architect/engineer and how those recommendations have been considered and actioned. This information has been added to the HMP. 02/10/19 Noted.	HMP

Ref	Comment	How addressed	Management plan reference location
54	Section 8.3.3 should include as a dot point stating the 'identification of residual items and materials to be made available through a process to be developed by the Proponent, to landowners within the locality from where the material originated'. This will assist in ensuring materials salvaged as a result of demolition are reused.	Regarding your additional comment for section 8.3.3 of the HMP, we will add the proposed text to version 7 of the document.	8.3.3

Table B-6: Log of consultation with Kamilaroi-Yankuntjatjara Working Group RAP

In / Out	Date and time	Method of contact	Details of contact
Out	09/07/19	Email	Issue of Heritage Management Sub-plan for review.
In	11/07/19, 17:01	Email	Response to Heritage Management Sub-plan review with comments.
Out	31/07/2019, 16:29	Email	Response confirming that recommendations had been incorporated into the plan.

Table B-7: Log of issues raised by Kamilaroi-Yankuntjatjara Working Group RAP

Reference	Comment	How addressed	Management plan reference location
1	The plan does not include a map showing the location of the sites referred to. For example, I don't know where AFT 1 and 2 are located.	Maps detailing each of the locations of Aboriginal Archaeology Sites has been added to Appendix D.	Appendix D

Reference	Comment	How addressed	Management plan reference location
2	The report doesn't advise who will be reviewing impacts on the Parramatta Sand Body, who will be the Excavation Director, and whether they will be qualified in Aboriginal archaeology as well as non-Aboriginal archaeology. The areas the Excavation Director is to monitor contains significant Aboriginal cultural heritage and archaeology.	The HMP has been revised to note that a proposal to manage the expected archaeological deposits across the PSB will be developed by a suitably qualified and experienced Aboriginal heritage expert and implemented prior to construction commencing. Once the nature and extent of the PSB is fully understood, a process for sampling the PSB in locations within the Project alignment that have not been subject to any archaeological testing will be developed and implemented by the Aboriginal heritage expert. Mitigation Measure H14 (Table 7.1) specifies that the Aboriginal heritage expert will have recognised qualifications in Aboriginal Archaeology.	Section 9.1 Table 7.1
3	There is a very significant site at Cumberland Hospital which must be protected. It is called B14.10d which has important artefacts including a grinding stone, but this report doesn't refer to it and I don't know if it is being protected.	The site at Cumberland Hospital (B14.10d) was recently identified and is recognised as a significant site. Table 7-1 specifies that opportunities to avoid impact to the site will be identified in consultation with an Aboriginal heritage expert. Specifically, the import of suitable fill materials will be undertaken to ensure the proposed use of the site as an Ancillary Facility will not impact on the Aboriginal archaeology. It is noted that there are no excavation works proposed to be undertaken on this site.	Table 6-4 Table 7-1

Table B-8: Log of consultation with Muragadi Heritage Indigenous Corporation RAP

In / Out	Date and time	Method of contact	Details of contact
Out	09/07/19	Email	Issue of Heritage Management Sub-plan for review.
In	26/07/19, 11:34 AM	Email	Response to Heritage Management Sub-plan review. No comments.

Table B-9: Log of consultation with Murra Bidgee Mullangari Aboriginal Corporation RAP

In / Out	Date and time	Method of contact	Details of contact
Out	10/07/19, 11:13 PM	Email	Issue of Heritage Management Sub-plan for review.
In	23/07/19, 12:42 PM	Email	Response to Heritage Management Sub-plan review. No comments.

Table B-10: Log of consultation with Tocomwall RAP

In / Out	Date and time	Method of contact	Details of contact
Out	10/07/19, 11:26 PM	Email	Issue of Heritage Management Sub-plan for review.
In	16/07/19, 07:31 AM	Email	Response to Heritage Management Sub-plan review with comment register.
Out	31/07/19, 16:58	Email	Response confirming that recommendations had been addressed.
In	31/07/19, 17:11	Email	Confirmation that comments had been satisfactorily addressed.

Table B-11: Log of issues raised by Tocomwall RAP

Reference	Comment	How addressed	Management plan reference location
1	Add APIC Policy	Commitment to adhere to the APIC Policy is reflected in the Aboriginal Workforce Participation Plan.	Section 2.3

Table B-12: Log of consultation with Walbunja RAP as per A5(b) and (c)

In / Out	Date and time	Method of contact	Details of contact
Out	09/07/19, 23:26	Email	Issue of Heritage Management Sub-plan for review.
In		Phone Call	Missed phone call from Hika Tekowhai.
Out		Phone Call	Reply to missed phone call. Information was requested regarding Aboriginal archaeological works performed to date and Aboriginal procurement strategy for the project. No comments regarding the Heritage Management Plan.
Out	03/09/19, 13:00	Email	Email sent to Hika Tekowhai providing the requested information.

Table B-13: Log of consultation with Darug Land Observations RAP as per A5(b) and (c)

In / Out	Date and time	Method of contact	Details of contact
Out	10/07/19, 18:19	Email	Issue of Heritage Management Sub-plan for review.
In	22/08/19, 17:20	Email	Response to Heritage Management Sub-plan review. No comments.

Table B-14: Log of consultation with Widescope Indigenous Group RAP as per A5(b) and (c)

In / Out	Date and time	Method of contact	Details of contact
Out	10/07/19, 23:31	Email	Issue of Heritage Management Sub-plan for review.
In	23/08/19, 16:00	Email	Response to Heritage Management Sub-plan review. No comments.

Table B-15: Log of consultation with Darug Aboriginal Land Care RAP as per A5(b) and (c)

In / Out	Date and time	Method of contact	Details of contact
Out	10/07/19, 18:16	Email	Issue of Heritage Management Sub-plan for review.
In	03/09/19, 20:25	Email	Response to Heritage Management Sub-plan review. No comments.

Appendix C – Heritage Items

Table C-1: Historical Heritage Items (Affected)

Item	Address	Listing	Location in Relation to Project	Project Impact and Additional Information
Westmead Precinct				
Parramatta Park and Old Government House	O'Connell Street, Parramatta	World Heritage List (1306) National Heritage List (105957) SHR (00596) Parramatta Park Trust s170 Heritage and Conservation Register (HCR) Parramatta LEP 2011 (I00596)	East of Project Boundary in Westmead Precinct and west of the Project Boundary in Parramatta CBD Precinct. World Heritage buffer zone borders Project boundary at Park Avenue (Westmead) and at O'Connell Street (CBD).	The project is not expected to result in any significant impacts to the World Heritage values of the Old Government House and Domain or buffer zone World Heritage property. Some minor off-corridor works (consisting of line marking within the existing road corridor only) will be required within the buffer zone of the property at the intersection of O'Connell Street/George Street and the intersection of O'Connell Street/Macquarie Street. Off corridor works along Park Avenue, Westmead will not encroach on the curtilage of the buffer zone.

Item	Address	Listing	Location in Relation to Project	Project Impact and Additional Information
Cumberland District Hospital Group	5A Fleet Street, North Parramatta 1 Hainsworth Street, Westmead	SHR (00820) NSW Department of Health s170 HCR Parramatta LEP 2011 (I00820)	Project alignment runs through the Cumberland Hospital precinct in the north of the Westmead Precinct across Parramatta River to the north-west of the Parramatta North Precinct.	This item covers two precincts, a portion west of the Parramatta River in Westmead and the majority east of the Parramatta River in North Parramatta A number of buildings within Cumberland District Hospital Group (East campus) have been identified for removal as part of the CSSI works (Package 2). The Infrastructure Works (Package 4, the subject of this Sub-plan) does not involve demolition of any heritage buildings within this item. Major direct impact on Life Skills Building of moderate significance. Options to retain to be explored. Refer to Parramatta North table entry for more detail.
University of Western Sydney	158–164 Hawkesbury Road, Westmead	Parramatta LEP 2011 (I628)	Borders west of the Project opposite Westmead Station Compound between Railway Parade and Darcy Road.	Impacts are limited to minor visual impact. The proposed Westmead Station light rail stop would be located east of the heritage curtilage and would introduce a new visual element into the landscape.
Parramatta North Precinct				

Item	Address	Listing	Location in Relation to Project	Project Impact and Additional Information
Cumberland District Hospital Group	5A Fleet Street, North Parramatta 1 Hainsworth Street, Westmead	SHR (00820) NSW Department of Health s170 HCR Parramatta LEP 2011 (I00820)	Project alignment runs through the Cumberland Hospital precinct in the north of the Westmead Precinct across Parramatta River to the north-west of the Parramatta North Precinct.	The Project alignment, Cumberland Hospital stop, Cumberland Hospital compound and Parramatta North compound would be located within this item. The Project would involve the demolition of five non-significant recovery cottages and the Boronia building in the West Campus and construction of a new bridge over Parramatta River to the south of the existing bridge. The project would also involve removal of trees on the site ranging from low to high significance. Sections of sandstone kerbs along the alignment would be removed, with potential for reuse within the site. The road alignments would be mostly retained, with the exception of the new bridge over Parramatta River. The Factory Street easement would be opened to its original form. The proposed works would introduce a new visual element into the precinct and alter the cultural landscape of the area, which could be mitigated in detailed design. Overall, the project would result in moderate direct and visual impacts, and minor potential indirect impacts, with minor positive impacts resulting from re-instated views. With mitigation and management measures outlined in Section 7 of this report, this item would continue to meet the threshold for State significance.

Item	Address	Listing	Location in Relation to Project	Project Impact and Additional Information
Parramatta Female Factory Precinct (component of Cumberland District Hospital Group)	Fleet Street, North Parramatta	National Heritage List (106234) SHR (00820) NSW Department of Health s170 HCR Parramatta LEP 2011 (I00820)	To the south of the Project boundary along Factory Street and west of the Project boundary along O'Connell Street in the North Parramatta Precinct.	The Parramatta Female Factory was gazetted on 14 November 2017 in the National Heritage listing. The alignment of the Project was selected to avoid impact on this heritage item, however, the proposed works would have minor impacts to cultural landscape elements within the broader setting. Views to be assessed against setting controls for local and National heritage values. Impacts to be mitigated.
Stone kerbing and tree planting	Fleet Street (both sides), North Parramatta	Parramatta LEP 2011 (I362 and I329)	This item occurs along the length of Fleet Street starting from the intersection of Factory Street and Fleet Street. This intersection is within the Project boundary.	Some trees and sandstone kerbs of heritage landscape value nearby the intersection would be removed. During detailed design, opportunities to minimise impact on this item will be investigated. Where avoidance is not possible, heritage kerbing would be salvaged and reused.

Item	Address	Listing	Location in Relation to Project	Project Impact and Additional Information
St Patrick's Roman Catholic Cemetery	1 Pennant Hills Road, North Parramatta	SHR (01880) Parramatta LEP 2011 (I388)	Adjacent to the Project boundary along Church Street and Pennant Hills Road, north of the Church Street, Albert Street and Pennant Hills Road intersection.	Significant early cemetery with potential for undocumented burials outside the current boundaries. St Patrick's Roman Catholic Cemetery was used for paupers, convicts, infants and other poor people from Parramatta institutions, which traditionally were not buried in the main cemetery. The proposed project alignment would result in a direct impact to a small section of the north-western corner of the cemetery. Trees would be removed that are located outside the curtilage of the item beyond the current fence line along Church Street. A small section of the heritage curtilage of the cemetery would be partially impacted between the existing fence and Church Street. This would result in a minor direct impact to the item.
Royal Oak Hotel	387 Church Street, Parramatta	Parramatta LEP 2011 (I691)	Within the Project boundary in the north-west corner of the Church Street and Ross Street intersection.	The proposal in the EIS is the demolition of the hotel portion, retention of rear stables, and construction of the light rail track through the site. The removal of the main building within the 'Royal Oak Hotel and stables (and potential archaeological site)' would result in a major direct impact to the heritage item. Much of the heritage significance and heritage fabric would be lost. While the item would still meet the threshold for local significance under the criteria, revision of its heritage curtilage on the Parramatta LEP would be required. There is considerable community objection to the demolition of this heritage item, and it is expected that by the removal of the historic fabric there will be a permanent loss of its historic, aesthetic and representative values, as well as deterioration of Church Street streetscape presence. During detailed design, opportunities to minimise impact on this item will be investigated. The proposed Ross Street compound will be built at the site of this item.
Parramatta CBD Precinct				

Item	Address	Listing	Location in Relation to Project	Project Impact and Additional Information
Prince Alfred Square	353D Church Street, Parramatta	SHR (01997) Parramatta LEP 2011 (I686)	South-west corner of the Church Street and Victoria Road intersection.	Prince Alfred Square was gazetted on 28 August 2017 in the State Heritage Register. The proposed project alignment and Prince Alfred Square light rail stop would be adjacent to Prince Alfred Square. The construction of light rail stop would require the removal of the current footpath in the north-eastern corner of the item to make way for the required platform. The footpath would be reconstructed further west into its heritage curtilage. This would require the removal of a section of the park boundary wall and a row of mature rose bushes. The significant war memorial would be retained. During detailed design, opportunities to minimise impact on this item will be investigated.
Lennox Bridge	349-351 (adjacent) Church Street, Parramatta	SHR (00750) Roads and Maritime Services S170 HCR Parramatta LEP 2011 (I00750)	Church Street Parramatta River crossing.	The alignment across Lennox Bridge would result in a direct impact within the heritage curtilage. As the alignment would be located on the non-significant bitumen deck, which was assessed as low significance in the CMP, the Project is unlikely to have substantial impacts on significant heritage fabric. The bridge would continue to be used as a transport corridor (a key heritage value), and the historical use of the bridge by trams would be reinstated. It is understood that the structure of the bridge was recently strengthened as part of a pedestrian access project. Provided that the structural ability of the bridge to withstand the Parramatta Light Rail on a long-term basis is confirmed, the Project would result in a moderate direct impact on the heritage bridge. This assessment assumes impacts to original fabric would be avoided including operational impacts such as excessive vibration. The PLR project would result in major visual impact if overhead wiring is used. Wire-free options would reduce the overall visual impact to the item (option being assessed by Package 5). Overall, Lennox Bridge would continue to meet the threshold for State significance.

Item	Address	Listing	Location in Relation to Project	Project Impact and Additional Information
Warders Cottages	1 and 3 Barrack Lane, Parramatta	SHR (00709) Parramatta LEP 2011 (I718)	On the east side of Barrack Lane between George Street and Macquarie Street.	This item is opposite the proposed Barrack Lane compound and substation. Existing contemporary buildings and landscaping located in proximity of the Warders Cottages negatively impact the setting of the cottages. The proposed substation would be visually unobtrusive and would not result in any significant visual impact. The substation would result in a minor visual impact to Warders Cottages, and there is a negligible direct and indirect impact on this item due to the Project.
Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve)	143A George Street, Parramatta	SHR (1863) NSW Department of Primary Industries s170 HCR Parramatta LEP 2011 (A2)	Adjacent to Project boundary east of Harris Street and south of George Street.	Along this section of the alignment the road reserve is not wide enough to accommodate the light rail infrastructure and traffic lanes. As Harris Street is part of the inner ring road it plays an important role in the local and regional traffic network, and the number of traffic lanes could not be reduced without a substantial traffic impact. Therefore, the proposed project alignment would be located within the heritage curtilage of the item and run along part of its western and northern boundaries. The alignment would involve the removal of seven significant trees and landscape elements, such as part of the open grassed area. This would result in the reduction of the heritage curtilage along the eastern side and the landscape and archaeological values of the item would be diminished.
Queen's Wharf Reserve and stone wall	198 George Street, Parramatta	Parramatta LEP 2011 (I489)	North of Project boundary along George Street, east of Harris Street.	The alignment is constrained between Robin Thomas Reserve and Queens Wharf Reserve. The road reserve is not wide enough to accommodate the light rail infrastructure and traffic lanes without impinging on Queens Wharf Reserve or the northern edge of Robin Thomas Reserve. Therefore, strip impacts were not able to be avoided. The proposed works will result in minor direct, minor visual and minor indirect impacts.
Rosehill and Camellia Precinct				

Item	Address	Listing	Location in Relation to Project	Project Impact and Additional Information
Sewage Pumping Station 67	1B Grand Avenue, Camellia	SHR (01643) Sydney Water s170 HCR Parramatta LEP 2011 (I01643)	North of the Project boundary along Grand Avenue North and west of the Project Boundary along the existing railway line.	The proposed project alignment would extend across the south section of the heritage curtilage of this item, and will slightly reduce the heritage curtilage of this item. This section of the heritage item does not include buildings or elements of heritage significance. A mature tree would be impacted by the proposed alignment which would result in a minor impact to the landscape values of the item.
Tram alignment	Grand Avenue, Camellia	Parramatta LEP 2011 (I6)	This item runs along Grand Avenue south of the Project boundary.	The proposed Camellia stabling facility and associative railway lines would be constructed within part of the tram alignment curtilage. There would be some direct impact where the new light rail tracks cross the heritage tram tracks perpendicularly at the entrance of the Camellia stabling facility.
Grave of Eliner Magee and child	1 Grand Avenue, Camellia	Parramatta LEP 2011 (I3)	East of the Project boundary along the existing railway line.	The proposed project alignment would be adjacent to this item and would encroach into its heritage curtilage, resulting in minor direct, minor visual and minor indirect impacts. This item is south of the proposed Parramatta River Bridge (south) compound.
Wetlands	Parramatta River	Parramatta LEP 2011 (I1)	This item occurs all along the shoreline of the Parramatta River.	The works on the current Camellia Bridge over Parramatta River would encroach on the heritage curtilage of the item. Trees are to be removed to allow for construction compounds on either side of the bridge. This would result in a minor direct impact to the overall significance of the wetlands.
Carlingford Precinct				

Item	Address	Listing	Location in Relation to Project	Project Impact and Additional Information
Camellia (Parramatta River) Underbridge Abutments/Clyde Carlingford Rail Bridge abutments (southern)	1A Grand Avenue (north of), Camellia	RailCorp s170 HCR Parramatta LEP 2011 (I2)	Forms part of the southern part of the existing rail bridge crossing Parramatta River in Camellia, within the Project boundary.	The brickwork abutments were designed for an older single-track width bridge. The abutments no longer provide any structural support, as they were replaced by new concrete headstocks and approach spans when the bridge was replaced in approximately 1995. The proposed project alignment requires the removal of part of the Camellia underbridge abutments to allow for a double track to be installed across the bridge. This will result in a major direct impact to the item. Opportunities to avoid and/or minimise impacts to the abutments will be considered during detailed design and documented in the relevant Environmental Design Review Report.
Camellia (Parramatta River) Underbridge Abutments/Clyde Carlingford Rail Bridge abutments (northern)	171 Victoria Road (adjacent), Parramatta	RailCorp s170 HCR Parramatta LEP 2011 (I555)	Forms part of the northern part of the existing rail bridge crossing Parramatta River in Camellia, within the Project boundary.	See above <i>Camellia (Parramatta River) Underbridge Abutments/Clyde Carlingford Rail Bridge abutments (southern)</i> above.

Item	Address	Listing	Location in Relation to Project	Project Impact and Additional Information
Rydalmere Hospital Precinct (former)	171 Victoria Road, Rydalmere	SHR (00749) University of Western Sydney s170 HCR Department of Health s170 HCR Parramatta LEP 2011 (I00749)	West of the Project boundary and north of the Parramatta River.	The Project alignment is within the existing Carlingford Line rail corridor, which minimises impacts on heritage items outside of the corridor. The Parramatta River (north) compound and the Vineyard Creek compound are located with the heritage curtilage of this item.
Dundas Railway Station Group	Station Street, Dundas	SHR (1133) RailCorp s170 HCR Parramatta LEP 2011 (I01133)	Within the Project boundary at the proposed Dundas light rail stop and the existing Dundas Station.	The proposed project alignment would go through the curtilage of Dundas Railway Station Group. The current design retains the original 1896 platform of the station. The platform is the only remaining original element of the station and its retention would result in a positive heritage outcome. The CSSI does not anticipate any modifications to the timber platform building of Dundas Railway Station Group. This will be confirmed during the detailed design of stations as part of the SOM Works (Package 5).
Carlingford Stock Feeds (Carlingford Produce Store)	1 Thallon Street, Carlingford	RailCorp s170 HCR The Hills LEP 2012 (I46)	To the west of the proposed Carlingford light rail stop and the existing Carlingford Station.	The Carlingford Station compound is located within the curtilage of this item.

Table C-2: Historical Heritage Items (Unaffected)

Name	Address	Listing	Name	Address	Listing
Parramatta North					
Oddfellows Arms Inn	541 Church Street, North Parramatta	SHR (276), Parramatta LEP 2011 (I00276)	Stone kerb and gutter	West arm Dunlop Street (both sides), North Parramatta	Parramatta LEP 2011 (I353)
Nineteenth century cottages	25 and 27 Galloway Street, North Parramatta	Parramatta LEP 2011 (I367)	Timber cottage	30 Galloway Street, North Parramatta	Parramatta LEP 2011 (I369)
Single storey residence and potential archaeological site	495 Church Street, North Parramatta	Parramatta LEP 2011 (I347)	Norfolk House and potential archaeological site	465–473 Church Street, North Parramatta	Parramatta LEP 2011 (I346)
Former bakery (and potential archaeological site)	476 Church Street, Parramatta	Parramatta LEP 2011 (I695)	North Parramatta Conservation Area		Parramatta LEP 2011
Stable (and potential archaeological site)	419–423 Church Street, Parramatta	Parramatta LEP 2011 (I698)	Single-storey residence	32 Grose Street, Parramatta	Parramatta LEP 2011 (I706)
Bicycle shop	458 Church Street, Parramatta	Parramatta LEP 2011 (I694)	Commercial building	448 Church Street, Parramatta	Parramatta LEP 2011 (I693)
Shop	446 Church Street, Parramatta	Parramatta LEP 2011 (I692)	Single Storey residence	15 Harold Street, Parramatta	Parramatta LEP 2011 (I502)
Parramatta CBD					

Name	Address	Listing
Horse trough	Victoria Road (adjacent to 353a Church Street), Parramatta	Parramatta LEP 2011 (I747)
St Peter's Uniting Church and studio theatre (and potential archaeological site)	356 Church Street, Parramatta	Parramatta LEP 2011 (I687)
Shop	321 Church Street, Parramatta	Parramatta LEP 2011 (I681)
Shop	311–315 Church Street, Parramatta	Parramatta LEP 2011 (I679)
Shop	293 Church Street, Parramatta	Parramatta LEP 2011 (I676)
Shop	289 Church Street, Parramatta	Parramatta LEP 2011 (I674)
Shop	281 Church Street, Parramatta	Parramatta LEP 2011 (I671)
Former ANZ Bank (and potential archaeological site)	306 Church Street, Parramatta	Parramatta LEP 2011 (I678)

Name	Address	Listing
Anthony Malouf and Co	366 Church Street, Parramatta	Parramatta LEP 2011 (I690)
Shop	325 and 327 Church Street, Parramatta	Parramatta LEP 2011 (I682)
Shop	317 Church Street, Parramatta	Parramatta LEP 2011 (I680)
Former David Jones department store	330 Church Street, Parramatta	Parramatta LEP 2011 (I683)
Shop	291 Church Street, Parramatta	Parramatta LEP 2011 (I675)
Shop	287 Church Street, Parramatta	Parramatta LEP 2011 (I673)
Former St Andrew's Uniting Church, hall (and potential archaeological site)	2 Phillip Street (corner of Marsden Street), Parramatta	Parramatta LEP 2011 (I736)
Shop, office (and potential archaeological site)	279 Church Street, Parramatta	Parramatta LEP 2011 (I670)

Name	Address	Listing
Shop (and potential archaeological site)	275 and 277 Church Street, Parramatta	Parramatta LEP 2011 (I669)
Shop (and potential archaeological site)	269 Church Street, Parramatta	Parramatta LEP 2011 (I667)
Shop (and potential archaeological site)	302 Church Street, Parramatta	Parramatta LEP 2011 (I677)
Shops and offices	263–265 Church Street, Parramatta	Parramatta LEP 2011 (I664)
Shop	255 Church Street, Parramatta	Parramatta LEP 2011 (I662)
Parramatta House (and potential archaeological site)	243 Church Street, Parramatta	Parramatta LEP 2011 (I660)
Former Rural Bank	16 George Street, Parramatta	Parramatta LEP 2011 (I700)
Parramatta District Hospital - Brislington and Landscape	10 George Street, Parramatta	SHR (00059), Department of Health s170 Heritage and

Name	Address	Listing
Shop (and potential archaeological site)	273 Church Street, Parramatta	Parramatta LEP 2011 (I668)
Shop (and potential archaeological site)	267 Church Street, Parramatta	Parramatta LEP 2011 (I666)
Sandstone and brick wall	286 (rear), 288 and 290 Church Street, Parramatta	Parramatta LEP 2011 (I672)
Shop (and potential archaeological site)	257, 259 and 261 Church Street, Parramatta	Parramatta LEP 2011 (I663)
Shop	253 Church Street, Parramatta	Parramatta LEP 2011 (I661)
Westpac Bank	264 Church Street (corner of George Street), Parramatta	Parramatta LEP 2011 (I665)
Court house tower	12 George Street, Parramatta	Attorney General's Department s170 Heritage and Conservation Register, Parramatta LEP 2011 (I699)
Marsdens Building (and potential archaeological site)	17 George Street, Parramatta	Parramatta LEP 2011 (I701)

Name	Address	Listing
		Conservation Register, Parramatta LEP 2011 (I00059)
Woolpack Hotel (and potential archaeological site)	19 George Street, Parramatta	Parramatta LEP 2011 (I702)
Shops (and potential archaeological site)	41–59 George Street, Parramatta	Parramatta LEP 2011 (I703)
Redcoats' Mess House (and potential archaeological site)	2 Horwood Place, Parramatta	SHR (00218), Parramatta LEP 2011 (I00218)
Shop and office	90 George Street, Parramatta	SHR (00278), Parramatta LEP 2011 (I00278)
HMV (former Commonwealth Bank) (and potential archaeological site)	215 Church Street, Parramatta	Parramatta LEP 2011 (I658)
Shop (and potential archaeological site)	197 Church Street, Parramatta	Parramatta LEP 2011 (I655)

Name	Address	Listing
Former courthouse wall and sandstone cellblock (and potential archaeological site)	223 and 235 Church Street, Parramatta	Parramatta LEP 2011 (I659)
Civic Arcade (former theatre) (and potential archaeological site)	48 George Street, Parramatta	Parramatta LEP 2011 (I704)
Dr Pringle's Cottage	52 George Street, Parramatta	Parramatta LEP 2011 (I705)
Roxy Cinema	69 George Street, Parramatta	SHR (00711), Parramatta LEP 2011 (I00711)
Telstra House (former post office) (and potential archaeological site)	211 Church Street (93–93a Marsden Street), Parramatta	Parramatta LEP 2011 (I657)
Horse parapet facade and potential archaeological site	198–216 Church Street and 38–46 Macquarie Street, Parramatta	Parramatta LEP 2011 (I656)

Name	Address	Listing
Bicentennial Square and adjoining buildings	188, 188R (part of Church Street road reserve) and 195A Church Street, 38 Hunter Street and 83 Macquarie Street, Parramatta	Parramatta LEP 2011 (I651)
Murrays' Building (and potential archaeological site)	188 Church Street (south east corner), Parramatta	Parramatta LEP 2011 (I652)
Leigh Memorial Uniting Church	119 Macquarie Street, Parramatta	Parramatta LEP 2011 (I719)
Warders Cottages	1 and 3 Barrack Lane, Parramatta	SHR (00709), Parramatta LEP 2011 (I718)
Convict barracks wall	80–100 Macquarie Street, Parramatta	Parramatta LEP 2011 (717)
Wetlands	Parramatta River	Parramatta LEP 2011 (I735)

Name	Address	Listing
Centennial Memorial Clock	Bicentennial Square (opposite 196 Church Street), Parramatta	Parramatta LEP 2011 (I654)
Kia Ora (and potential archaeological site)	62–64 Macquarie Street, Parramatta	Parramatta LEP 2011 (I716)
Arthur Phillip High School (and potential archaeological site-Convict Lumberyard)	175 Macquarie Street, Parramatta	Parramatta LEP 2011 (I720)
Perth House and Stables	85 George Street, Parramatta	SHR (00155), Parramatta LEP 2011 (I00155)
Harrisford	182 George Street, Parramatta	SHR (248), Parramatta LEP 2011 (I00248)
Gasworks Bridge	196 George Street (adjacent), Parramatta	Roads and Maritime Services s170 Heritage and Conservation Register, Parramatta LEP 2011 (I487)

Name	Address	Listing	Name	Address	Listing
Tara (also known as Ellengowan)	153 George Street, Parramatta	Parramatta LEP 2011 (I483)	HMAS Parramatta Shipwreck and memorials	198 George Street, Parramatta	SHR (01676), Parramatta LEP 2011 (I01676)
Rosehill and Camellia					
Trees in median strip	167 George Street (opposite), Parramatta	Parramatta LEP 2011 (I484)	Resident flats and houses	200, 202, 204, 208, 212, 214, 216 and 220 George Street, Parramatta	Parramatta LEP 2011 (I490)
Resident flats and houses	1, 3, 5, 11 and 17 Noller Parade, Parramatta	Parramatta LEP 2011 (I523)	Timber cottages	2, 4, 6, 8 and 10 Purchase Street, Parramatta	Parramatta LEP 2011 (I532)
Bulimba	169 George Street, Parramatta	Parramatta LEP 2011 (I485)	Cottage	173 George Street, Parramatta	Parramatta LEP 2011 (I486)
Carlingford					
Single storey residence	27 Station Street, Dundas	Parramatta LEP 2011 (I43)	Victorian house	98 Kissing Point Road, Dundas	Parramatta LEP 2011 (I40)
Redstone	34 Adderton Road and 1 Manson Street, Telopea	SHR (1795), Parramatta LEP 2011 (I01795)	K13 memorial	304 Pennant Hills Road, Carlingford	Parramatta LEP 2011 (I28)

Table C-3: Historical Archaeological Sites

HAMU	Location in relation to Project	Potential archaeological resource	Significance/ Listing	Project Activities
1	Westmead Precinct, Hawkesbury Road (east side)	Government Farm and Domain, nineteenth century residential subdivisions	Local and State	The construction of light rail track with associated adjustments to road and footpaths.
2	Westmead Precinct, Hawkesbury Road (west side)	Government Farm and Domain, nineteenth century residential subdivisions and cemetery reserve	Local and State	The construction of light rail track with associated adjustments to road and footpaths.
3	Westmead Precinct, Cumberland Hospital (west of river)	Government Farm and Domain, Parramatta Hospital for the Insane gardens	Local and State	The construction of light rail track with associated adjustments to road and footpaths.
4	North of the Parramatta North Precinct within the Project alignment.	Smith's 1792 land grant, contact archaeology, Government Mill races, Marsden's Mill Dam Farm, Mrs Betts' House, former Parramatta Lunatic Asylum, Superintendent's house, Gross Street brick drain and early road construction	State and Local Cumberland Hospital - SHR 00820; NSW Department of Health s170 Heritage and Conservation Register; Parramatta LEP I00820 Parramatta Female Factory - National Heritage List (106234) PHALMS AMU 2860 Parramatta LEP I360	The construction of light rail track with associated adjustments to road and footpath. The construction of light rail track, associated adjustments to road and footpath and construction of Cumberland Hospital stop within the former alignment of Factory Street.

HAMU	Location in relation to Project	Potential archaeological resource	Significance/ Listing	Project Activities
5 and 5a	Following the alignment along Factory Street from Cumberland Hospital District boundary to Church Street.	Grose Street Drain, nineteenth century suburban development, Diggers Return Hotel c1860s, historic road infrastructure	Local Parramatta LEP I360 PHALMS AMU 2880, 3133, 3134, 3135	The construction of light rail track with associated adjustments to road and footpaths within Factory Street.
7 7a 7b	Along Church Street from Barney St to Victoria Road	Government Farm, early-mid nineteenth century residential and commercial subdivision, building frontages, historic road infrastructure, early twentieth century tram. 7a and 7b relate to road widening and localised areas of higher potential for nineteenth century residential and commercial archaeology.	Local PHALMS AMU 3229	Establishment of light rail track with associated adjustments to road and footpath along Church Street. Construction of the Factory Street, Fennell Street, Prince Alfred Square, and Eat Street light rail stops.
8	North of the Project alignment at the Church Street/Pennant Hills Road intersection, and along Church Street for the length of the cemetery.	Remains associated with earlier phases of St Patricks Roman Catholic Cemetery, including burials.	State and Local SHR 1880 PHALMS AMU 3111	Establishment of light rail track, with associated adjustments to road and footpath along Church Street.
10 10a 10b	Block bounded by Fennell, Church and Harold Streets. Adjacent areas within Church Street.	Remains associated with 19th century residential and commercial development of the block bounded by	Local PHALMS AMU 3128	Fennell Street compound Establishment of light rail track, with associated adjustments to road and footpath along Church Street.

HAMU	Location in relation to Project	Potential archaeological resource	Significance/ Listing	Project Activities
		Fennell, Church and Harold Streets. 10a and 10b relate to road widening and localised areas of higher potential for nineteenth century residential and commercial archaeology.		
11	Area of the Royal Oak Hotel on Church Street.	Remains associated with the Royal Oak Hotel dating from the 1830s	Local LEP I691 PHALMS AMU 3226	Ross Street compound and demolition of the Royal Oak Hotel.
13	South-west corner of the Church Street and Victoria Road intersection. One third of the way along Market Street and on the left side of Church Street between Victoria Road and Market Street.	Remains associated with the first and second Parramatta Gaol and Factory. Remains of the former 'village green' and WWII era anti-aircraft shelter landforms.	State and Local SHR 01997 LEP I686 PHALMS AMU 3110, 3235, 3229	Construction of Prince Alfred Square light rail stop.
15	Along George Street in the Parramatta CBD, from O'Connell Street to just before Purchase Street.	Remains associated with the George Street tramline, Parramatta Gasworks (within the Queen Street Wharf Reserve) early services and drains and former building frontages.	Local PHALMS AMU 3018, 3101	Construction of light rail along George Street, with associated adjustments to road and footpath, public domain works and utilities adjustment.

HAMU	Location in relation to Project	Potential archaeological resource	Significance/ Listing	Project Activities
16	Along Macquarie Street from O'Connell Street to Harris Street.	Original town grid dating from the 1790s, remains associated with late 19th century residential and commercial development of Macquarie Street, and historic road infrastructure.	Local and State PHALMS AMU 3215, 2887	Construction of light rail on Macquarie Street with associated adjustments to road and footpath, construction of the Parramatta Square and Harris Street light rail stops, public domain works and utilities adjustments.
16a	Macquarie Street near the junction with Harris Street	Remains associated with early land grants and Crooks property c1800.	State	Construction of light rail on Macquarie Street with associated adjustments to road and footpath, and utilities adjustments.
17	Horwood Place in Parramatta CBD.	Original town grid dating from 1790s. Remains of convict huts and free settler properties dating to the early nineteenth century. Remains associated with 19th century urban development residential and commercial development of Parramatta (prior to establishment of Horwood Place), and historic road infrastructure.	State and Local PHALMS AMU 2894, 3075, 3082, 3174, 3177	Public domain and utilities adjustment.
18	This item runs down from Parramatta River parallel to Smith Street and Wilde Avenue until it reaches the Perth House heritage item. From there it runs south-west	Intact remains of the Parramatta Town Drain within Macquarie Streets (intact) and Barrack Lane (disturbed).	State and Local Parramatta LEP I647 PHALMS AMU 3101, 3215	Public domain and utilities adjustment.

HAMU	Location in relation to Project	Potential archaeological resource	Significance/ Listing	Project Activities
	crossing Barrack Lane and Smith Street before curving further south and crossing Macquarie Street. It has been identified that the portion of this item that crosses Macquarie Street remains intact, and that the Barrack Lane portion is likely to be partially disturbed. The drain is not located at significant depth and may be encountered during excavation activities.			
20 20 a	This management area runs along the Project alignment along Harris Street between Macquarie Street and George Street, and along the western and northern edges of Robin Thomas Reserve.	Contact archaeology, remains associated with the former Soldiers District, Rum Corps barracks, nineteenth century residential and commercial development, remains associated with the Purchase Nursery, and historic road infrastructure. 20a refers to the remains of an early nineteenth century provision store within George Street.	State and Local ‘Ancient Aboriginal and Early Colonial Landscape’ - SHR 1863 Robin Thomas Reserve - NSW Department of Primary Industries s170 Heritage and Conservation Register, Parramatta LEP A2. PHALMS AMU 3038, 2944, 3037, 2887	Construction of light rail track on the western side of Robin Thomas Reserve between Macquarie and George Streets with associated adjustments to road and footpath. Construction of light rail track on the western side of Robin Thomas Reserve between Macquarie and George Streets with associated adjustments to road and footpath.

HAMU	Location in relation to Project	Potential archaeological resource	Significance/ Listing	Project Activities
21	This item runs along George Street from just passed the eastern edge of Robin Thomas Reserve to Alfred Street and the western side of Alfred Street.	Commissariat and barracks (George Street east), Parramatta Benevolent Asylum, George Street tramline and historic road infrastructure.	State and Local PHALMS AMU 3031	Construction of light rail track on George Street with associated adjustments to road and footpath.
22	Smith Street	Original town grid dating from 1790s, Remains associated with 19th century residential and commercial development of Smith Street, and historic road infrastructure.	Local and State PHALMS AMU 3115, 3158, 3214	Public domain and utilities adjustment.
23	Charles Street	Original town grid dating from 1790s, remains associated with 19th century residential and commercial development of Charles Street, and historic road infrastructure.	Local and State PHALMS AMU 3214	Public domain and utilities adjustment.
24	Parramatta CBD off corridor works	Original town grid dating from 1790s, remains associated with 19th century residential and commercial development, and historic road infrastructure, George Street tramline.	Local	Reconfiguration of George Street between O'Connell and Harris Streets.

HAMU	Location in relation to Project	Potential archaeological resource	Significance/ Listing	Project Activities
25	Tramway Ave and Grand Avenue North between Alfred Street and the existing railway line.	Elizabeth Farm, Tramway Avenue and the former Wunderlich Tile Factory and twentieth century industry. George Street tramline.	Local PHALMS AMU 2972, 2965 Parramatta LEP I6 (Tram Alignment - Grand Avenue)	Construction of light rail with associated adjustments to road within George Street.
27	Along the existing railway line	Earlier remains associated with the Carlingford Railway Line and railway development.	Local PHALMS AMU 2911	Construction of Carlingford Line active transport link alongside the light rail.
31	This item is south of the Parramatta River Bridge in Camellia and east of the Project alignment and existing railway line. The Parramatta River Bridge (south) compound/ laydown area is proposed at this location.	Evidence associated with the Magee hut and grave.	State PHALMS AMU 2938 Parramatta LEP I3	Establishment of Parramatta River Bridge (south) compound/laydown area (minimal excavation).
33	Rydalmere Railway Station and Vineyard Creek crossing.	Remains associated with emancipist land grants (the Ponds), market gardens and orchards, and remains associated with railway development.	Local PHALMS AMU 2988, 3004	Bridge works, utilities adjustment and establishment of compound sites (minimal excavation).
34	Dundas Railway Station	Remains associated with the former Dundas Railway Station.	Local SHR 1133, RailCorp s170 Heritage and Conservation Register, LEP I01133	Earthworks on existing railway line and establishment of the Dundas compound site (minimal excavation).

HAMU	Location in relation to Project	Potential archaeological resource	Significance/ Listing	Project Activities
35	Carlingford Railway Station	Remains associated with emancipist land grants (the Ponds), and remains associated with the former Carlingford Stock Feeds.	Local RailCorp s170 Heritage and Conservation Register, LEP I46	Construction of Carlingford light rail stop, establishment of the Carlingford compound (minimal excavation), public domain and utility adjustment.

Appendix D – Aboriginal Archaeology Sites Locality Maps

Appendix E – Environmental Representative Endorsement

