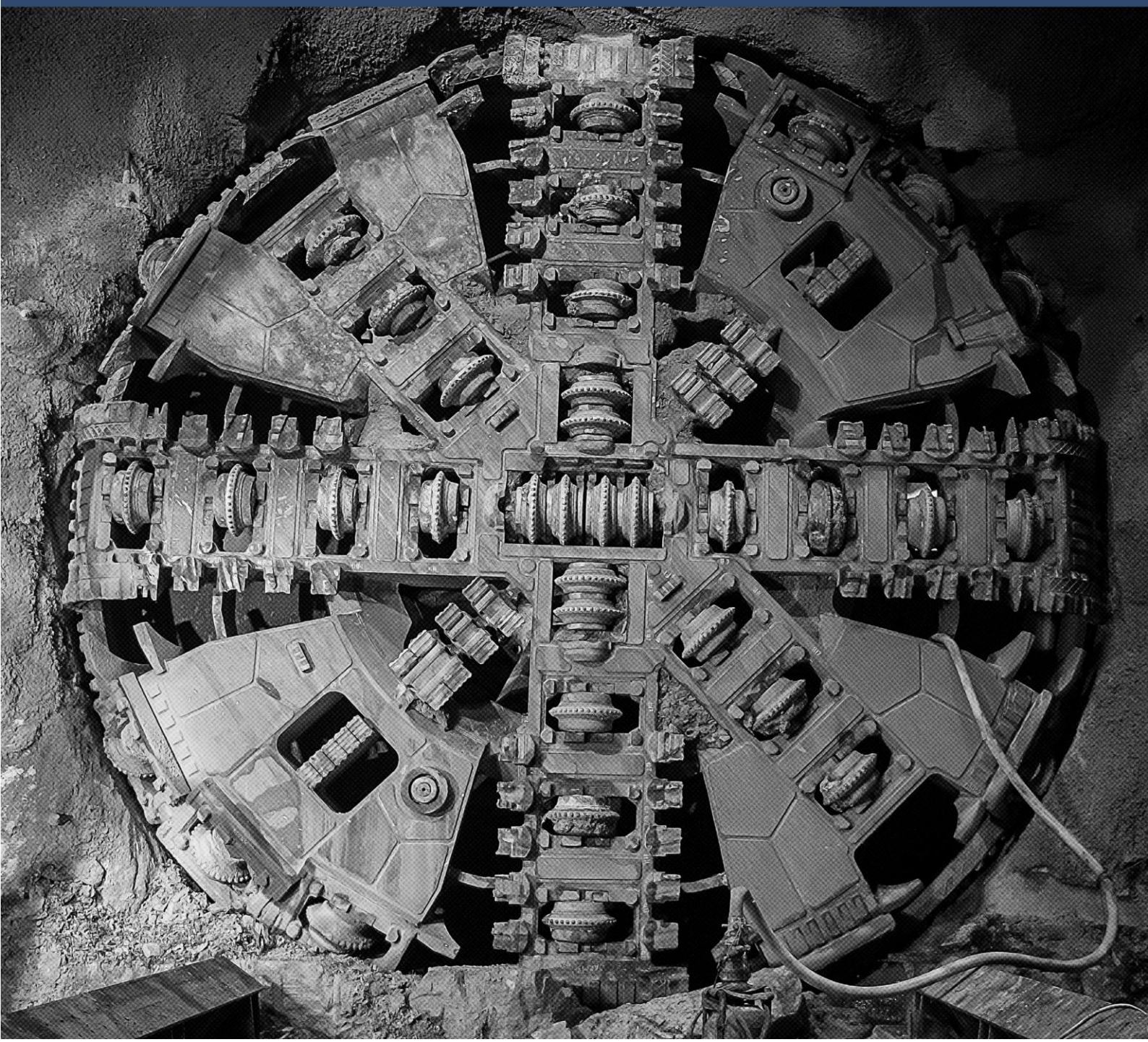
EASTERN TUNNELLING PACKAGE
John Holland CPB Contractors Ghella JV

JOHN HOLLAND CPB CONTRACTORS Ghella

HERITAGE MANAGEMENT

SUB-PLAN



HERITAGE MANAGEMENT SUB-PLAN

Project number	7040
Document number	SMWSTETP-JCG-SWD-SW000-EN-PLN-002015

Document approval

Rev	Date	Prepared by	Reviewed by	Comments	Approved by
A	25/11/2022	[redacted]	[redacted]	Draft for consultation; Sydney Metro & ER review	[redacted]
B	14/02/2023			Revised in response to Sydney Metro, ER and stakeholder comments	
C	17/02/2023			Revised in response to Sydney Metro and stakeholder comments	
0	22/03/2023			DPE Approval	
1	05/02/2024			Annual Review	
2	14/03/2024			Response to Annual Review Comments	
3	24/04/2025			Annual Review	
4	14/05/2025			Response to comments	
Signature:					

Draft issues of this document shall be identified as Revision A, B, C, etc. Upon initial issue for use this shall be changed to a number commencing at Revision 0, with subsequent revision numbers following sequentially (e.g. 1, 2, etc).

This Sub-plan was previously issued to Sydney Metro as SMWSTETP-JCG-1NL-EN-PLN-000002 (Revision A). The document number of this Sub-plan has been updated to SMWSTETP-JCG-SWD-SW000-EN-PLN-002015 to comply with both the Sydney Metro ECM schema and the JCG file numbering convention (FNC). Previous comments against SMWSTETP-JCG-1NL-EN-PLN-000002 have been addressed in this version of the Sub-plan.

THIS PLAN IS THE PROPERTY OF JCG AND MAY NOT BE COPIED, DISTRIBUTED OR USED WITHOUT THE WRITTEN CONSENT OF JCG.

Compliance

Table 1: Compliance matrix

ID	Requirement[1]	Reference
C1	Construction Environmental Management Plans (CEMPs) and CEMP Sub-plans must be prepared in accordance with the Construction Environmental Management Framework (CEMF) included in the documents listed in Condition A1 to detail how the performance outcomes, commitments and mitigation measures specified in the documents listed in Condition A1 will be implemented and achieved during construction.	This Sub-plan
C5	Of the CEMP Sub-plans required under Condition C1, the following CEMP Sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP Sub-plan. Details of issues raised by a government agency during consultation must be included in the relevant CEMP Sub-plan, including copies of all correspondence from those government agencies as required by Condition A6. Where a government agency (ies) request(s) is not included, the Proponent must provide the Planning Secretary / ER (whichever is applicable) justification as to why: (a) Noise and vibration: Place Management NSW (in respect of The Bays) and Relevant Council(s) (b) Flora and fauna: DPE Environment and Heritage Group, DPI Fisheries, and Relevant Council(s) (c) Heritage (Non-Aboriginal and Aboriginal): Heritage NSW, Place Management NSW (in respect of The Bays) and Relevant Council(s) (d) Spoil: Relevant council(s) (e) Soil and water: DPE Water and Relevant Council(s)	Section 1.4
C6	The CEMP Sub-plans must state how: (a) the environmental performance outcomes identified in the documents listed in Condition A1 will be achieved;	Table 28
	(b) the mitigation measures identified in the documents listed in Condition A1 will be implemented;	Section 7 Section 8 Table 27
	(c) the relevant conditions of this approval will be complied with; and	Table 26
	(d) issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART principles	Section 6.1 Section 6.3
C7	With the exception of any CEMP Sub-plans expressly nominated by the Planning Secretary to be endorsed by the ER, all CEMP Sub-plans must be submitted to the Planning Secretary for approval.	Section 1.4
C8	The CEMP Sub-plans not requiring the Planning Secretary's approval must obtain the endorsement of the ER as being in accordance with the conditions of approval and all relevant undertakings made in the documents listed in Condition A1. Any of these CEMP Sub-plans must be submitted to the ER with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before construction or where construction is phased no later than one (1) month before the commencement of that phase.	Section 1.4
C9	Any of the CEMP Sub-plans to be approved by the Planning Secretary must be submitted to the Planning Secretary with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before construction or where construction is phased no later than one (1) month before the commencement of that phase.	Section 1.4

ID	Requirement[1]	Reference
C10	Construction must not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary or endorsed by the ER (whichever is applicable), unless otherwise agreed by the Planning Secretary. The CEMP and CEMP Sub-plans, as approved by the Planning Secretary or endorsed by the ER (whichever is applicable), including any minor amendments approved by the ER, must be implemented for the duration of construction. Where construction of the CSSI is phased, construction of a phase must not commence until the CEMP and CEMP Sub-plans for that phase have been approved by the Planning Secretary or endorsed by the ER upon nomination by the Planning Secretary (whichever is applicable).	Section 1.4
C12	In addition to the relevant requirements of the CEMF, the Heritage CEMP Sub-plan must include, but not be limited to: (b) be prepared in consultation with a suitably qualified and experienced heritage expert;	This Sub-plan was prepared by AMBS
	(c) identify exclusion zones, archival recording requirements, baseline and periodic monitoring protocols (including before and during construction);	Section 7 Section 8 Table 20 (Control H21)
	(d) identify and assess the heritage significance of items identified as retaining 'potential heritage significance' in the documents listed in Condition A1 and which will be impacted by the CSSI;	Section 5
	(e) in association with Condition D44, set out the final site inspections to be conducted for the Post-Construction Condition Report within three (3) months of completion of construction for the following heritage sites unless otherwise agreed by the Planning Secretary: (i) Former Skinners Family Hotel (SHR 00584); (ii) NSW Club House Building (SHR 00145); (iii) Former Bank – Delfin House (SLEP I1903); and (iv) Richard Johnson Square (SLEP I1673).	Table 20
	(f) set out means of rectification of any damage by the CSSI to Heritage items (d)(i) to (d)(iv) above within six (6) months of the completion of construction at the construction site identified in the relevant Heritage CEMP Sub-plan. This rectification work must be in consultation with a suitably qualified and experienced heritage consultant to ensure the use of appropriate materials, appropriate conservation practices and in accordance with existing heritage management documents (for example, conservation management plans or strategies) to protect and conserve the heritage significance of the items.	Table 20
	The Heritage CEMP Sub-plan must include Aboriginal cultural heritage management and mitigation measures (that may include conservation, archaeological salvage excavation and community collection) based on the Aboriginal Cultural Heritage Excavation Report and continuing Aboriginal community consultation.	Section 7 Section 4.4

1. Other relevant compliance obligations are detailed in Part B of this Sub-Plan (Element 4).

Table of contents

Compliance i
Acronyms 5
Part A: Overview 7
1. Introduction 7
1.1. Purpose 7
1.2. Objectives, targets and key performance indicators 7
1.3. Context and interface with other plans 8
1.4. Consultation and approval 9
1.5. Sub-plan structure 10
2. Project overview 11
2.1. Background 11
2.2. Project scope 11
2.3. Project phasing 12
3. Legal and other requirements 18
3.1. Legislation 18
3.2. Guidelines 18
3.3. Other environmental documents 18
4. People and collaboration 20
4.1. Our team 20
4.2. Specialist consultants 21
4.3. Collaboration with Sydney Metro and the ER 23
4.4. Consultation with RAPs 23
5. Existing environment 24
5.1. Aboriginal Cultural Heritage 24
5.2. Non-Aboriginal Heritage 25
6. Environmental aspects and impacts 31
6.1. Overview 31
6.2. Construction aspects 31
6.3. Impacts 31
7. Environmental control measures for Aboriginal heritage 42
7.1. Aboriginal archaeology 42
7.2. Unexpected heritage items 46
8. Environmental control measures for historic heritage 48
8.1. Protection measures for historic heritage items 48
8.2. Archival Recording 49
8.3. Salvage of Significant Fabric 50
8.4. Historical archaeology 61

8.5. Unexpected heritage items 66
9. Compliance management 71
9.1. Hold points 71
9.2. Complaints 71
9.3. Auditing 71
9.4. Reporting 71
10. Review and improvement 73
10.1. Continual improvement 73
10.2. Sub-plan review 73
Part B: Implementation Systems and Tools 74
Part C Annexures 92
Appendix A Unexpected Heritage Finds Procedure (SM-20-00099497) 92
Appendix B Exhumation Management Procedure (SM-20-00099495) 93
Appendix C Sydney Metro West –Hunter Street Station (Sydney CBD) Aboriginal and Historical Archaeological Research Design 94
Appendix D Sydney Metro West –Pyrmont Station Construction Sites Archaeological Research Design and Excavation Methodology 95
Appendix E Sydney Metro West – The Bays Archaeological Research Design and Excavation Methodology 96
Appendix F Consultation Report 97
Appendix G Environmental Representative Endorsement 98

Acronyms

Table 2: Acronyms

Acronym	Definition
AHIMS	Aboriginal Heritage Information Management System
ARD	Archaeological Research Design
CEMP	Construction Environmental Management Plan
DPE	Department of Planning and Environment
ECM	Environmental Control Map
ED	Excavation Director
EIS	Environmental Impact Statement
Environmental aspect	Defined by AS/NZS ISO 14001:2015 as an element of an organisation's activities, products or services that can interact with the environment.
Environmental impact	Defined by AS/NZS ISO 14001:2015 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
Environmental objective	Defined by AS/NZS ISO 14001:2015 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
Environmental target	Defined by AS/NZS ISO 14001:2015 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
ER	Environmental Representative
E&SMS	Environment and Sustainability Management System
ETP Works	Eastern Tunnelling Package Works
Heritage Act	*Heritage Act 1977*
HMP	Heritage Management Sub-plan
IC	Independent Certifier
JCG	John Holland CPB Ghella Joint Venture
NHL	National Heritage List
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
OOHW	Out-of-hours work
POEO Act	*Protection of the Environment Operations Act 1997*
Project, the	Eastern Tunnelling Package
RAP	Registered Aboriginal Party
REMM	Revised Environmental Mitigation Measure
S170	Section 170 Heritage and Conservation Register
SHI	State Heritage Inventory
SHR	State Heritage Register
SLEP	Sydney Local Environmental Plan 2012

Acronym	Definition
SM	Sydney Metro
SREP	Sydney Regional Environmental Plan No 26—City West
SSI	State Significant Infrastructure
STP	Slurry Treatment Plant
TBM	Tunnel Boring Machine
WTP	Water Treatment Plant

Part A: Overview

1. Introduction

1.1. Purpose

This Heritage Management Sub-plan (HMP or Sub-plan) is applicable to the construction of the Sydney Metro West - Eastern Tunnelling Package (ETP Works or the Project). This Sub-plan describes how John Holland CPB Ghella Joint Venture (JCG) will minimise and manage the heritage impacts of the Project.

This Sub-Plan has been prepared to address the requirements of the:

- State Significant Infrastructure (SSI) 19238057 Planning Approval (dated 24 August 2022) and relevant conditions of the Sydney Metro West Concept Schedule 2 of SSI 10038 Planning Approval (dated 11 March 2021) (Planning Approvals) and all subsequent modifications.
- Environment Protection Licence (EPL) No. 21784
- Sydney Metro West – Stage 2 – Phasing Report
- AS/NZS ISO 14001:2016 Environmental Management Systems – Requirements with guidance for use
- Sydney Metro Construction Environmental Management Framework, Version 4.3 (CEMF)
- Environmental Impact Statement (EIS) and the Submissions Report, including the Revised Environmental Mitigation Measures (REMMs)
- Contractual requirements including the ETP Deed and General and Particular Specifications
- Relevant Archaeological Research Designs prepared for the Project
- Applicable legislation.

1.2. Objectives, targets and key performance indicators

The objectives, targets and key performance indicators for heritage management are detailed Table 3.

Table 3: Objectives, targets and key performance indicators

Objectives	Targets	Key Performance Indicators
Consider heritage values in any architectural design, education or physical interpretation	▪ This objective is outside of the scope of the Project.	▪ N/A
Minimise or avoid impacts to Aboriginal and non-Aboriginal heritage sites or their heritage significance	▪ No unapproved impacts on items or places of heritage value ▪ Ensure full compliance with the relevant legislative requirements and approvals. ▪ Follow correct procedure and ensure notification of any unexpected Aboriginal or non-Aboriginal heritage objects/places uncovered during construction ▪ No breaches of the Sydney Metro Unexpected Heritage Finds Procedure	▪ Number of heritage incidents and non-compliances
Avoid accidental impacts on heritage items	▪ No breaches or regulatory infringements (PINs or prosecutions)	▪ Number of breaches or regulatory infringements
Maximise worker's awareness of Aboriginal and Non-Aboriginal heritage	▪ 100% of scheduled training completed on time (inductions) ▪ Ensure Heritage Awareness Training is provided to all personnel in the form of inductions before they begin the ETP Works	▪ Number of workers who have completed the induction

1.3. Context and interface with other plans

To achieve the intended environmental performance outcomes of the Project, JCG have established an Environment and Sustainability Management System (E&SMS) in accordance with the requirements of ISO 14001:2016. Guided by the Environment and Sustainability Policy, the E&SMS consists of a Construction Environmental Management Plan (CEMP), issue-specific procedures, Sub-plans and monitoring programs as illustrated in Figure 1. Implementation of the E&SMS is achieved through tools, checklists and forms as detailed in the CEMP.

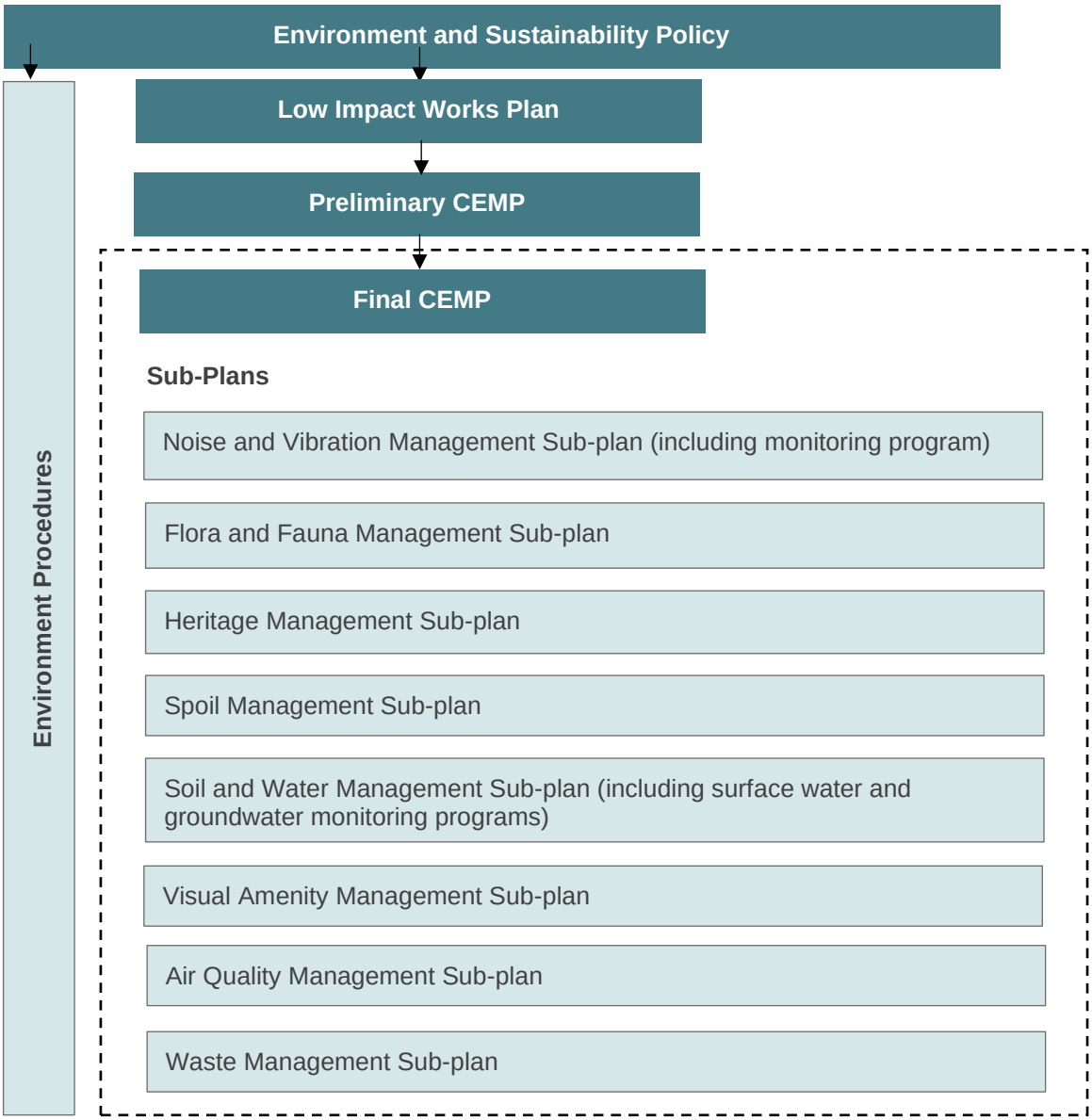


Figure 1: CEMP Framework

1.4. Consultation and approval

Reflecting the requirements of Conditions A6 and C5, this Sub-plan was prepared in consultation with Heritage NSW, Place Management NSW, City of Sydney Council and Inner West Council. A detailed consultation report, including matters raised by stakeholders and JCG responses, is provided in Appendix F.

In accordance with the Phasing Report, this Sub-plan was endorsed by the ER and then submitted and approved by the Planning Secretary at least one month before the commencement of the Tunnelling, Excavation and Associated Works (refer to Section 2.3 for details on the phasing of the ETP Works).

Construction did not commence until the CEMPs, Sub-plans and monitoring programs had been approved by the Planning Secretary or endorsed by the ER (whichever is applicable). The CEMPs, Sub-plans and monitoring programs, as approved by the Planning Secretary or endorsed by the ER (whichever is applicable), including any minor amendments approved by the ER, will be implemented for the duration of the Project. In accordance with the Sydney Metro Phasing Report, construction of a phase will not commence until the CEMP and CEMP Sub-plans for that phase have been approved by the Planning Secretary or endorsed by the ER upon nomination by the Planning Secretary (whichever is applicable).

1.5. Sub-plan structure

Table 4: Sub-plan structure

Part	Details
Part A: Overview	▪ Project overview ▪ Legal and other requirements ▪ People and collaboration ▪ Existing environment ▪ Environmental aspects and impacts ▪ Environmental control measures ▪ Compliance management ▪ Review and improvement
Part B: Implementation Systems and Tools	This section summarises the systems and tools that will be implemented to achieve compliance with the Planning Approval, REMMs, CEMF and EPL.
Part C: Annexure	Further documents and information that support this Sub-plan include: ▪ Appendix A – Unexpected Heritage Finds Procedure (SM-20-00099497) version 4.0 dated August 2021 ▪ Appendix B – Exhumation Management Procedure (SM-20-00099495) version 5.0 dated August 2021 ▪ Appendix C – Sydney Metro West – Pyrmont Station Construction Sites Archaeological Research Design and Excavation Methodology ▪ Appendix D – Sydney Metro West – Hunter Street Station (Sydney CBD) Aboriginal and Historical Archaeological Research Design ▪ Appendix E – Sydney Metro West – The Bays Revised Archaeological Research Design and Excavation Methodology ▪ Appendix F – Consultation Report ▪ Appendix G – Environmental Representative Endorsement

2. Project overview

2.1. Background

Sydney Metro West is a new 24-kilometre metro line that will connect Greater Parramatta with the Sydney CBD via stations at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD).

The planning process for Sydney Metro West was assessed as a staged infrastructure application under section 5.20 of the *Environment Planning and Assessment Act 1979* (EP&A Act).

Stage 1 of the development, the Sydney Metro West Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (SSI-10038 Schedule 2), was approved on 11 March 2021 and includes:

- Construction of a new passenger rail infrastructure between Westmead and the central business district of Sydney, including:
  - Tunnels, stations (including surrounding areas) and associated rail facilities
  - Stabling and maintenance facilities (including associated underground and overground connections to tunnels)
- Modification of existing rail infrastructure, including stations and surrounding areas
- Ancillary development.

Stage 2 of the planning approval process, the ETP Works, includes all major civil construction work including station excavation (Pyrmont Station and Hunter Street Station (Sydney CBD) and tunnelling between The Bays and Sydney CBD (Figure 2).

It is noted that the existing Sydney Metro West precast facility at Eastern Creek will be utilised in the delivery of the ETP Works. The facility, which was assessed by Sydney Metro in a Review of Environmental Factors (REF) and approved on 11 March 2021, is outside of the scope of the HMP.

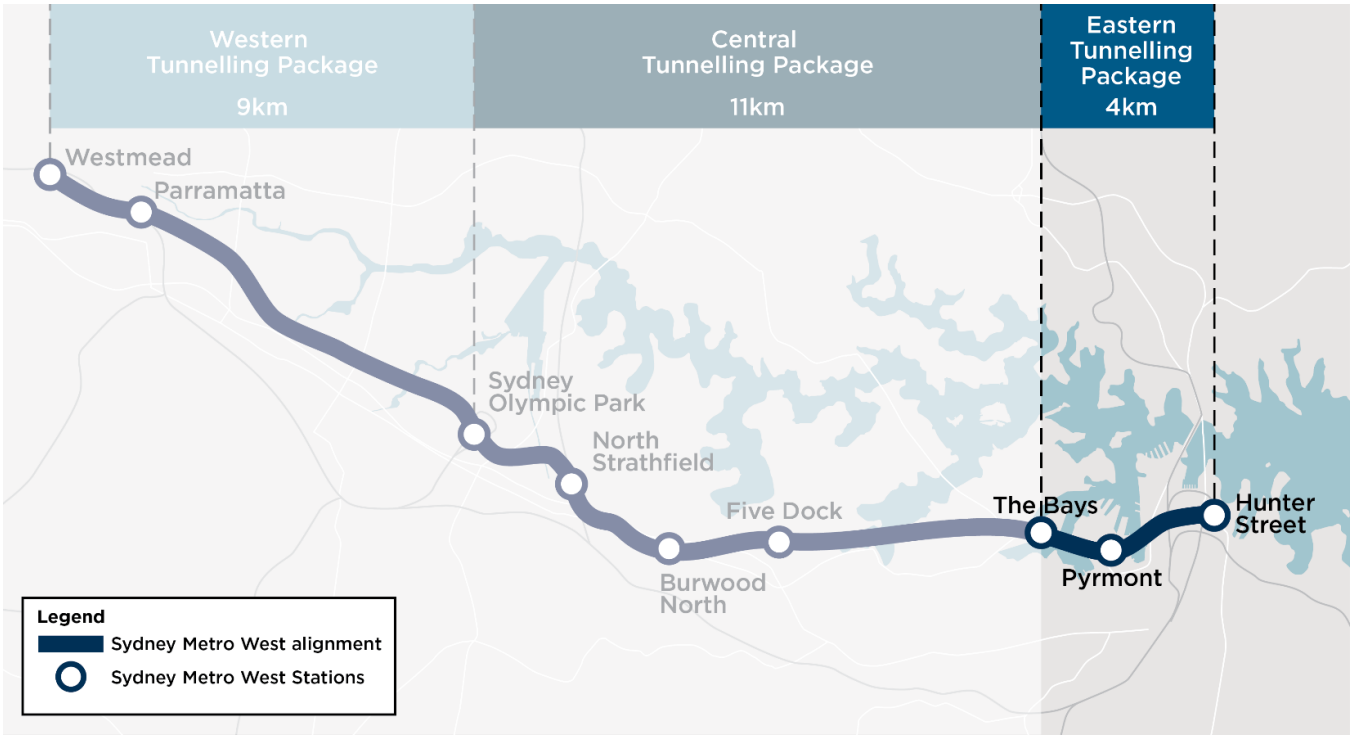


Figure 2: Overview of the Sydney Metro West alignment

2.2. Project scope

The ETP Works (construction) involves the delivery of:

- Enabling works such as demolition, utility supply to construction sites, utility adjustments and modifications to the existing transport network
- Mined crossover cavern construction

- 4.2 km of TBM tunnel excavation, 650m of mined tunnels and 12 cross passage excavation, from The Bays to Sydney CBD
- Excavation for two new underground metro stations at Pyrmont and Hunter Street
- Construction of a turnback, crossover tunnels and caverns at the eastern end of the tunnel section
- A concrete segment facility for use during construction located at Eastern Creek (outside of the scope of this Sub-plan).

2.3. Project phasing

Reflecting the outcomes of a detailed environmental risk assessment, the ETP Works will be delivered through a phased approach. This approach, detailed in the Phasing Report, includes Low Impact Works as defined under the SSI 19238057 Planning Approval and the activity-based phases for construction (Table 5). Additional details on the phasing of construction activities at each worksite is provided in Table 6.

Table 5: Overview of ETP Works phasing

Phase	Description	Indicative timing	Environmental documentation	Consultation and approvals
Low Impact Works	Activities defined as Low Impact Works under SSI 19238057 Planning Approval, including survey work, investigations, utility relocations, installation of environmental controls and initial demolition works	November 2022 to May 2023	▪ Low Impact Works Plan ▪ Low Impact Works DNVIS	▪ ER endorsement
Preliminary Works	Including works within the existing Hunter Street East acoustic shed, and critical enabling works which are required to be conducted outside of standard hours	March to May 2023	▪ Preliminary CEMP ▪ Environmental Procedures ▪ Hunter Street East acoustic shed works DNVIS ▪ Project-wide Out of Hours Works DNVIS	▪ Stakeholder consultation (refer to Section 1.4) ▪ ER endorsement
Tunnelling, Excavation and Associated Works (addressed in this Sub-plan)	Including the Preliminary Works (not completed prior to approval of the final CEMP), demolition of existing industrial premises, site establishment, piling and shaft excavation, tunnelling, and decommissioning	May 2023 onward	▪ CEMP ▪ Sub-plans ▪ Environmental Procedures ▪ DNVISs (TBA)	▪ Stakeholder consultation ▪ ER endorsement ▪ DPE approval (as determined by the Phasing Report)

Table 6: Overview of construction activities by worksite and work phase

Worksite	Site condition at handover to JCG	Low Impact Works	Preliminary Works	Final CEMP
Project wide design survey and investigations	▪ N/A	▪ Survey control, instrumentation and monitoring including installation of benchmarks and installation of optical survey targets ▪ Geotechnical drilling (locations to be confirmed in Environmental Control Maps)	▪ Survey control, instrumentation and monitoring including installation of extensometers and piezometers (outside of standard construction hours) ▪ Geotechnical drilling (OOHW)	▪ N/A
The Bays	▪ Existing Central Tunnelling Package (CTP) Worksite ▪ Existing shaft (30 metres in depth) ▪ Existing high voltage construction power supply conduits ▪ Existing temporary buildings	▪ Installation of environmental controls ▪ Use of existing offices and amenities for start-up ▪ Secure site ▪ Establishment of pedestrian bridge over site access road	▪ N/A	▪ Establishment of additional temporary offices amenities and car parking ▪ Establish high voltage power supply and water supply from existing Central Tunnelling Package substation (including trenching) ▪ Sewer connection works ▪ TBM launch niche walls ▪ TBM assembly, launch and tunnelling support works from an existing shaft ▪ Cross passage construction ▪ Segment storage, temporary Water Treatment Plant (WTP) and Slurry Treatment Plant (STP) ▪ Principal spoil handling facility for ETP Works ▪ Establishment of a truck marshalling area ▪ Establishment of laydown and secondary truck marshalling area (previous CTP areas)
Pyrmont West	▪ Existing buildings: – 26-32 Pyrmont Bridge Road, Pyrmont (five stories including two basement levels)	▪ Establish portable amenities ▪ Initial demolition works including: – Hazmat investigation and structural investigation	▪ Utility adjustment works, including: – Appropriately 20m of trenching in the northern	▪ Archaeological salvage excavations (if triggered) ▪ Establish site including new construction access driveways,

Worksite	Site condition at handover to JCG	Low Impact Works	Preliminary Works	Final CEMP
		– Establishment of site security and hoardings – Establishment of truck access – Demolition work (soft strip only) ▪ Five archaeological test trenches ▪ Prepare archival recordings (subject to access)	footpath of Pyrmont Bridge Road (day shift) – Approximately 50m of trenching in Paternoster Row (day shift) – Removal of overhead cabling from the northern footpath of Pyrmont Bridge Road (one OOHW shift) ▪ Adjustment of property utility connections	site hoardings, instrumentation and monitoring ▪ Utility works, including establishment of temporary construction services, investigation and protection of existing assets, and decommissioning of redundant assets (including trenching) ▪ Demolition of existing buildings ▪ Archaeological monitoring during basement slab removal and investigations (if required) ▪ Establishment and use of temporary offices and amenities ▪ Excavation of temporary shaft within the station shaft footprint ▪ Installation of acoustic shed with gantry crane and steel bridging deck for excavation of station shaft, pedestrian and service adits and spoil handling for cross over cavern ▪ Permanent concrete lining of cavern and adit connections ▪ Installation of acoustic shed will support material handling outside standard hours of work
Pyrmont East	▪ Existing buildings – 37-69 Union St, Pyrmont (four stories with no basement)	▪ Establish portable amenities ▪ Initial demolition works including: – Hazmat investigation and structural investigation – Establishment of site security and hoardings – Establishment of truck access – Demolition work (soft strip only)	▪ Detailed Site Investigation ▪ Adjustment of property utility connections	▪ Establish site including new construction access driveways, site hoardings, instrumentation and monitoring ▪ Decommissioning of existing electricity kiosk ▪ Utility works, including establishment of temporary construction services,

Worksite	Site condition at handover to JCG	Low Impact Works	Preliminary Works	Final CEMP
		▪ Detailed Site Investigation ▪ Street tree removal		investigation and protection of existing assets, and decommissioning of redundant assets (including trenching) ▪ Establishment of high voltage power supply (including trenching) ▪ Demolition of existing buildings ▪ Contamination management based on DSI ▪ Establishment and use of temporary offices and amenities ▪ Excavation of temporary shaft within the station shaft footprint ▪ Installation of acoustic shed with gantry crane and steel bridging deck for excavation of station shaft and cavern ▪ Permanent concrete lining of station cavern and nozzle enlargements ▪ Installation of acoustic shed will support material handling outside standard hours of work
Hunter Street West	▪ Existing buildings – 7-13 Hunter St, Sydney (9 Hunter St) (21 stories including one basement level) – 5 Hunter St, Sydney (304-408 George St, Sydney) (16 stories, including two basement levels) – 298-302 George St, Sydney (16 stories, including one basement level) – 312 George St, Sydney (one story with no basement)	▪ Establish portable amenities ▪ Archaeological investigations of DeMestre Place (if access dates allow) ▪ Initial demolition works including: – Hazmat investigation and structural investigation – Establishment of site security and hoardings – Establishment of truck access – Demolition work (soft strip only) ▪ Demolition soft strip	▪ Establish construction access driveways at the Hunter Street East site and the Hunter Street West site ▪ Utility investigation potholes ▪ Adjustment of property utility connections	▪ Archaeological investigations of DeMestre Place (if not undertaken as Low Impact Works) ▪ Protection, adjustment and decommissioning of utility services (including trenching) ▪ Temporary services investigation and installation at DeMestre Place ▪ Relocate street lighting pole to allow site access

Worksite	Site condition at handover to JCG	Low Impact Works	Preliminary Works	Final CEMP
	– 314-318 George St, Sydney (nine stories, including one basement level) – Heritage building at 296 George St directly (adjacent to Hunter Street West site)	▪ Prepare archival recordings (subject to access)		▪ Establish site including new construction access driveways, site hoardings, instrumentation and monitoring ▪ Demolition of existing buildings ▪ Archaeological monitoring during basement slab removal and investigations (if required) ▪ Establishment and use of temporary offices and amenities ▪ Excavation of station access shaft
Hunter Street East	▪ Site hoarding ▪ Existing acoustic shed, spoil handling facilities and truck access ▪ Existing excavation within acoustic shed (approximately 5 metres below road level) ▪ Existing temporary WTP and high voltage power supply ▪ Existing temporary office and amenities ▪ Existing buildings: – 28-34 O'Connell St, Sydney (19 stories, including three basement levels) – 44-48 Hunter St, Sydney (16 stories, including one basement level) – 37 Bligh St, Sydney (16 stories, including one basement level) – 33 Bligh St, Sydney (steel shed, appropriately 20m in height)	▪ Use of existing offices and amenities ▪ Maintenance of existing temporary WTP ▪ Internal temporary fit-out within the existing Hunter St East acoustic shed: – Reticulate high voltage power supply ready for decline excavation – Site adjustments within the acoustic shed to facilitate the high voltage construction power reconfiguration – Establish (including assembly) road header, dust scrubber, shotcrete and bolting equipment – Site establishment within existing offices and amenities ▪ Initial demolition works including: – Hazmat investigation and structural investigation – Establishment of site security and hoardings	▪ Preliminary excavation within the existing acoustic shed (works to be conducted 24 hours each day and 7 days each week) – Temporary declines using a road header – Ventilation-duct bores – Ventilation adits using a Brock excavator – Approximately 50 truck movements per day (conducted in accordance with a Construction Traffic Management Plan) – Use of existing WTP (subject to the inclusion of alternative discharge criteria in the EPL) ▪ Load-out of excavated spoil ▪ Utility investigation potholes ▪ Adjustment of property utility connections	▪ Upgrade of high voltage power supply (including trenching) ▪ Excavation of station cavern, nozzle enlargements and turnbacks from within an existing acoustic shed ▪ Establish site including new construction access driveways, site hoardings, instrumentation and monitoring ▪ Tree trimming and removal ▪ Demolition of existing high-rise buildings and excavation of stage 1 of station access shaft ▪ Archaeological monitoring during basement slab removal and investigations (if required) ▪ Backfill of temporary decline prior to decommissioning ▪ Demolition of existing acoustic shed and amenities and excavation of stage 2 of station access shaft ▪ Concrete lining of station cavern and turnbacks

Worksite	Site condition at handover to JCG	Low Impact Works	Preliminary Works	Final CEMP
		– Establishment of truck access – Demolition work (soft strip only) ▪ Street tree trimming/removal ▪ Prepare archival recordings (subject to access)		▪ TBM disassembly and retrieval
Eastern Creek	▪ Existing temporary precast facility	▪ N/A (site is not within the scope of SSI 19238057)	▪ N/A (site is not within the scope of SSI 19238057)	▪ N/A (site is not within the scope of SSI 19238057)

3. Legal and other requirements

3.1. Legislation

This Sub-plan has been prepared in accordance with the:

- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Protection of the Environment Operations Act 1997* (POEO Act)
- *Heritage Act 1977* (Heritage Act)
- *National Parks and Wildlife Act 1974* (NPW Act)

As the ETP Works are approved State Significant Infrastructure, the exemptions detailed in Table 7 are applicable. Additional details on legislative requirements are provided in Section 3.3 of the CEMP.

Table 7: Relevant legislation

Act	Key Requirements
Heritage Act	Under the provisions of sections 5.23(1) and 5.23(2) of the EP&A Act, an approval under Part 4, or an excavation permit under section 139 of the Heritage Act 1997 does not apply to approved CSSI projects. In addition, Division 8 of Part 6 of the Heritage Act 1977 does not apply to prevent or interfere with the carrying out of approved CSSI projects.
NPW Act	Under the provisions of sections 5.23(1) and 5.23(3) of the EP&A Act, permits under section 90 of the National Parks and Wildlife Act 1974 and orders and directions pursuant to Part 6A are not applicable to approved CSSI projects.

3.2. Guidelines

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

- *Criteria for Assessing Excavation Directors* (Heritage Council of NSW 2019)
- *Assessing Significance for Historical Archaeological Sites and 'Relics'* (Heritage Branch 2009)
- *Archaeological Assessment Guidelines* (Heritage Office1996)
- *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010)
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010)
- *Guide to Investigation, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011)
- *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Office 2006)
- *Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977* (Heritage Office 1998)
- *Sydney Metro Unexpected Heritage Finds Procedure* (Sydney Metro 2021)
- *Exhumation Management Procedure* (Sydney Metro 2022).

3.3. Other environmental documents

Other environmental documents relevant to managing heritage issue include:

- *Sydney Metro West – Hunter Street Station (Sydney CBD) Aboriginal and Historical Archaeological Research Design*, prepared for Sydney Metro (Extent Heritage May 2022) (ARDa) (Appendix C)
- *Sydney Metro West – Pyrmont Station Construction Sites Archaeological Research Design and Excavation Methodology*, Report to Sydney Metro (Artefact Heritage April 2022) (ARDb) (Appendix D)
- *Sydney Metro West – The Bays Archaeological Research Design and Excavation Methodology*, Report to AFJV/Sydney Metro (Artefact Heritage November 2022) (ARDc) (Appendix D)
- SSI 19238057 Planning Approval (dated 24 August 2022) and relevant conditions of the Sydney Metro West Concept Schedule 2 of SSI 10038 Planning Approval (dated 11 March 2021) (Planning Approvals)
- Sydney Metro Phasing Report
- Sydney Metro CEMF
- EIS and the Submissions Report, including the REMMs
- Contractual requirements including the ETP Deed and General and Particular Specifications.

4. People and collaboration

4.1. Our team

The roles and responsibilities of key JCG personnel with respect heritage management are detailed in Table 8.

Table 8: Key roles, authority and responsibility

Element	Description
Project Director	
Role	▪ Manage the delivery of the Project in accordance with the ETP Deed
Authority	▪ Hold the authority to direct personnel or subcontractors to carry out actions to avoid or minimise unintended environmental impacts ▪ Act as the Contractor's Representative
Responsibility	▪ Accountable for the environmental and sustainability performance of the Project ▪ Allocate sufficient resources to achieve heritage and approvals compliance
Minimum Skill Level	▪ Tertiary qualification in Engineering or other associated disciplines ▪ Relevant experience on similar projects and significant project delivery experience
Project Interface	▪ Lead the JCG Senior Leadership Team and interface with Sydney Metro team
Environment, Approvals and Sustainability Director	
Role	▪ Manage the delivery of environment and sustainability requirements
Authority	▪ Authority to produce any correspondence and documentation necessary for approvals, and environmental and sustainability management ▪ Authority to take all reasonable steps to achieve environmental compliance
Responsibility	▪ Accountable for environmental and sustainability performance ▪ Lead the creation of a consultative and proactive culture that ensures environmental compliance and 'No Harm' as a driver of work behaviour ▪ Lead and manage the development and implementation of a risk-based EMS ▪ Ensure environmental and sustainability participation at Value Engineering Workshops ▪ Provide specialist heritage advice to the Project Director and other functional managers to facilitate design and construction ▪ Oversee the preparation of environmental assessments on design changes and obtain any necessary planning approvals ▪ Oversee the reporting, investigation and response to environmental incidents or complaints ▪ Liaise with Sydney Metro and external stakeholders on performance and continual improvement ▪ Engage with the Environment Protection Authority (EPA) to obtain an EPL
Minimum Skill Level	▪ Tertiary qualification in Environmental Engineering, Science, Sustainability or other associated discipline ▪ Recent relevant experience in environmental management on a similar project ▪ Minimum of 15 years' environmental management experience and 5 years' sustainability management
Project Interface	▪ Member of the JCG Senior Leadership Team and interface with Sydney Metro West Environment and Sustainability team
Environment Manager	
Role	▪ Manage day-to-day environmental compliance, including heritage management
Authority	▪ Authority to stop works where a Hold Point has not been adequately released
Responsibility	▪ Assist the Environment, Approvals and Sustainability Director in the creation of a consultative and proactive culture ▪ Manage the implementation of the CEMP, including heritage management ▪ Deliver the environmental induction and training program

Element	Description
	▪ Undertake environmental site monitoring and inspections ▪ Facilitate site inspections with Sydney Metro, the ER and the Acoustic Advisor (AA) ▪ Report and assist in incident management
Minimum Skill Level	▪ Tertiary qualification in Environmental Engineering, Science, Sustainability or other associated disciplines ▪ Minimum of 8 years' relevant experience
Project Interface	▪ Attend environment, sustainability, design and construction meetings
Environmental Advisor	
Role	▪ Support day-to-day environmental compliance, including heritage management
Authority	▪ Authority to stop works where a Hold Point has not been adequately released
Responsibility	▪ Assist the Environment Manager in the creation of a consultative and proactive culture ▪ Support the implementation of the CEMP, including heritage management ▪ Deliver the environmental induction and training program ▪ Undertake environmental site monitoring and inspections ▪ Facilitate site inspections with Sydney Metro, the ER and the Acoustic Advisor (AA) ▪ Report and assist in incident management
Minimum Skill Level	▪ Tertiary qualification in Environmental Engineering, Science, Sustainability or other associated disciplines ▪ Minimum of 2 years' relevant experience
Project Interface	▪ Attend environment, sustainability, design and construction meetings
Site Supervisor	
Role	▪ Assist the Construction Director in implementing the requirements of this Sub-plan
Authority	▪ Authority to stop works where a Hold Point has not been adequately released
Responsibility	▪ Support the implementation of the CEMP, including heritage management controls ▪ Deliver the environmental inductions where required ▪ Undertake environmental inspections ▪ Report and assist in incident management
Minimum Skill Level	▪ Qualification in relevant trade ▪ Minimum of 5 years' relevant experience
Project Interface	▪ Attend construction meetings

4.2. Specialist consultants

The JCG team will be supported by the specialist consultant AMBS and TTW who will provide the following services during construction:

- Provide specialist advice to manage the Aboriginal and non-Aboriginal heritage aspects, including unexpected finds during delivery of the ETP Works
- Provide a suitably qualified and experienced built heritage expert
- Provide a suitable qualified and heritage structural engineer
- Implement ARDa, ARDb and ARDc
- Provide an Excavation Director who complies with the Heritage Council of NSW's Criteria for Assessment of Excavation Directors (July 2011). The Excavation Director will be responsible for overseeing and matters associated with historic archaeology and advise the Heritage Council of NSW (or its delegate).
- Manage the archival recording and heritage salvage register requirements.

Additional details on AMBS roles and responsibilities are detailed in

Table 9.

Table 9: Roles and responsibilities of Specialist Consultants

Role	Consultant	Responsibility for heritage management
Primary Historic Excavation Directors	AMBS	▪ Prepare this Sub-plan and oversee its implementation ▪ Direct all historical archaeological investigations including: – Implementation of ARDa, ARDb and ARDc – Testing and monitoring of historical archaeological sites – Historical archaeological excavations and salvage ▪ Implement the Aboriginal and Historic Heritage Unexpected Finds Workflow Procedure ▪ Prepare clearance certificates. ▪ Prepare preliminary archaeological results reports for each site. ▪ Prepare reporting on the results of the historical archaeological excavations ▪ Manage and direct historic artefact cataloguing, analysis, storage requirements and reporting. Peer review of all reports.
Site Directors	AMBS	▪ Manage and direct historical archaeological investigations in consultation with the Primary Excavation Director including: – Implementation of ARDa, ARDb and ARDc – Manage testing and monitoring of historical archaeological sites – Manage historical archaeological excavations and salvage – Implement the Aboriginal and Historic Heritage Unexpected Finds Workflow Procedure – Preparation of clearance certificates following finalisation of all historical archaeological investigations at each relevant site for Primary Director approval and submission. ▪ Prepare preliminary archaeological results reports for each site ▪ Prepare reports on the results of the historical archaeological excavations ▪ Manage historic artefact cataloguing, analysis, storage requirements and reporting.
Aboriginal Heritage Excavation Director	AMBS	▪ Prepare this Sub-plan and oversee its implementation ▪ Direct, manage and undertake a program of Aboriginal archaeological test and salvage excavations in accordance with ARDa ▪ Manage and direct Aboriginal artefact analysis, storage requirements and reporting ▪ Manage the Aboriginal and Historic Heritage Unexpected Finds Workflow Procedure ▪ Issue clearance certificates following finalisation of all Aboriginal archaeological investigations at each relevant site ▪ Continue consultation and engagement with the Registered Aboriginal Parties (RAPs)
Heritage Consultant and Built Heritage Expert	AMBS	▪ Prepare Statements of Heritage Impact, as required ▪ Provide on-going verbal and written heritage advice regarding heritage items and places within and adjacent to the Project footprint ▪ Manage archival and photographic recordings and salvage, as required ▪ Provide advice regarding vibration monitoring, if required ▪ Provide advice regarding the protection of heritage items that may be affected by the works ▪ Any other heritage issues that may arise during the project
Heritage Structural Engineer	TTW	▪ Prepare a detailed methodology for the protection of the Former Skinners Family Hotel, Tank Stream and Bennelong Stormwater Channel No. 29
Heritage Architect	TKD	▪ Provide advice to assist in the development of a detailed methodology for the protection of the Former Skinners Family Hotel.

Role	Consultant	Responsibility for heritage management
Noise and Vibration Consultant	Renzo Tonin and Associates	▪ Preparing Detailed Noise and Vibration Impact Statements (DNVIS) and providing advice on reasonable on feasible mitigation measures and methodologies to limit noise and vibration impacts ▪ Undertaking noise and vibration monitoring when required ▪ Assisting in community consultation when required

4.3. Collaboration with Sydney Metro and the ER

The Environment, Approvals and Sustainability team will openly communicate and consult with Sydney Metro, and the ER. This will include:

- Working collaboratively to ensure appropriate strategies are identified and implemented
- Holding regular meetings with the Sydney Metro Environment Team to provide updates on the construction process and receive any feedback
- Facilitating regular inspections with Sydney Metro and the ER
- Recording and responding appropriately to environmental complaints and enquiries and reporting them to Sydney Metro and other stakeholders including the ER and the EPA in a timely manner
- Providing comprehensive information to manage incidents including details on preventative actions to avoid re-occurrence.

4.4. Consultation with RAPs

The RAPs will continue to be informed of the ETP Works in accordance with Condition D11 and provided with the opportunity to be consulted about the Aboriginal cultural heritage management requirements as applicable to the ETP Works. This will be achieved through:

- Test and salvage excavations –RAPs will be invited to attend and participate in Aboriginal cultural heritage test and salvage excavations
- Aboriginal Cultural Heritage Excavation Report(s) – RAPs will be provided a minimum of 28 days to consider the Aboriginal Cultural Heritage Excavation Report(s) and provide comment prior to the finalisation of the report. The final report will be provided to Heritage NSW within 24 months of the completion of the Aboriginal archaeological excavations (test and salvage).

Aboriginal stakeholder consultation for the ETP Works will be conducted in accordance with the NSW Office of Environment and Heritage's Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 and will continue the initial consultation undertaken for the Sydney Metro West Stage 1. Evidence of consultation with RAPs will be submitted to Sydney Metro and the ER for information.

5. Existing environment

The EIS assessed the potential for impacts to Aboriginal Cultural heritage and non-Aboriginal heritage.

The tunnel sections between construction sites are generally too deep to affect archaeological deposits. These sections have therefore not been assessed for impacts as part of the EIS.

5.1. Aboriginal Cultural Heritage

The EIS Technical Paper 4 describes the environmental and Aboriginal heritage context for the Pyrmont and Hunter Street sites. The Aboriginal archaeology of the Hunter Street sites was reassessed and further refined in ARDa.

5.1.1. Pyrmont Station

The EIS assessment identified that no Aboriginal heritage sites had been previously recorded within 200 metres of the Pyrmont Station site. It further identified that there was no likelihood that intact soils bearing Aboriginal archaeological deposits would be present, due to the landscape context and level of modification of the site and surrounding area.

5.1.2. Hunter Street West

The Hunter Street West site has been identified as being located on a sloping landform associated with the Tank Stream, which runs along the eastern boundary of the Project area. The site has been impacted by varying levels of disturbance, including construction of modern buildings, and modifications to the ground surface. Basement excavations have impacted or removed remnant natural soil profiles, with the exception of the location of Skinners Hotel, De Mestre Place, and the eastern portion of the Project area, which have moderate to low potential to retain Aboriginal heritage objects. The area of the Tank Stream is identified as having moderate potential to retain Aboriginal objects, which could comprise isolated artefacts, artefact scatters, or cultural burning.

During preparation of the EIS, an Aboriginal stakeholder noted that the alignment of Elizabeth Street, east of the project area, was used as a track by Aboriginal people both before 1788 and immediately after contact. Natural resources associated with the Tank Stream environment were noted as having been of importance to Aboriginal people.

A single Aboriginal heritage site (AHIMS site 45-6-2796) was previously recorded in a redeposited historical context near to the Hunter Street West site. The site had been inaccurately recorded in the Heritage NSW AHIMS database as being in the Project area, but the original recording indicates that it is outside of the Hunter Street West site, directly to the south. The site comprises a single stone artefact, recovered during historical archaeological excavations.

5.1.3. Hunter Street East

The Hunter Street East site is located 100m from the edge of the former Tank Stream bank, suggesting that if natural soil profiles are present in the project area they have potential to retain Aboriginal objects. However, the current built environment of the site comprises office blocks and a temporary acoustic shed, suggesting that the area has been highly impacted and modified through construction and modifications to the ground surface. There is low potential for Aboriginal objects to be present in redeposited natural soils or historical contexts in the Hunter Street East site.

5.1.4. The Bays

A Potential Aboriginal Deposit (PAD) (PAD 01) is located in the south-western portion of the Bays construction site, located directly below predicted remains relating to outbuildings of the First White Bay Hotel. Remains of the First White Bay Hotel have been predicted to have a low potential for intactness, but if intact would be of local heritage significance. No other areas of the construction site have been identified as having Aboriginal archaeological potential, as most of the site sits on reclaimed land which would not contain intact deposits.

It is not proposed that The Bays PAD 01 would be impacted by the ETP works. No subsurface excavations are needed within the PAD site as part of this project. The methodology outlined in the Bays ARDEM would be implemented if ground disturbing works were required within the boundary of the PAD, or if areas of archaeological potential were unexpectedly uncovered in other areas of the site.

5.2. Non-Aboriginal Heritage

The EIS identified listed heritage items on the relevant state and federal statutory and non-statutory heritage registers within the tunnel alignment study area. The Non-Aboriginal Heritage technical paper (Artefact 2022) study area encompasses a 25 metre buffer around the construction sites. The technical paper identifies listed and potential heritage items which have been assessed for direct, indirect, settlement and vibration impacts.

A total of 42 listed heritage items were identified within the tunnel alignment study area on a number of statutory heritage registers including the:

- National Heritage List (NHL)
- State Heritage Register (SHR)
- Sydney Local Environmental Plan 2012 (SLEP)
- Sydney Regional Environmental Plan No 26—City West (SREP), repealed 2022.
- Section 170 Heritage and Conservation Registers (S170).

In addition, two items not listed on statutory heritage registers were identified in the EIS for the Project. A summary of heritage items in the vicinity of the ETP Works areas is provided in Table 10. The location of heritage items in the vicinity of the Pyrmont Station and Hunter Street Station sites is detailed in Figure 7 and Figure 8.

Table 10: Summary of heritage listed items within a 25-metre buffer of the ETP Works areas (SHR denoted in bold font)

Register	Pyrmont Station West	Pyrmont Station East	Hunter Street Station West	Hunter Street Station East	The Bays	Tunnel Alignment
NHL	-	-	-	-	▪	▪ **Royal Botanical Gardens and Domain** (including Governor's Domain and Civic Precinct (NHL Place ID 106103, SHR Item no. 01070, SLEP 2012 Item no. I1653)
SHR	-	-	▪ **Tank Stream** (SHR item no. 00636, Sydney Water s170 item no. 4573709, SLEP 2012 item no. I1656) ▪ **Former Skinners Family Hotel** (SHR Item no. 00584, SLEP 2012 Item no. I1766) ▪ **Little Hunter and Hamilton Street Precinct** (SHR item no. 00599, SLEP 2012 item no. I1808) ▪ **NSW Sports Club** (SHR item no. 00599, SLEP 2012 item no. I1808)	▪ **NSW Club House Building** (SHR Item no. 00145, SLEP 2012 Item no. I1676) ▪ **City Mutual Life Assurance Building** (SHR item no. 00585, SLEP 2012 item no. I1675) ▪ **Perpetual Trustee Company** (SHR item no. 00678, SLEP 2012 item no. I1810) ▪ **Public Trust Office** (SHR item no. 01019, Department of Justice and Attorney General S170 Register, SLEP 2012 item no. I1904) ▪ **Former Wales House** (SHR item no. 00586, SLEP 2012 item no. I1915)	▪ **White Bay Power Station** (SHR Item no. 01015, SHI no. 4500460) and associated items including the Penstock	▪ **Glebe Island Bridge** (SHR Item no. 1914 RMS s170 register (no item number retrievable)) ▪ **Railway cutting** (SHR item no. 01225, Sydney Trains s170 register, SLEP 2012 item no. 1203) ▪ **Former Railway House (part of Transport House) including interior**s (SHR Item no. 01271 Sydney Trains s170 register (no item number retrievable), SLEP 2012 Item no. I1975) ▪ **Former 'Qantas House'** (SHR Item no. 01512, SLEP 2012 Item no. I1811) ▪ **Chifley Square** (SHR Item no. 01512, SLEP 2012 Item no. I1708) ▪ **St James Railway Station** (SHR Item no. 01248, Sydney Trains s170 register (no item number retrievable), SLEP 2012 Item no. I1740) ▪ **State Library of NSW** (SHR Item no. 01071, Department of Education s170 register (no item number retrievable), SLEP 2012 Item no. 01071)

Register	Pyrmont Station West	Pyrmont Station East	Hunter Street Station West	Hunter Street Station East	The Bays	Tunnel Alignment
						▪ **Royal Botanical Gardens and Domain (including Governor's Domain and Civic Precinct** (NHL Place ID 106103, SHR Item no. 01070, SLEP 2012 Item no. I1653)
SLEP 2012	▪ Pyrmont Heritage Conservation Area (SLEP 2012 Item no. C52) ▪ Quarryman's Hotel (SLEP 2012 Item no. I1232, SREP 2005 (City West) Item no. 56) ▪ Former Industrial Building 'Waite and Bull' (SLEP 2012 Item no. I1263, SREP 2005 (City West) Item no. 54.)	▪ Former New York Hotel (SLEP 2012 Item no. I1275, SREP 2005 (City West) Item no. 67) ▪ Former Warehouse 'Bank of NSW Stores' (SLEP 2012 Item no. I1256, SREP 2005 (City West) Item no. 53) ▪ Corner Shop and Residence 'Charmelu' (SLEP 2012 Item no. I1213, SREP 2005 (City West) Item no. 68) ▪ Terrace Group (SLEP 2012 Item no. I1274, SREP 2005 (City West) Item no. 122) ▪ Pyrmont Bridge Road Hotel (SLEP 2012 Item no. I1255, SREP 2005 (City West) Item no. 52)	▪ **Tank Stream** (SHR item no. 00636, Sydney Water s170 item no. 4573709, SLEP 2012 item no. I1656) ▪ **Former Skinners Family Hotel** (SHR Item no. 00584, SLEP 2012 Item no. I1766) ▪ **Little Hunter and Hamilton Street Precinct** (SHR item no. 00599, SLEP 2012 item no. I1808) ▪ **NSW Sports Club** (SHR item no. 00599, SLEP 2012 item no. I1808) ▪ Ash Street Laneway (SLEP 2012 item no. I1666) ▪ Former Commercial Building – 'Peapes	▪ **NSW Club House Building** (SHR Item no. 00145, SLEP 2012 Item no. I1676) ▪ Former Bank – Delfin House (SLEP 2012 Item no. I1903) ▪ Richard Johnson Square (SLEP 2012 Item no. I1673) ▪ **City Mutual Life Assurance Building** (SHR item no. 00585, SLEP 2012 item no. I1675) ▪ **Perpetual Trustee Company** (SHR item no. 00678, SLEP 2012 item no. I1810) ▪ **Public Trust Office** (SHR item no. 01019, Department of Justice and Attorney General S170 Register,	▪	▪ **Railway cutting** (SHR item no. 01225, Sydney Trains s170 register, SLEP 2012 item no. 1203) ▪ Former warehouse 'Festivals Records' including interiors (SLEP 2012 Item no. I1211) ▪ Terrace group including interiors (SLEP 2012 Item no. I1227) ▪ Terrace group including interiors (SLEP 2012 Item no. I1276, SREP 2005 (City West) Item no 123) ▪ Pyrmont Bridge Hotel (SLEP 2012 Item no. I1255, SREP 2005 (City West) Item no. 52) ▪ **Former Railway House (part of Transport House) including interiors** (SHR Item no. 01271 Sydney Trains s170 register (no item number retrievable), SLEP 2012 Item no. I1975) ▪ Wynyard Park including parkland, mature trees, remnant fences, underground conveniences and Lang Statue (SLEP 2012 Item no. I1971)

Register	Pyrmont Station West	Pyrmont Station East	Hunter Street Station West	Hunter Street Station East	The Bays	Tunnel Alignment
			Menswear' (SLEP 2012 item no. I1765) ▪ Grand Hotel (SLEP 2012 item no. I1809) ▪ Pangas House (SLEP 2012 item no. I2297)[1]	SLEP 2012 item no. I1904) ▪ **Former Wales House** (SHR item no. 00586, SLEP 2012 item no. I1915) ▪ Former Industrial Building 'Manufacturers Mutual' (SLEP 2012 item no. I1902)		▪ Former 'Shell House' including interior (SLEP 2012 Item no. I1691) ▪ **Former 'Qantas House'** (SHR Item no. 01512, SLEP 2012 Item no. I1811) ▪ Wentworth Hotel (SLEP 2012 Item no. I1674) ▪ **Chifley Square** (SHR Item no. 01512, SLEP 2012 Item no. I1708) ▪ Terrace house 'Horbury House' (SLEP 2012 Item no. I1877) ▪ **St James Railway Station** (SHR Item no. 01248, Sydney Trains s170 register (no item number retrievable), SLEP 2012 Item no. I1740) ▪ Shakespeare Place (SLEP 2012 Item no. I1949) ▪ **State Library of NSW** (SHR Item no. 01071, Department of Education s170 register (no item number retrievable), SLEP 2012 Item no. 01071) ▪ **Royal Botanical Gardens and Domain (including Governor's Domain and Civic Precinct** (NHL Place ID 106103, SHR Item no. 01070, SLEP 2012 Item no. I1653)

[1] Listing has changed since the development of the EIS

Register	Pyrmont Station West	Pyrmont Station East	Hunter Street Station West	Hunter Street Station East	The Bays	Tunnel Alignment
SREP 2005	▪ Quarryman's Hotel (SLEP 2012 Item no. I1232, SREP 2005 (City West) Item no. 56) ▪ Former Industrial Building 'Waite and Bull' (SLEP 2012 Item no. I1263, SREP 2005 (City West) Item no. 54.)	▪ Former New York Hotel (SLEP 2012 Item no. I1275, SREP 2005 (City West) Item no. 67) ▪ Former Warehouse 'Bank of NSW Stores' (SLEP 2012 Item no. I1256, SREP 2005 (City West) Item no. 53) ▪ Corner Shop and Residence 'Charmelu' (SLEP 2012 Item no. I1213, SREP 2005 (City West) Item no. 68) ▪ Terrace Group (SLEP 2012 Item no. I1274, SREP 2005 (City West) Item no. 122) ▪ Pyrmont Bridge Road Hotel (SLEP 2012 Item no. I1255, SREP 2005 (City West) Item no. 52)	-	-	▪	▪ Glebe Island Silos (Port Authority of NSW s170 4560016, SREP No. 26 – City West Part 3 No. 1) ▪ Terrace group including interiors (SLEP 2012 Item no. I1276, SREP 2005 (City West) Item no 123) ▪ Pyrmont Bridge Hotel (SLEP 2012 Item no. I1255, SREP 2005 (City West) Item no. 52)
S170	-	-	▪ **Tank Stream** (SHR item no. 00636, Sydney Water s170 item no. 4573709, SLEP 2012 item no. I1656)	▪ Bennelong Stormwater Channel No 29A (Sydney Water s170 Item no. 4570854)	▪ White Bay Power Station (outlet) Canal (Port Authority of NSW s170 4560026) ▪ White Bay Power Station (inlet) canal (Port Authority of NSW s170 4560062)	▪ Glebe Island Silos (Port Authority of NSW s170 4560016, SREP No. 26 – City West Part 3 No. 1) ▪ **Glebe Island Bridge** (SHR Item no. 1914 RMS s170

Register	Pyrmont Station West	Pyrmont Station East	Hunter Street Station West	Hunter Street Station East	The Bays	Tunnel Alignment
			▪ Bennelong Stormwater Channel No 29A (Sydney Water s170 Item no. 4570854)	▪ **Public Trust Office** (SHR item no. 01019, Department of Justice and Attorney General S170 Register, SLEP 2012 item no. I1904)	▪ Beattie Street Stormwater Channel No. 15 (Sydney Water s170 4570329) ▪ Glebe Island Silos (Port Authority of NSW s170 4560016) ▪ SREP No. 26 – City West Part 3 No. 1	register (no item number retrievable)) ▪ **Railway cutting** (SHR item no. 01225, Sydney Trains s170 register, SLEP 2012 item no. 1203) ▪ **Former Railway House (part of Transport House) including interiors** (SHR Item no. 01271 Sydney Trains s170 register (no item number retrievable), SLEP 2012 Item no. I1975) ▪ **St James Railway Station** (SHR Item no. 01248, Sydney Trains s170 register (no item number retrievable), SLEP 2012 Item no. I1740) ▪ **State Library of NSW** (SHR Item no. 01071, Department of Education s170 register (no item number retrievable), SLEP 2012 Item no. 01071)
Unlisted	▪ Gilbey's Distillery (unlisted)	-		-		-

6. Environmental aspects and impacts

6.1. Overview

Reflecting the requirements of the CEMF (3.1(b)(v)), this Section details the heritage risks associated with the Tunnelling, Excavation and Associated Works. The controls to manage the identified risks (Section 7 and Section 8) have been developed in consideration of the SMART Principles – Specific, Measurable, Achievable, Relevant and Time-based. Ongoing risk assessments undertaken throughout the development of the EIS and Submissions Report have informed the identification of REMMs. On this basis, the control measures are considered to be relevant and achievable for the Project and will be monitored against specific, measurable and time-based targets (Table 3).

Additional details on the environmental risk assessment procedure are provided in the CEMP (Section 3.5)

6.2. Construction aspects

Key aspects of the Project that could result in adverse heritage impacts include:

- Protection, adjustment and decommissioning of utility services (including trenching)
- Establishment of sites including new construction access driveways, site hoardings, instrumentation and monitoring
- Demolition of existing buildings
- Bulk excavation works
- Tunnelling where heritage structures exist above the alignment causing vibration and settling.

Refer also to the Aspects and Impacts Register included in Appendix D of the CEMP.

6.3. Impacts

6.3.1. Aboriginal Heritage

Areas with potential to retain Aboriginal heritage items have been identified at the Hunter Street east and west project areas and at the Bays. If Aboriginal archaeological deposits and heritage items are present at these sites, they will be of moderate or high heritage significance.

Construction activities in the Hunter Street east and west project areas have potential to impact on subsurface Aboriginal heritage items, if they are present. An appropriate level of archaeological investigations will be required during the works to mitigate potential impacts to the Aboriginal heritage values at the worksites.

6.3.2. Historic Heritage

The proposed works will impact both built and archaeological non-Aboriginal heritage through a combination of direct and indirect impacts. Direct physical impacts include the removal of archaeological resources and heritage fabric, with potential impacts from noise, vibration, and settlement. Indirect visual impacts may also occur through construction activities. The following tables summarise the potential impacts of the proposed works, using information taken from the EIS, non-Aboriginal heritage technical paper, ARDa, ARDb and ARDc:

- Table 11 details potential impacts from tunnelling works
- Table 12 details potential impacts from ETP Works at the Pyrmont Station site
-

- Table 13 details potential impacts from ETP Works at the Hunter Street Station site
- Table 14 details potential impacts from ETP Works at the Bays site
- Table 15 details the assessed archaeological impacts.

Table 11: Assessed potential impacts relating to tunnelling works (SHR denoted in bold font)

Potential Impact	Site	Heritage Items
Potential impact: Potential negligible settlement with superficial damage unlikely, resulting in a negligible heritage impact	Pyrmont Station	▪ Former warehouse 'Festivals Records' including interiors (SLEP 2012 Item no. I1211) ▪ Former New York Hotel (SLEP 2012 Item no. I1275, SREP 2005 (City West) Item no. 67) ▪ Former Warehouse 'Bank of NSW Stores' (SLEP 2012 Item no. I1256, SREP 2005 (City West) Item no. 53) ▪ Pyrmont Bridge Hotel (SLEP 2012 Item no. I1255, SREP 2005 (City West) Item no. 52)
	Hunter Street Station	▪ Former 'Shell House' including interior (SLEP 2012 Item no. I1691) ▪ Former Industrial Building 'Manufacturers Mutual' (SLEP 2012 item no. I1902) ▪ **Perpetual Trustee Company** (SHR item no. 00678, SLEP 2012 item no. I1810) ▪ **Public Trust Office** (SHR item no. 01019, Department of Justice and Attorney General S170 Register, SLEP 2012 item no. I1904) ▪ **Former 'Qantas House'** (SHR Item no. 01512, SLEP 2012 Item no. I1811) ▪ Wentworth Hotel (SLEP 2012 Item no. I1674) ▪ **Chifley Square** (SHR Item no. 01512, SLEP 2012 Item no. I1708) ▪ Terrace house 'Horbury House' (SLEP 2012 Item no. I1877) ▪ Shakespeare Place (SLEP 2012 Item no. I1949)
Potential impact: Potential negligible to slight settlement resulting in possible superficial damage that is unlikely to have structural significance, generating a minor heritage impact	Pyrmont Station	▪ Pyrmont Heritage Conservation Area (SLEP 2012 Item no. C52)
Potential impact: Potential slight settlement resulting in possible superficial damage, which is unlikely to have structural significance, generating a minor potential heritage impact	Pyrmont Station	▪ Quarryman's Hotel (SLEP 2012 Item no. I1232, SREP 2005 (City West) Item no. 56) ▪ Former Industrial Building 'Waite and Bull' (SLEP 2012 Item no. I1263, SREP 2005 (City West) Item no. 54.) ▪ Corner Shop and Residence 'Charmelu' (SLEP 2012 Item no. I1213, SREP 2005 (City West) Item no. 68) ▪ Pyrmont Bridge Road Hotel (SLEP 2012 Item no. I1255, SREP 2005 (City West) Item no. 52) ▪ Terrace Group (SLEP 2012 Item no. I1274, SREP 2005 (City West) Item no. 122)
	Hunter Street Station	▪ Former Commercial Building – 'Peapes Menswear' (SLEP 2012 item no. I1765) ▪ **Former Skinners Family Hotel** (SHR Item no. 00584, SLEP 2012 Item no. I1766) ▪ Grand Hotel (SLEP 2012 item no. I1809)

Potential Impact	Site	Heritage Items
		▪ Pangas House (SLEP 2012 item no. I2297)[2] ▪ **Former Wales House** (SHR item no. 00586, SLEP 2012 item no. I1915) ▪ **NSW Club House Building** (SHR Item no. 00145, SLEP 2012 Item no. I1676) ▪ Former Bank – Delfin House (SLEP 2012 Item no. I1903) ▪ **City Mutual Life Assurance Building** (SHR item no. 00585, SLEP 2012 item no. I1675) ▪ **NSW Sports Club** (SHR item no. 00599, SLEP 2012 item no. I1808) ▪ **State Library of NSW** (SHR Item no. 01071, Department of Education s170 register (no item number retrievable), SLEP 2012 Item no. 01071)
Potential impact: Within the zone of influence, and would be subject to further detailed assessment during design development and construction planning	Pyrmont Station	▪ **Railway cutting** (SHR item no. 01225, Sydney Trains s170 register, SLEP 2012 item no. 1203)
	Hunter Street Station	▪ **Tank Stream** (SHR item no. 00636, Sydney Water s170 item no. 4573709, SLEP 2012 item no. I1656) ▪ Bennelong Stormwater Channel No 29A (Sydney Water s170 Item no. 4570854) ▪ **Little Hunter and Hamilton Street Precinct** (SHR item no. 00599, SLEP 2012 item no. I1808) ▪ **St James Railway Station** (SHR Item no. 01248, Sydney Trains s170 register (no item number retrievable), SLEP 2012 Item no. I1740)
	The Bays	▪ Glebe Island Silos (Port Authority of NSW s170 4560016, SREP No. 26 – City West Part 3 No. 1)
Potential impact: Outside the zone of influence and unlikely to be impacted, resulting in a neutral potential heritage impact	Hunter Street Station	▪ **Former Railway House (part of Transport House) including interiors** (SHR Item no. 01271 Sydney Trains s170 register (no item number retrievable), SLEP 2012 Item no. I1975) ▪ Wynyard Park including parkland, mature trees, remnant fences, underground conveniences and Lang Statue (SLEP 2012 Item no. I1971) ▪ **Royal Botanical Gardens and Domain (including Governor's Domain and Civic Precinct** (NHL Place ID 106103, SHR Item no. 01070, SLEP 2012 Item no. I1653)
	The Bays	▪ **Glebe Island Bridge** (SHR Item no. 1914 RMS s170 register (no item number retrievable))
Potential impact: Partially within the zone of influence but no requirement for further assessment during design development and construction planning identified	Hunter Street Station	▪ Richard Johnson Square (SLEP 2012 Item no. I1673)

[2] Listing has changed since the development of the EIS

Table 12: Assessed heritage impacts at the Pyrmont station site (SHR denoted in bold font)

Item	Impact	Level of Impact
Pyrmont Heritage Conservation Area (SLEP 2012 Item no. C52)	***Direct impact: Demolition of items within conservation area*** Whilst the Project includes demolition of buildings within the Heritage Conservation Area, no listed heritage items that are contributory to the significance of the Conservation Area are proposed to be demolished.	Negligible
	Potential direct impact: Vibration There are four items located within the Pyrmont Conservation Area which are located immediately adjacent to the western construction site and have a potential vibration level which could exceed the cosmetic damage screening criteria. Vibration is predicted to have a moderate cumulative impact on the Conservation Area.	Moderate
	Indirect impact: Views and vistas (temporary) The demolition of the existing buildings and construction activities, including the construction of an acoustic shed would result in changes to the surrounding setting and context of the Conservation Area, and impact existing streetscape views and vistas of the significant high density fine grained urban setting of the Conservation Area.	Moderate
Former New York Hotel (SLEP 2012 Item no. I1275, SREP 2005 (City West) Item no. 67)	***Potential direct impact: Vibration*** Vibration to the structure is predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located about 15 metres north of the eastern construction site. The construction site is within the expanded heritage curtilage of the heritage item. The demolition of existing buildings and construction activities on the eastern construction site would result in changes to the surrounding setting and context of the heritage item, including significant streetscape views from the heritage item. In addition, an acoustic shed would be located directly opposite the heritage item. Main vistas to the building would be maintained along Union Street and Edward Street, retaining this significant setting contribution.	Negligible
Quarryman's Hotel (SLEP 2012 Item no. I1232, SREP 2005 (City West) Item no. 56)	***Potential direct impact: Vibration*** Vibration is predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located about 15 metres south-west of the western construction site. The construction site is within the expanded heritage curtilage of the heritage item. The demolition of existing buildings and construction activities, would result in changes to the surrounding setting and context of the heritage item, including views from the heritage item. In addition, an acoustic shed would be located directly opposite the heritage item. Main vistas to the building would be maintained along Pyrmont Bridge Road and Harris Street.	Negligible
Former Warehouse 'Bank of NSW Stores' (SLEP 2012 Item no. I1256, SREP 2005 (City West) Item no. 53)	***Potential direct impact: Vibration*** The vibration is predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located about 20 metres south of the eastern construction site. The eastern construction site is within the expanded	Minor

Item	Impact	Level of Impact
	heritage curtilage of the heritage item. An acoustic shed would be located directly opposite the heritage item and impacting the view corridors from the building. In addition, the western construction site would be located 50 metres to the north-west of the heritage item, and visible from the heritage item along Pyrmont Bay Road. Main vistas to the building would be maintained along Pyrmont Bridge Road and Pyrmont Street.	
Corner Shop and Residence 'Charmelu' (SLEP 2012 Item no. I1213, SREP 2005 (City West) Item no. 68)	***Potential direct impact: Vibration*** Vibration is predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located about 20 metres west of the eastern construction site. The construction site is within the expanded heritage curtilage of the heritage item. An acoustic shed would be located directly opposite the heritage item and impacting the view corridors from the building. Main vistas to the building would be maintained along Union Street and Edward Street.	Negligible
Terrace Group (SLEP 2012 Item no. I1274, SREP 2005 (City West) Item no. 122)	***Potential direct impact: Vibration*** The vibration is predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located about 20 metres west of the eastern construction site. The construction site is within the expanded heritage curtilage of the heritage item. While the demolition of existing buildings and construction activities would result in changes to the surrounding setting and context of the heritage item, these changes are not within the visual catchment of the heritage item, and therefore will not impact views and vistas to the significant facades nor impact the heritage item's ability to contribute to the streetscape.	Neutral
Pyrmont Bridge Road Hotel (SLEP 2012 Item no. I1255, SREP 2005 (City West) Item no. 52)	***Potential direct impact: Vibration*** The vibration is predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located about 20 metres south of the eastern construction site. The construction site would be within the expanded heritage curtilage of the heritage item. An acoustic shed is temporary, and although comparable in scale with the existing site, which comprises two buildings. The construction site and heritage item are separated by a large open area which permits views to and from the heritage item Main streetscape vistas to the building would be maintained along Pyrmont Bridge Road and Hardwood Street.	Minor
Former Industrial Building 'Waite and Bull' (SLEP 2012 Item no. I1263, SREP 2005 (City West) Item no. 54.)	***Potential direct impact: Vibration*** The vibration is predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The western construction site would be located directly opposite the heritage item. An acoustic shed would be located directly opposite the heritage item on the western construction site and impacting view corridors from the building. The eastern construction site would be	Negligible

Item	Impact	Level of Impact
	located 50 metres to the north-east of the heritage item, and visible from the heritage item. Main vistas to the building would be maintained along Pyrmont Bridge Road and Pyrmont Street. Overall, the work is considered to have a minor visual impact, as a result of demolition and alteration of the existing streetscape and context of the heritage item, however considered to be a negligible impact to the significance of the item and its contribution to the streetscape.	
Former Gilbey's Gin Distillery Building (unlisted)	***Direct impact: Demolition of potential heritage item*** The potential heritage item would be demolished as part of the Project. This would result in the loss of a representative example of an Art Deco warehouse building, and one of few remaining distillery buildings left in NSW.	Major

Table 13: Assessed heritage impacts at the Hunter Street Station site (SHR denoted in bold font)

Item	Impact	Level of Impact
Tank Stream (SHR item no. 00636, Sydney Water s170 item no. 4573709, SLEP 2012 item no. I1656)	***Direct impact: Physical impact*** The heritage item is underground, located directly beneath and within the western construction site. However its fabric would not be directly excavated and nor would the heritage significant alignment of the Tank Stream be altered in any way as a result of the Project.	Neutral
	Potential direct impact: Vibration Vibration levels are predicted to exceed the cosmetic damage screening criteria. Vibration is predicted to have a moderate direct impact on the Tank Stream, due to its location within the western construction site, and close proximity in adjacent lots.	Moderate
	Indirect impact: Views and vistas (temporary) As the Tank Stream is located wholly underground, the proposed work would not result in impacts to the views and vistas to and from the item.	Neutral
Bennelong Stormwater Channel No 29A (Sydney Water s170 Item no. 4570854)	***Direct impact: No physical impact*** The heritage item is located adjacent to the north-eastern corner of the eastern construction site, above the tunnel alignment. The work would not involve any direct excavation or removal of any portion of the item.	Neutral
	Potential direct impact: Vibration Vibration is predicted to be above the cosmetic damage screening criteria. Potential direct impacts associated with vibration would have the potential to be moderate where the Bennelong Stormwater Channel No 29A is in close proximity to the Project.	Moderate
	Indirect impact: Views and vistas (temporary) As the heritage item is located wholly underground, the proposed work would not result in impacts to the views and vistas to and from the item.	Neutral
Former Skinners Family Hotel (SHR Item no. 00584, SLEP 2012 Item no. I1766)	***Potential direct impact: Physical impact*** The heritage item is located within the north-western corner of the western construction site. While the heritage item would not be demolished, there is potential for direct physical impact as the demolition of the adjacent building has the potential to directly damage the brick structure and façade of the heritage item.	Moderate
	Potential direct impact: Vibration Vibration to the structure is predicted to exceed cosmetic damage screening criteria. Vibration is predicted to have a moderate potential for direct impact on the Skinners Family Hotel due to its location within the western construction site.	Moderate
	Indirect impact: Views and vistas (temporary) The western construction site would be within the heritage curtilage of the heritage item. The demolition of existing buildings and construction activities would result in non-significant changes to the setting of the heritage item.	Negligible
NSW Club House Building (SHR Item no. 00145, SLEP 2012 Item no. I1676)	***Potential direct impact: Vibration*** Vibration to the structure is predicted to exceed the cosmetic damage screening criteria and would have moderate potential for direct impacts on the heritage item.	Moderate
	Indirect impact: Views and vistas (temporary)	Negligible

Item	Impact	Level of Impact
	The eastern construction site would be within the expanded heritage curtilage of the heritage item. The demolition of existing buildings and construction activities would result in non-significant changes to the setting of the heritage item. The continued presence of the existing acoustic shed directly adjacent to the heritage item is not anticipated to cause any additional overshadowing impacts.	
Former Bank – Delfin House (SLEP 2012 Item no. I1903)	***Potential direct impact: Vibration*** Vibration levels are predicted to exceed the cosmetic damage screening criteria.	Moderate
	Indirect impact: Views and vistas (temporary) The heritage item is located directly abutting the north-western corner of the eastern construction site. The construction site is within the expanded heritage curtilage of the heritage item. The demolition of existing buildings and construction activities would result in non-significant changes to the setting of the heritage item. The continuing presence of the existing acoustic directly next to the heritage item would not result in any additional overshadowing impacts.	Negligible
Richard Johnson Square (SLEP 2012 Item no. I1673)	***Potential direct impact: Vibration*** Vibration levels are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located directly abutting the south-eastern edge of the eastern construction sites. The construction site would be within the expanded heritage curtilage of the heritage item. The demolition of existing buildings and construction activities nearby would result in non-significant changes to the setting of the heritage item. The construction of an acoustic shed directly next to the heritage item would result in temporary minor overshadowing of the item. The acoustic shed would also have a temporary impact to the overall urban context, due to its lack of architectural contribution to the streetscape.	Minor
City Mutual Life Assurance Building (SHR item no. 00585, SLEP 2012 item no. I1675)	***Potential direct impact: Vibration*** Vibration levels are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located about 20 metres south-east of the eastern construction site. The construction site would be within the expanded heritage curtilage of the heritage item. The significant views to the building would continue to be maintained along Hunter Street and Bligh/Castlereagh Street. The demolition of existing buildings and construction activities would result in non-significant changes to the setting of the heritage item. The continued presence of the acoustic shed temporarily located directly next to the heritage item, would result in a negligible, temporary impact to the immediate urban context of the building.	Negligible
Perpetual Trustee Company (SHR item no. 00678, SLEP 2012 item no. I1810)	***Potential direct impact: Vibration*** Vibration levels are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral

Item	Impact	Level of Impact
	Indirect impact: Views and vistas (temporary) The heritage item is located about 20 metres south of the eastern construction site. The construction site would be within the expanded heritage curtilage of the heritage item. Vistas to the building along Hunter Street would not be impacted by the proposed work. The demolition of existing buildings and construction activities would result in non-significant changes to the setting of the heritage item. The continued presence of the acoustic shed temporarily located directly next to the heritage item, would result in a negligible, temporary impact to the immediate urban context of the building.	Negligible
Public Trust Office (SHR item no. 01019, Department of Justice and Attorney General S170 Register, SLEP 2012 item no. I1904)	***Potential direct impact: Vibration*** The vibration is predicted be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located about 20 metres north of the eastern construction site. The construction site would be within the expanded heritage curtilage of the heritage item. Vistas to the building along O'Connell Street would not be impacted by the proposed work. The demolition of existing buildings and construction activities would result in non-significant changes to the setting of the heritage item. The continued presence of the existing acoustic shed opposite the building would be temporary in nature, and would not overshadow the heritage item or impact its visual corridors.	Negligible
Little Hunter and Hamilton Street Precinct (SHR item no. 00599, SLEP 2012 item no. I1808)	***Potential direct impact: Vibration*** Vibration levels are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located about 20 metres north of the western construction site. The construction site would be within the expanded heritage curtilage of the heritage item. Vistas to the building along O'Connell Street would not be impacted by the proposed work. The demolition of existing buildings and construction activities would result in non-significant changes to the setting of the heritage item.	Negligible
NSW Sports Club (SHR item no. 00599, SLEP 2012 item no. I1808)	***Potential direct impact: Vibration*** Vibration levels are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located about 20 metres north of the western construction site. The construction site would be within the expanded heritage curtilage of the heritage item. The demolition of the existing buildings and construction activities, would result in changes to the surrounding setting and context of the heritage item, including impacts to the view corridor from the building. The continued presence of the existing acoustic shed opposite the heritage item would be temporary in nature, and would not result in overshadowing of the item.	Negligible

Item	Impact	Level of Impact
Former Wales House (SHR item no. 00586, SLEP 2012 item no. I1915)	***Potential direct impact: Vibration*** Vibration levels are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The western construction site would be visible along Hunter Street from the heritage item. The eastern construction site would be located directly opposite the heritage item on O'Connell Street. The demolition of existing buildings and construction activities would result in non-significant changes to the setting of the heritage item.	Minor
Former Industrial Building 'Manufacturers Mutual' (SLEP 2012 item no. I1902)	***Potential direct impact: Vibration*** Vibration levels are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located about 25 metres north-east of the western construction site. The construction site would be within the expanded heritage curtilage of the heritage item. Vistas to the building along O'Connell Street would not be impacted by the proposed work. The demolition of existing buildings and construction activities would result in changes which would not impact the setting of the heritage item significantly.	Negligible
Ash Street Laneway (SLEP 2012 item no. I1666)	***Potential direct impact: Vibration*** Vibration levels are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The Ash Street laneway is located 25 metres south of the western construction site. The demolition of existing buildings and construction activities would not result in changes to the surrounding setting and context of the laneway. Views from the laneway are obscured by the Ivy development at the northern end, which abuts the western construction site.	Neutral
Former Commercial Building 'Peapes Menswear' (SLEP 2012 item no. I1765)	***Potential direct impact: Vibration*** Vibration levels are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The demolition of existing buildings and construction activities would result in non-significant changes to the surrounding setting and context of the heritage item. The Project would not obscure view corridors to the building, nor would the Project cause overshadowing impacts.	Negligible
Grand Hotel (SLEP 2012 item no. I1809)	***Potential direct impact: Vibration*** Vibration levels are predicted to be below the cosmetic damage screening criteria. Potential direct impacts associated with vibration are not anticipated.	Neutral
	Indirect impact: Views and vistas (temporary) The heritage item is located about 25 metres north-east of the western construction site. The construction site would be within the expanded heritage curtilage of the heritage item. Views and vistas to the building would not be impacted by the proposed work. The	Negligible

Item	Impact	Level of Impact
	demolition of existing buildings and construction activities would result in non-significant changes to the surrounding setting and context of the heritage item.	
Pangas House SLEP 2012 item no. I2297)[3]	***Potential direct impact: Vibration*** Vibration levels are predicted to exceed the cosmetic damage screening criteria, and would have potential for moderate direct impacts on Pangas House.	Moderate
	Indirect impact: Views and vistas (temporary) The western construction site would be located directly adjacent to the potential heritage item. The demolition of existing buildings and construction activities would result in non-significant changes to the setting of the potential heritage item, which is currently surrounded by large modern structures.	Negligible

Table 14 Assessed heritage impacts at the Bays site (SHR denoted in bold font)

Item	Impact	Level of Impact
White Bay Power Station SHR (01015) Urban Development Corporation s170 (4500460) SREP No. 26 – City West Part 3 No. 11 and associated items including the Penstock	***Indirect impact – Views and vistas (temporary)*** The stage 2 surface works will result in visual changes to the arrangement and configuration of the land surrounding the significant industrial structures, which have identified spatial significance for their contribution to the scale and industrial quality of the item and its built components. However, the scale of the works in Stage 2 is limited and the impacts are considered to be negligible or neutral.	Negligible or neutral

Table 15: Assessed non-Aboriginal archaeological impacts

Site	Assessed impact
Pyrmont Station	Mined excavation to significant depth (approximately 20 metres) within the Pyrmont Station construction sites would result in the total removal of all archaeological resources. As all archaeological resources that may be present within both construction sites would be removed, the Project would result in a major impact to non-Aboriginal archaeological resources of local significance.
Hunter Street Station	The impact of construction of the Hunter Street station involves excavation of the greater part of the east and west station sites footprint to a depth of up to 31m. The area of the active Tank Stream drain (SHR item no. 00636, Sydney Water s170 item no. 4573709, SLEP 2012 item no. I1656) located along the eastern edge of the western site will be outside the impact zone. The nature of the works will require the total removal of any archaeological remains within the deep excavation zones.
The Bays	Surface works are required at The Bays Construction Site to establish infrastructure required for station excavation and tunnelling works. Impacts are managed through the

[3] Listing has changed since the development of the EIS

Site	Assessed impact
	implementation of a Work Method Statement (WMS) prior to each defined scope of ground disturbing works in the study area.

7. Environmental control measures for Aboriginal heritage

7.1. Aboriginal archaeology

As a part of the proposed works, archaeological investigations at the Hunter Street Station west site must be completed in accordance with the methodology detailed in the ARDa, prepared in accordance with REMM NAH6.

The following sections outline the measures that will be undertaken to ensure compliance with Conditions D10, D12, D13, D14, D16 and D19 and REMM NAH6, AH1 and AH3.

7.1.1. Aboriginal Heritage Excavation Director

Condition D16 requires that Aboriginal archaeological excavations must be conducted by a suitably qualified person in accordance with the requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010).

AMBS Director Aboriginal Heritage is the nominated Aboriginal Heritage Excavation Director for the works and responsible for all Aboriginal heritage investigations.

7.1.2. Aboriginal archaeological excavations

Archaeological investigations for the Project will primarily take place in advance of construction, and in accordance with the detailed methodologies provided in the ARDa. Investigations for both Aboriginal and historic archaeology will be integrated, given the potential for both to be present at the Hunter Street Station West site.

Table 16 provides a breakdown of the proposed program for Aboriginal archaeological investigations. Areas of Aboriginal archaeological potential as identified in the ARDa are shown in Figure 3 and Figure 4.

Table 16: Program of Aboriginal archaeological investigations

Excavation Methodology	Stage of Works	Location	Description
Hunter Street Station			
Test Excavation	Pre-construction	▪ Hunter Street Station West: within De Mestre Place.	Four historic test trenches and seven Aboriginal test trenches will be excavated within De Mestre Place. Within historic trenches, the historic Excavation Director will oversee excavation until natural intact soil profiles are identified, at which point Aboriginal test excavation will proceed, overseen by the Aboriginal Heritage Excavation Director.
Monitoring	Pre-construction, demolition, construction	▪ Hunter Street Station West: within areas of archaeological potential. ▪ Hunter Street Station East: within areas of archaeological potential. ▪ The Bays: within areas of archaeological potential.	Monitoring will be undertaken of excavation works in all areas of low, low-moderate, and moderate potential across the Hunter Street Station West, Hunter Street Station East and the Bays sites.

Excavation Methodology	Stage of Works	Location	Description
Salvage Excavation	Pre-construction, demolition, construction	▪ Hunter Street Station West: Where intact natural soils or Aboriginal objects are identified during monitoring or historic investigations ▪ Hunter Street Station East: Where intact natural soils or Aboriginal objects are identified during monitoring or historic investigations ▪ The Bays: Where intact natural soils or Aboriginal objects are identified during monitoring or historic investigations	Salvage excavation will take place where intact natural soils or Aboriginal objects or features are identified during monitoring or historic archaeological investigations

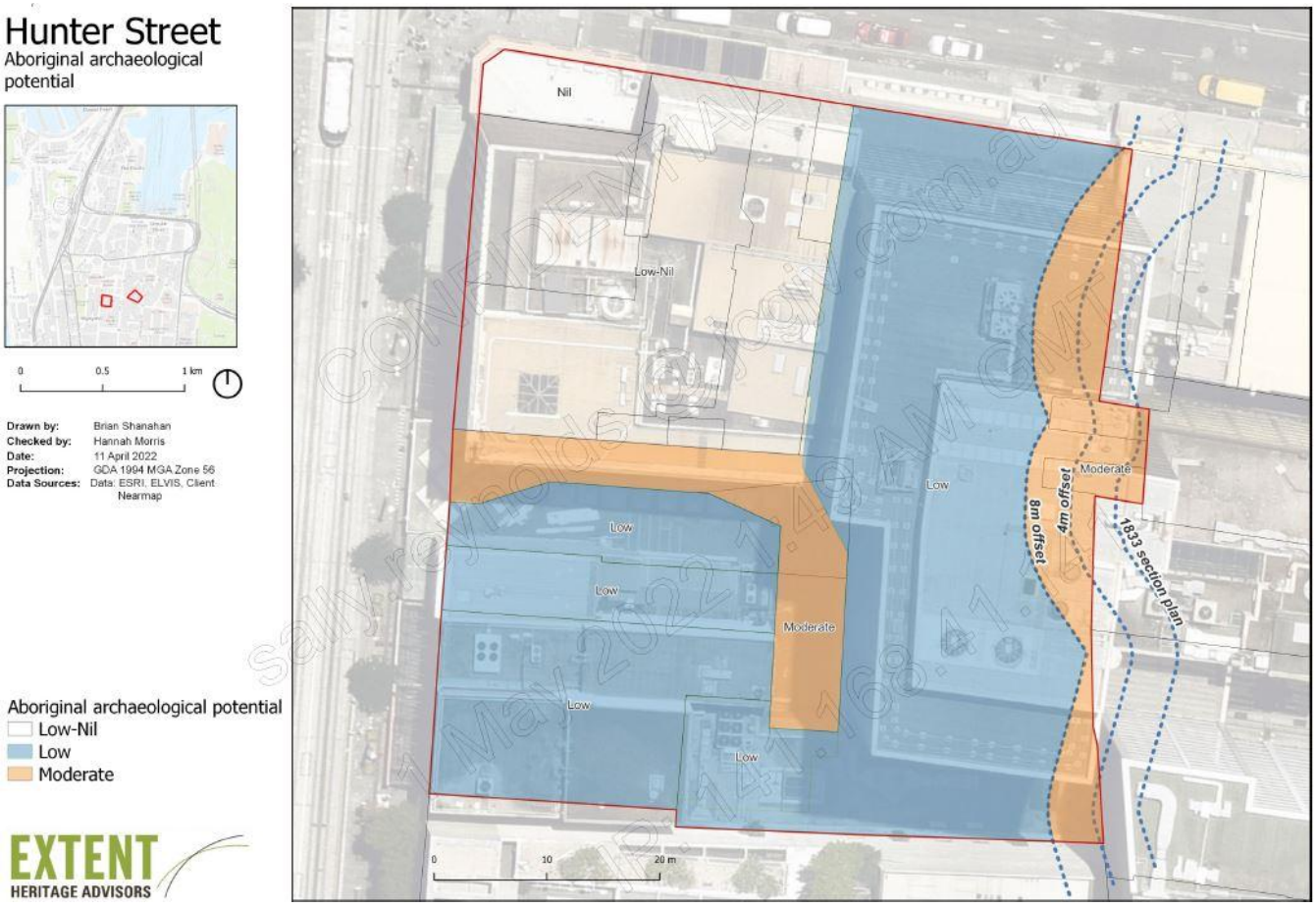


Figure 3: Areas of Aboriginal archaeological potential within the Hunter Street Station west site (Extent 2022, p. 119)

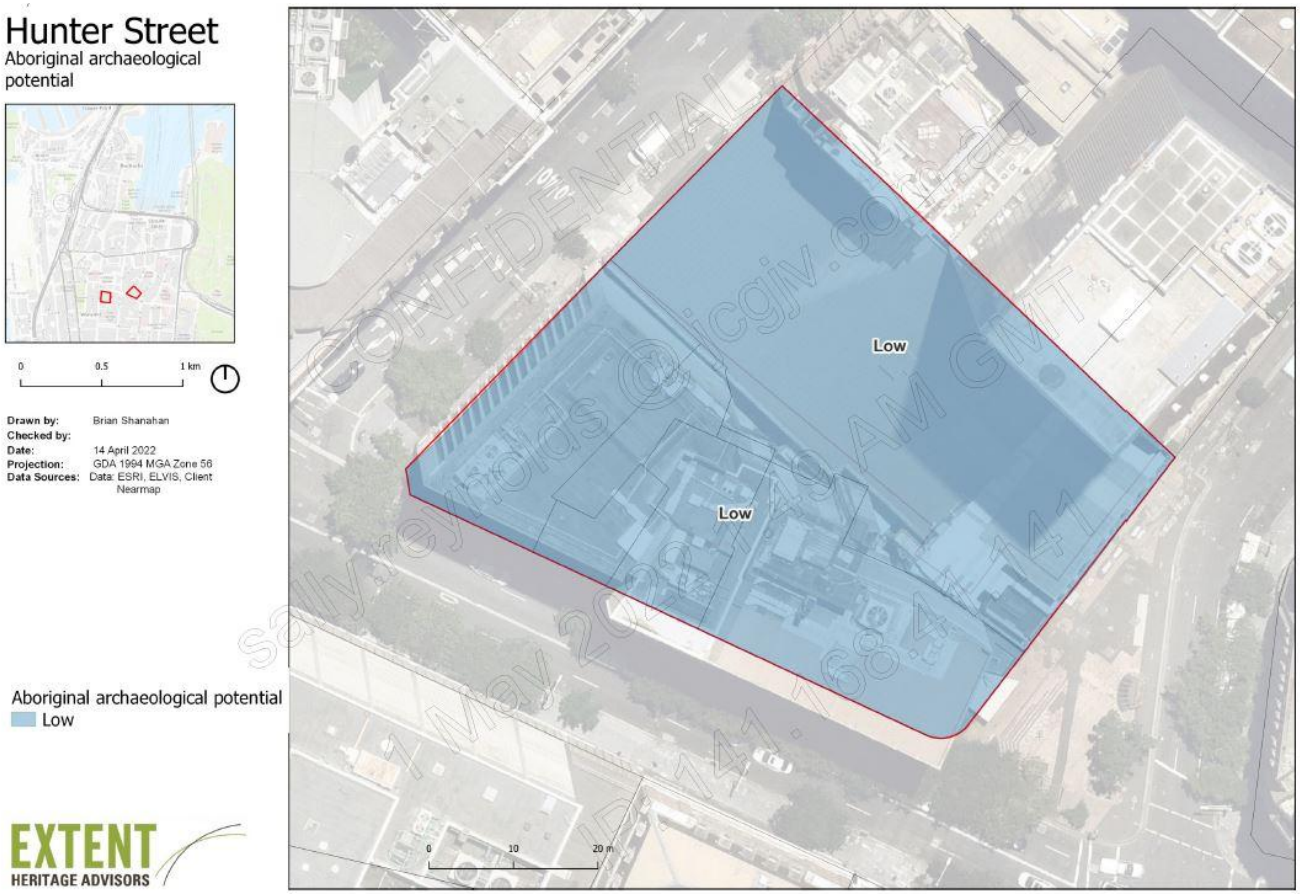


Figure 4: Areas of Aboriginal archaeological potential within the Hunter Street Station east site (Extent 2022, p. 121)

7.1.3. Archaeological monitoring

Archaeological monitoring to identify intact soil profiles or historic archaeological remains will be carried out during removal of base slabs and foundations in all areas identified as having historical and/or Aboriginal archaeological potential across the Hunter Street east and west sites.

7.1.4. Aboriginal test excavation – De Mestre Place

The De Mestre Place laneway has been assessed to be the least developed part of the Hunter Street west site and is considered to have moderate potential to retain Aboriginal heritage objects. In accordance with the ARDa, seven 1x1m Aboriginal archaeological test trenches will be excavated in De Mestre Place to provide an understanding of soil profiles, disturbance, and the archaeology of the area (Figure 5). Three of the test trenches are positioned within the proposed historic test trench locations. In the event that the proposed locations are found to be disturbed by services or cannot be excavated due to the results of the historic archaeological investigations, they may be relocated or abandoned following discussion with Aboriginal representatives on site and the historic Excavation Director.

During excavations, modern fill materials will be removed by machine excavator, and manual excavation will proceed once natural soil profiles are identified. Aboriginal excavations within a historic trench will proceed once intact natural soil profiles are identified, and historic features can be managed and removed under the historic excavation methodology. All excavated material will be wet sieved through a 3mm sieve to ensure appropriate recovery of materials. Where a hearth is identified *in situ*, charcoal samples will be taken to allow radiocarbon dating, where possible.

Where 15 or more Aboriginal artefacts, or an archaeologically significant artefact or feature, are identified in a single test trench, the trench will be expanded using the same excavation methodology.

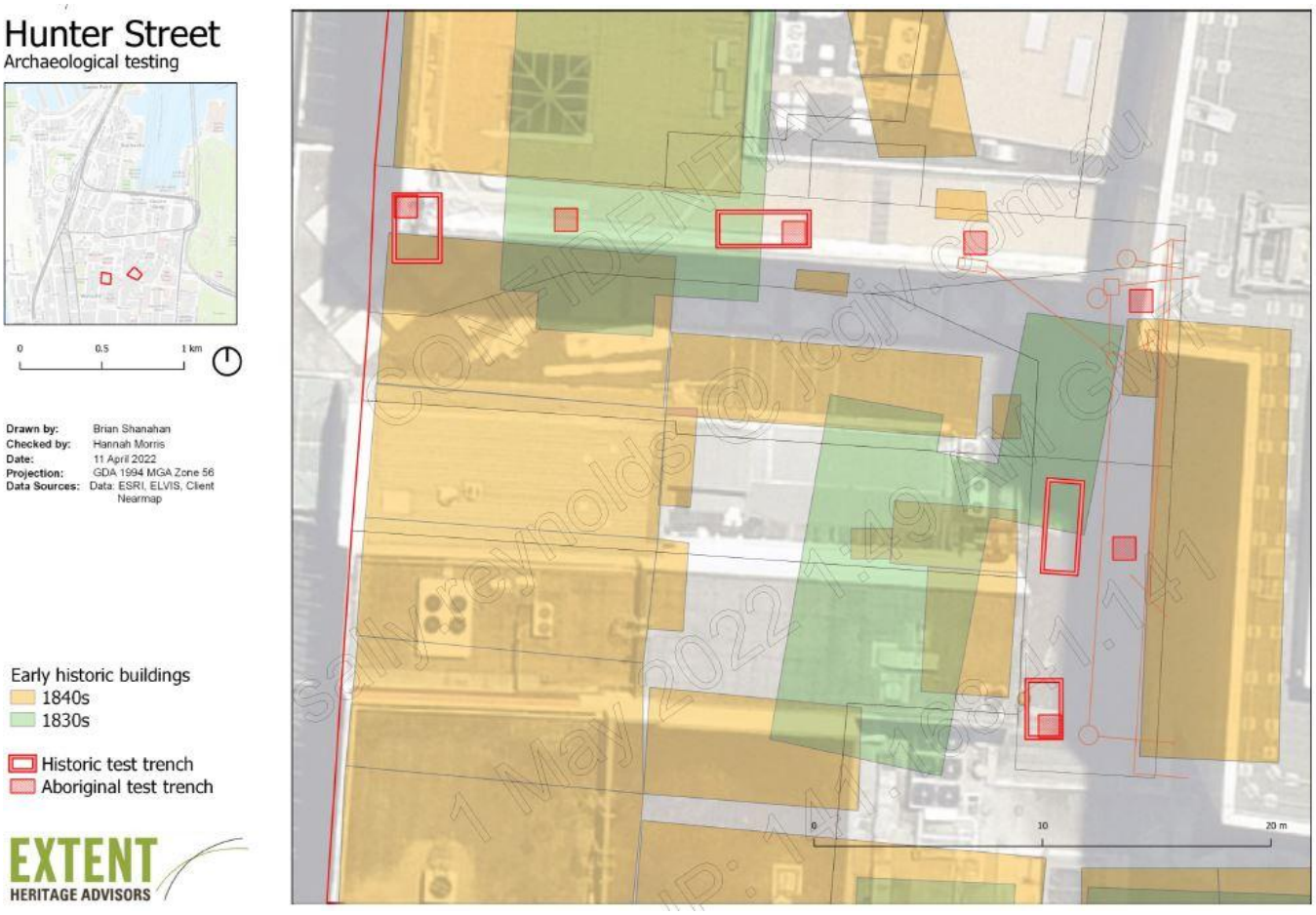


Figure 5: Proposed location of Aboriginal archaeological test trenches at De Mestre Place (Extent 2022 p. 161).

7.1.5. Aboriginal test excavation – Tank Stream Valley

The location of the Tank Stream, along the eastern boundary of the Hunter Street west site, has been assessed to have moderate Aboriginal archaeological potential. Where intact natural soil profiles are

identified in proximity to the Tank Stream during monitoring or historic investigations, A program of archaeological test excavation is required, using the same testing methodology as that used in De Mestre Place. The test excavation will comprise up to 5 test trenches excavated at 10m intervals along the Tank Stream where intact natural soils or Aboriginal artefacts are identified (Figure 6).

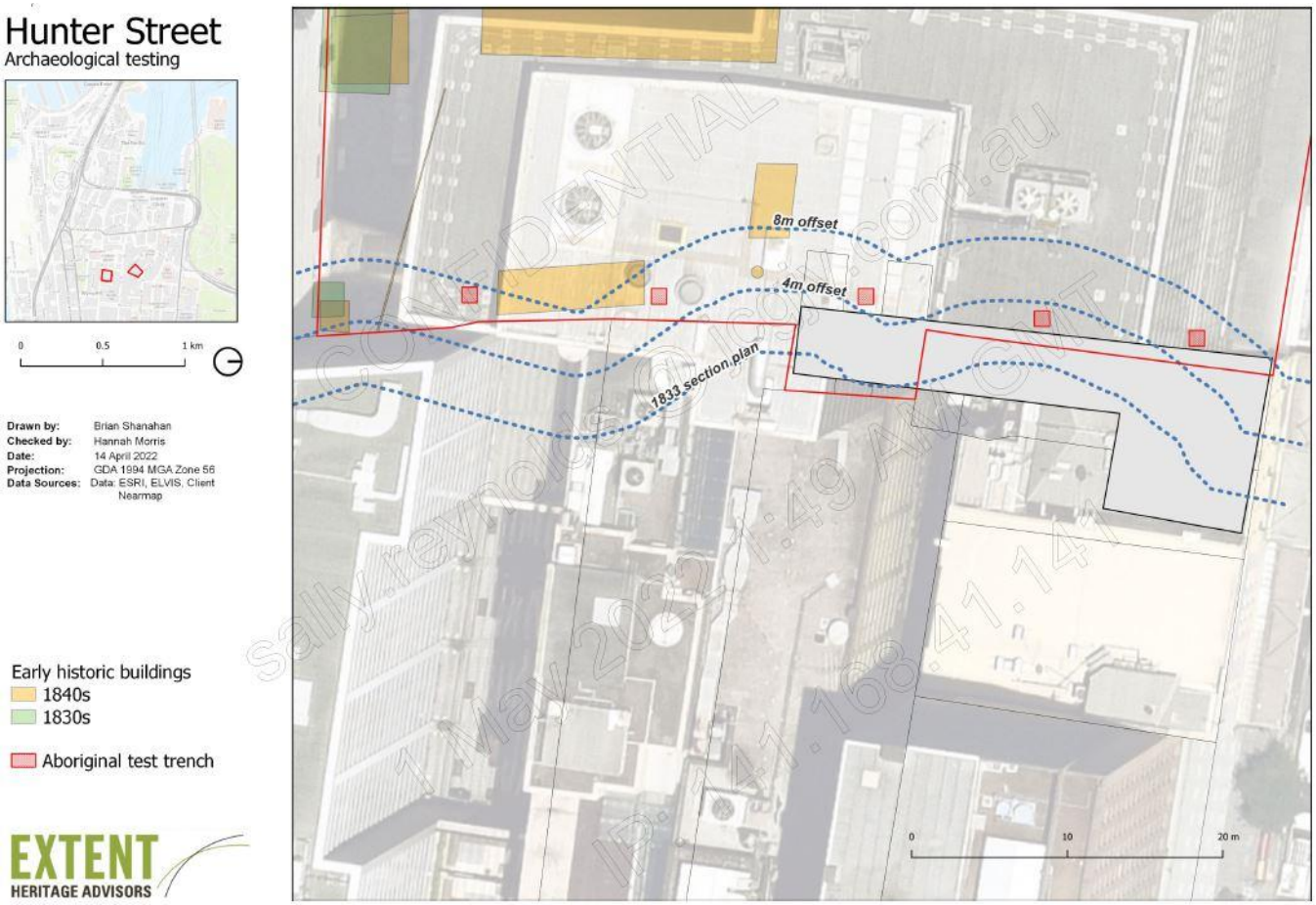


Figure 6: Proposed location of Aboriginal archaeological test trenches along the Tank Stream (Extent 2022 p. 167).

7.1.6. Aboriginal Salvage excavations

Salvage of Aboriginal archaeology will be undertaken where intact soil profiles or Aboriginal objects have been identified through test excavation, historic investigations, and monitoring, and to allow expansion of identified sites to allow further archaeological investigation of their extent and significance.

Where substantial areas of natural soils are identified, test trenches will be positioned in a grid at intervals of 10m. Where discrete soil profiles are identified, a test trench will be placed in each area, maintaining a density of one trench every 10m. Salvage excavation will broadly follow the test excavation methodology, but trenches will be expanded where at least 15 artefacts are identified in a single test trench, or where significant features or objects are identified, such as hearths or shell middens. Expansion will comprise additional 1x1m trenches abutting the original trench, continuing until the extent of the site has been reached, defined as a maximum of 3 artefacts per m^2, or a representative sample of the feature has been recorded.

7.2. Unexpected heritage items

Archaeological testing and monitoring will not be undertaken in areas identified as having no potential for Aboriginal objects to be present and human remains are not expected to be unearthed in delivering the ETP Works. As such, the remainder of the ETP Works will be managed under the following Sydney Metro procedures as appropriate in compliance with Conditions D4 and D19:

- *Unexpected Heritage Finds Procedure (SM-20-00099497)* version 4.0 dated August 2021 (Appendix A)
- *Exhumation Management Procedure (SM-20-00099495)* version 5.0 dated August 2021 (Appendix B).

Where either unexpected heritage finds or potential human remains are identified, the first step is to stop all works in the vicinity of the find, and to notify the Sydney Metro Environment Manager and the Excavation Director.

8. Environmental control measures for historic heritage

An outline of the proposed control measures for historic heritage items is provided in the Sections that follow and summarised in Table 17 and Table 20. Heritage items in the vicinity of the proposed work sites are shown in Figure 7 and Figure 8.

8.1. Protection measures for historic heritage items

8.1.1. Acoustic treatment

If acoustic treatment is proposed to a heritage item, JCG will obtain heritage advice from a suitable qualified built heritage expert prior to installation in accordance with Condition D5. The purpose of this advice will be to guide the installation of acoustic treatments and minimise any impacts to the heritage significance of the item.

8.1.2. Noise and vibration

Conditions D32, D34, and D45, as well as REMMs NV13 and NV14 provide requirements for noise and vibration in relation to the proposed works.

Prior to excavation and demolition works, condition surveys of heritage buildings and structures near to the tunnel and excavations are to be carried out as required by Section 8.4.2 of the Noise and Vibration Management Sub-plan. These surveys will be undertaken in consultation with a heritage specialist to ensure that the heritage values of the item are considered as a part of the survey. The results of the condition surveys will be used to inform the construction methodology, including management and mitigation measures.

Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure (in consultation with a structural engineer) and vibration monitoring will be carried out to ensure vibration levels remain below appropriate limits for that structure. For heritage items, the more detailed assessment will specifically consider the heritage values of the structure in consultation with a heritage specialist to ensure sensitive heritage fabric is adequately monitored and managed.

Prior to the installation of any noise, vibration, or movement monitoring equipment at heritage items as outlined in Noise and Vibration Monitoring Program (Appendix A of the Noise and Vibration Management Sub-plan), the advice of a suitably qualified and experienced built heritage expert will be sought to ensure that the proposed installation methodologies and equipment will not adversely impact the heritage values of the items.

Vibration testing will be undertaken for works which have the potential to impact heritage items to identify safe working distances to prevent cosmetic damage. Where the preferred values are exceeded, works will be stopped, the construction methodology will be reviewed, and additional mitigation measures implemented as required. If any heritage items are found to be structurally unsound, the process outlined in DIN 4150 will be applied.

Refer to the Noise and Vibration Management Sub-plan, including the Vibration Assessment Procedure (building damage) for details on vibration monitoring, including trigger levels and management procedures.

8.1.3. Ground movement and settlement

As noted in the EIS and REMM NAH8, further assessment of ground movement is required at later design stages and during construction planning to assess the preliminary findings of the ground movement assessment in relation to heritage items. Specific items identified in the EIS to be targeted by the additional assessment include:

- Tank Stream
- Bennelong Stormwater Channel No 29A
- Little Hunter and Hamilton Street Precinct
- Glebe Island Silos
- Railway Cutting
- St James Railway Station.

The assessment of ground movement will be undertaken as part of the detailed geotechnical model for the ETP Works which will be developed and progressively updated during design and construction (REMM GW1). The detailed geotechnical model will include an assessment of the potential for damage to structures (including listed heritage buildings), services, basements and other subsurface elements through settlement or strain. Other listed heritage infrastructure will also be subject to such further assessment of ground movement, including instrumentation and monitoring, where identified as being required in Technical Paper 3 (Non-Aboriginal heritage). Where building damage risk is rated as moderate or higher, a structural assessment of the affected buildings/structures will be carried out and specific measures implemented to address the risk of damage. Refer to the CEMP for additional information on the detailed geotechnical model. Where relevant, this HMP will be revised during the ETP Works to include the results of ground movement assessments (refer to Section 10.2 for revision process).

In accordance with Condition D47, appropriate equipment to monitor areas in proximity of construction sites and the tunnel route during construction will be installed with particular reference to at risk buildings, structures and utilities identified in the condition surveys required by Condition D44 and / or geotechnical analysis as required. If monitoring during construction indicates exceedance of predicted impacts identified in the EIS or determined through geotechnical analysis, then all construction affecting settlement will cease immediately if it is safe to do so and will not resume until fully rectified or a revised method of construction is established that will ensure protection of affected buildings. Refer to the CEMP for further details on settlement monitoring.

8.1.4. Protection of heritage items during demolition and construction

The proposed demolition and construction works will occur in close proximity to a number of listed heritage items. In accordance with Condition D7 and REMM NAH3, the following measures will be implemented during the ETP Works to prevent adverse impacts to heritage items:

- Developing a methodology for demolition to minimise direct and indirect impacts to adjacent and adjoining heritage items
- Completing structural engineering investigations for any heritage items adjacent to buildings scheduled to be demolished prior to demolition, to ensure the conservation of the item's fabric and heritage significance
- Engaging a suitably qualified heritage engineer and built heritage expert to develop a detailed methodology for the protection of the following items:
  - Skinners Family Hotel
  - Tank Stream
  - Bennelong Stormwater Channel No 29A.
- Implementing protective measures during construction to prevent adverse impacts to the Skinners Family Hotel. The advice of a suitably qualified and experienced built heritage expert as well as the Excavation Director will be sought to ensure that the ETP Works will not adversely affect the heritage significance of the item or significant historical archaeology. Consultation may be undertaken with the owners/occupiers of the heritage items, where relevant.
- Obtain required approvals from relevant authorities (e.g. Specialist Engineering Assessment from Sydney Water) prior to commencement of excavation works in the vicinity of the Tank Stream and the Bennelong Stormwater Channel No 29A.

8.1.5. Other measures

Where any at-property treatment not specified above is required at a heritage item, the advice of a suitably qualified and experienced built heritage expert will be sought to ensure that the ETP Works will not adversely affect the heritage significance of the item (Condition D34).

8.2. Archival Recording

Photographic archival recording will be undertaken in accordance with Condition D17 and REMM NAH1 of the following items prior to the commencement of site establishment works at the Pyrmont and Hunter Street Station sites:

- Former Skinners Family Hotel
- NSW Club House Building

- Former Bank – Delfin House
- Richard Johnson Square
- Gilbey's Distillery
- Pangas House.

Photographic archival recordings will be completed in accordance with the guidelines *How to Prepare Archival Records of Heritage Items* (Heritage Office 1998) and *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Office 2006), and will include all relevant buildings, structures, and landscape features, as well as maps showing the locations of photographs and features. Within 12 months of completion of works on heritage items, archival recording reports for each item will be submitted to the following bodies:

- Archival recordings or State-listed items:
  - Heritage NSW
  - State Library of NSW
  - Sydney Metro
  - City of City Council.
- Archival recordings of other items:
  - City of Sydney Council
  - City of Sydney Library
  - Sydney Metro.

8.3. Salvage of Significant Fabric

In accordance with Condition D9 and REMM NAH4, salvage of significant fabric will take place where heritage items will be partially or fully destroyed by the ETP Works. Salvage will take place prior to demolition, and include:

- A site inspection by a suitably qualified heritage consultant to assess the item, and determine any elements which would be appropriate for salvage
- The completion of a significant fabric and moveable heritage salvage register for each site inspected.

Any significant elements or moveable heritage items which are considered to have potential for reuse or reinstatement will be salvaged. This may include potential for use in interpretation (by Sydney Metro) as noted in Condition C-B6 of Planning Approval SSI 10038. If any salvage of fabric from State Heritage Listed items is proposed, this will take place in consultation with Heritage NSW.

As per REMM NAH4, significant fabric of Gilbey's Distillery will be assessed and opportunities for reuse will be considered prior to demolition. Where fabric is identified for salvage, a methodology will be prepared in consultation with Heritage NSW and the items will be captured in the significant fabric and moveable heritage salvage register.

Table 17: Summary of proposed impacts and mitigation measures to heritage items

Item	Address	Statutory Listings	Significance	Potential Impacts	Mitigation Measures
Pyrmont Station West					
Pyrmont Heritage Conservation Area	Pyrmont	▪ SLEP 2012 Item no. C52	Local	▪ Direct impact: Negligible ▪ Potential direct: Moderate (vibration), Minor (settlement) ▪ Indirect impact: Moderate (views and vistas) Overall impact: Moderate	-
Quarryman's Hotel	214-216 Harris Street, Pyrmont	▪ SLEP 2012 Item no. I1232 ▪ SREP 2005 (City West) Item no. 56	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Minor (settlement) ▪ Indirect impact: Negligible (views and vistas) Overall impact: Minor	-
Former Industrial Building 'Waite and Bull'	137 Pyrmont Street, Pyrmont	▪ SLEP 2012 Item no. I1263 ▪ SREP 2005 (City West) Item no. 54.	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Minor (settlement) ▪ Indirect impact: Negligible (views and vistas) Overall impact: Negligible	-
Gilbey's Distillery	26-32 Pyrmont Bridge Road, Pyrmont	▪ Unlisted	Local	▪ Direct impact: Major Overall impact: Major	▪ Assessment of significance prior to demolition (included in Archival recording) ▪ Archival recording ▪ Significant fabric salvage
Pyrmont Station East					
Former New York Hotel	50 Union Street, Pyrmont	▪ SLEP 2012 Item no. I1275 ▪ SREP 2005 (City West) Item no. 67	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Negligible (settlement) ▪ Indirect impact: Negligible (views and vistas) Overall impact: Negligible	-

Item	Address	Statutory Listings	Significance	Potential Impacts	Mitigation Measures
Former Warehouse 'Bank of NSW Stores'	17-21 Pyrmont Bridge Road, Pyrmont	▪ SLEP 2012 Item no. I1256 ▪ SREP 2005 (City West) Item no. 53	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Negligible (settlement) ▪ Indirect impact: Minor (views and vistas) Overall impact: Minor	-
Corner Shop and Residence 'Charmelu'	63-67 Edward Street, Pyrmont 'Charmelu' street address on 35 Union Street, Pyrmont	▪ SLEP 2012 Item no. I1213 ▪ SREP 2005 (City West) Item no. 68	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Minor (settlement) ▪ Indirect impact: Negligible (views and vistas) Overall impact: Minor	-
Terrace Group	31-33 Union Street, Pyrmont	▪ SLEP 2012 Item no. I1274 ▪ SREP 2005 (City West) Item no. 122	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Minor (settlement) ▪ Indirect impact: Neutral (views and vistas) Overall impact: Minor	-
Pyrmont Bridge Road Hotel	11 Pyrmont Bridge Road, Pyrmont	▪ SLEP 2012 Item no. I1255 ▪ SREP 2005 (City West) Item no. 52	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Minor (settlement) ▪ Indirect impact: Minor (views and vistas) Overall impact: Minor	-
Hunter Street Station West					
Tank Stream	Various locations	▪ SHR item no. 00636 ▪ Sydney Water s170 item no. 4573709 ▪ SLEP 2012 item no. I1656	State	▪ Direct impact: Neutral ▪ Potential direct impact: Moderate (vibration), Further assessment required (settlement) ▪ Indirect impact: Neutral Overall impact: Moderate	▪ Ground movement assessment ▪ Detailed protection methodology
Bennelong Stormwater Channel No 29A	Various locations	▪ Sydney Water s170 Item no. 4570854	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Moderate (vibration), Further assessment required(settlement) ▪ Indirect impact: Neutral Overall impact: Moderate	▪ Ground movement assessment ▪ Detailed protection methodology

Item	Address	Statutory Listings	Significance	Potential Impacts	Mitigation Measures
Skinners Family Hotel	296 George Street, Sydney	▪ SHR Item no. 00584 ▪ SLEP 2012 Item no. I1766	State	▪ Direct impact: Moderate ▪ Potential direct impact: Moderate (vibration), Minor (settlement) ▪ Indirect Impact: Negligible (views and vistas) Overall impact: Moderate	▪ Archival recording ▪ Detailed protection methodology ▪ Protective measures during construction
Little Hunter and Hamilton Street Precinct	Litter Hunter Street (between Hunter Street and Curtin Place), Sydney	▪ SHR item no. 00599 ▪ SLEP 2012 item no. I1808	State	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Further assessment required (settlement) ▪ Indirect Impact: Negligible (views and vistas) Overall impact: Negligible	▪ Ground movement assessment
NSW Sports Club	10-14 Hunter Street, Sydney	▪ SHR item no. 00599 ▪ SLEP 2012 item no. I1808	State	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Minor (settlement) ▪ Indirect Impact: Negligible (views and vistas) Overall impact: Negligible	-
Ash Street Laneway	Ash Street, Sydney	▪ SLEP 2012 item no. I1666	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), No further assessment required (settlement) ▪ Indirect Impact: Neutral (views and vistas) Overall impact: Neutral	-
Former Commercial Building ‘Peapes Menswear’	285-287 George Street, Sydney	▪ SLEP 2012 item no. I1765	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Minor(settlement) ▪ Indirect Impact: Negligible (views and vistas) Overall impact: Minor	-

Item	Address	Statutory Listings	Significance	Potential Impacts	Mitigation Measures
Grand Hotel	30 Hunter Street, Sydney	▪ SLEP 2012 item no. I1809	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Minor (settlement) ▪ Indirect Impact: Negligible (views and vistas) Overall impact: Minor	-
Pangas House	15-17 Hunter Street, Sydney	▪ SLEP 2012 item no. I2297)[4]	Local	▪ Direct impact: Moderate ▪ Potential direct impact: Moderate (vibration), Minor (settlement) ▪ Indirect Impact: Negligible (views and vistas) Overall impact: Moderate	▪ Assessment of significance prior to demolition (included in Archival recording) ▪ Archival recording
Hunter Street Station East					
Bennelong Stormwater Channel No 29A	Various locations	▪ Sydney Water s170 Item no. 4570854	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Moderate (vibration), Further assessment required(settlement) ▪ Indirect impact: Neutral Overall impact: Moderate	▪ Ground movement assessment ▪ Detailed protection methodology
NSW Club House Building	31 Bligh Street, Sydney	▪ SHR Item no. 00145 ▪ SLEP 2012 Item no. I1676	State	▪ Direct impact: Negligible ▪ Potential direct impact: Moderate (vibration), Minor (settlement) ▪ Indirect Impact: Negligible (views and vistas) Overall impact: Minor	▪ Archival Recording ▪ Vibration testing for works which have the potential to impact the heritage item to identify safe working distances

[4] Listing has changed since the development of the EIS

Item	Address	Statutory Listings	Significance	Potential Impacts	Mitigation Measures
Former Bank – Delfin House	16 O'Connell Street, Sydney	▪ SLEP 2012 Item no. I1903	Local	▪ Direct impact: Negligible ▪ Potential direct impact: Moderate (vibration), Minor (settlement) ▪ Indirect impact: Negligible (views and vistas) Overall impact: Moderate	▪ Archival Recording ▪ Vibration testing for works which have the potential to impact the heritage item to identify safe working distances
Richard Johnson Square	Bligh Street, Sydney	▪ SLEP 2012 Item no. I1673	Local	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), No further assessment required (settlement) ▪ Indirect Impact: Minor (views and vistas) Overall impact: Minor	▪ Archival Recording
City Mutual Life Assurance Building	60-66 Hunter Street, Sydney	▪ SHR item no. 00585 ▪ SLEP 2012 item no. I1675	State	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Minor (settlement) ▪ Indirect Impact: Negligible (views and vistas) Overall impact: Minor	-
Perpetual Trustee Company	33-39 Hunter Street, Sydney	▪ SHR item no. 00678 ▪ SLEP 2012 item no. I1810	State	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Negligible (settlement) ▪ Indirect Impact: Negligible (views and vistas) Overall impact: Negligible	-
Public Trust Office	19-21 O'Connell Street, Sydney	▪ SHR item no. 01019 ▪ Department of Justice and Attorney General S170 Register ▪ SLEP 2012 item no. I1904	State	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Negligible (settlement) ▪ Indirect Impact: Negligible (views and vistas) Overall impact: Negligible	-
Former Wales House	64-66 Pitt Street, Sydney	▪ SHR item no. 00586 ▪ SLEP 2012 item no. I1915	State	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Minor (settlement) ▪ Indirect Impact: Minor (views and vistas) Overall impact: Minor	-

Item	Address	Statutory Listings	Significance	Potential Impacts	Mitigation Measures
Former Industrial Building 'Manufacturers Mutual'	12-14 O'Connell Street, Sydney	▪ SLEP 2012 item no. I1902	State	▪ Direct impact: Neutral ▪ Potential direct impact: Neutral (vibration), Negligible (settlement) ▪ Indirect Impact: Negligible (views and vistas) Overall impact: Negligible	-
Tunnel Alignment					
Glebe Island Silos	Victoria Road, Glebe Island	▪ Port Authority of NSW s170 4560016 ▪ SREP No. 26 – City West Part 3 No. 1	Local	▪ Neutral (Vibration) ▪ Within the zone of influence for potential settlement impacts and would be subject to further detailed assessment during design development and construction planning. Overall impact: Further assessment required	▪ Ground movement assessment
Glebe Island Bridge	Bank Street, Victoria Road, Pyrmont	▪ SHR Item no. 01914 ▪ RMS s170 register	State	▪ Neutral (Vibration) ▪ Outside the zone of influence for potential settlement impacts and unlikely to be impacted (Settlement) Overall impact: Neutral	-
Railway cutting	Pyrmont	▪ SHR item no. 01225 ▪ Sydney Trains s170 register ▪ SLEP 2012 item no. 1203	State	▪ Neutral (Vibration) ▪ Within the zone of influence for potential settlement impacts and would be subject to further detailed assessment during design development and construction planning. Overall impact: Further assessment required	▪ Ground movement assessment
Former warehouse 'Festivals Records' including interiors	1-3 Bulwara Road (and 63-79 Millers Street), Pyrmont	▪ SLEP 2012 Item no. I1211	Local	▪ Neutral (Vibration) ▪ Negligible (Settlement) Overall impact: Negligible	-
Terrace group including interiors	135-155 Harris Street, Pyrmont	▪ SLEP 2012 Item no. I1227	Local	▪ Neutral (Vibration) ▪ Negligible (Settlement) Overall impact: Negligible	-

Item	Address	Statutory Listings	Significance	Potential Impacts	Mitigation Measures
Terrace group including interiors	86-92 Union Street	▪ SLEP 2012 Item no. I1276 ▪ SREP 2005 (City West) Item no 123	Local	▪ Neutral (Vibration) ▪ Negligible (Settlement) Overall impact: Negligible	-
Pyrmont Bridge Hotel	94-96 Union Street, Pyrmont	▪ SLEP 2012 Item no. I1277 ▪ SREP 2005 (City West) Item no. 52	Local	▪ Neutral (Vibration) ▪ Negligible (Settlement) Overall impact: Negligible	-
Former Railway House (part of Transport House) including interiors	11-31 York Street, Sydney	▪ SHR Item no. 01271 Sydney Trains s170 register (no item number retrievable) ▪ SLEP 2012 Item no. I1975	State	▪ Neutral (Vibration) ▪ Outside the zone of influence for potential settlement impacts and unlikely to be impacted Overall impact: Neutral	-
Wynyard Park including parkland, mature trees, remnant fences, underground conveniences and Lang Statue	York Street, Sydney	▪ SLEP 2012 Item no. I1971	Local	▪ Neutral (Vibration) ▪ Outside the zone of influence for potential settlement impacts and unlikely to be impacted (Settlement) Overall impact: Neutral	-
Former 'Shell House' including interior	2-12 Carrington Street, Sydney	▪ SLEP 2012 Item no. I1691	Local	▪ Neutral (Vibration) ▪ Negligible (Settlement) ▪ Overall impact: Negligible	-
Former 'Qantas House'	68-96 Hunter Street, Sydney	▪ SHR Item no. 01512 ▪ SLEP 2012 Item no. I1811	State	▪ Neutral (Vibration) ▪ Negligible (Settlement) Overall impact: Negligible	-
Wentworth Hotel	2 Bligh Street (and 61-101 Phillip Street), Sydney	▪ SLEP 2012 Item no. I1674	Local	▪ Neutral (Vibration) ▪ Negligible (Settlement) Overall impact: Negligible	-
Chifley Square	Chifley Square, Sydney	▪ SHR Item no. 01512 ▪ SLEP 2012 Item no. I1708	State	▪ Neutral (Vibration) ▪ Outside the zone of influence for potential settlement impacts and unlikely to be impacted Overall impact: Negligible	-

Item	Address	Statutory Listings	Significance	Potential Impacts	Mitigation Measures
Terrace house 'Horbury House'	171-173 Macquarie Street, Sydney	▪ SLEP 2012 Item no. I1877	Local	▪ Neutral (Vibration) ▪ Negligible (Settlement) Overall impact: Negligible	-
St James Railway Station	Sydney	▪ SHR Item no. 01248 ▪ Sydney Trains s170 register (no item number retrievable) ▪ SLEP 2012 Item no. I1740	State	▪ Neutral (Vibration) ▪ Within the zone of influence for potential settlement impacts and would be subject to further detailed assessment during design development and construction planning. Overall impact: Further assessment required	▪ Ground movement assessment
Shakespeare Place	Shakespeare Place, Sydney	▪ SLEP 2012 Item no. I1949	Local	▪ Neutral (Vibration) ▪ Negligible (Settlement) Overall impact: Minor	-
State Library of NSW	1 Shakespeare Place, Sydney	▪ SHR Item no. 01071 ▪ Department of Education s170 register (no item number retrievable) ▪ SLEP 2012 Item no. 01071	State	▪ Neutral (Vibration) ▪ Slight (Settlement) Overall impact: Minor	-
Royal Botanical Gardens and Domain (including Governor's Domain and Civic Precinct	Sydney	▪ NHL Place ID 106103 ▪ SHR Item no. 01070 ▪ SLEP 2012 Item no. I1653	National	▪ Neutral (Vibration) ▪ Outside the zone of influence for potential settlement impacts and unlikely to be impacted (Settlement) Overall impact: Neutral	-

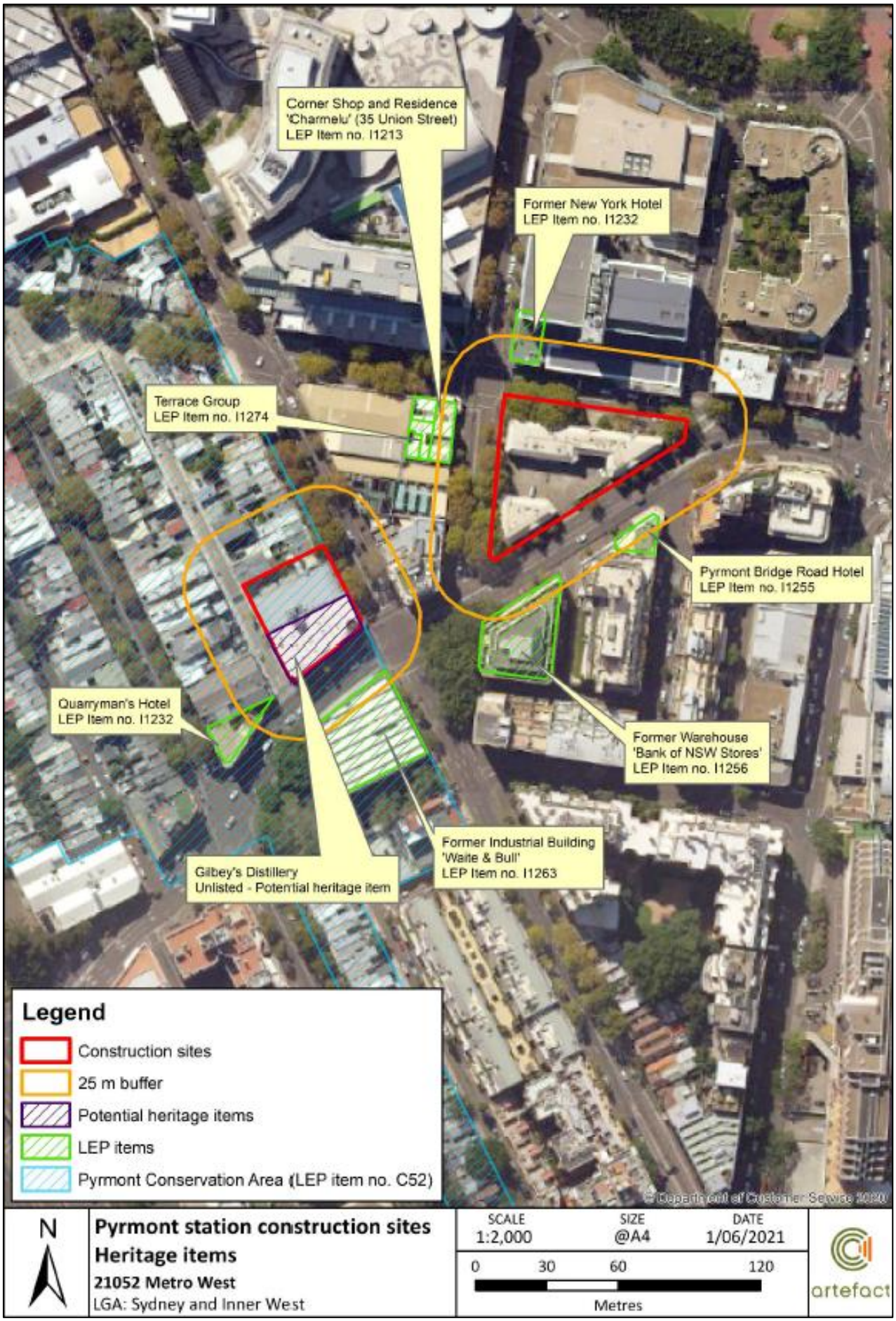


Figure 7: Heritage items in the vicinity of the Pyrmont Station construction sites (Artefact 2021, p. 127)

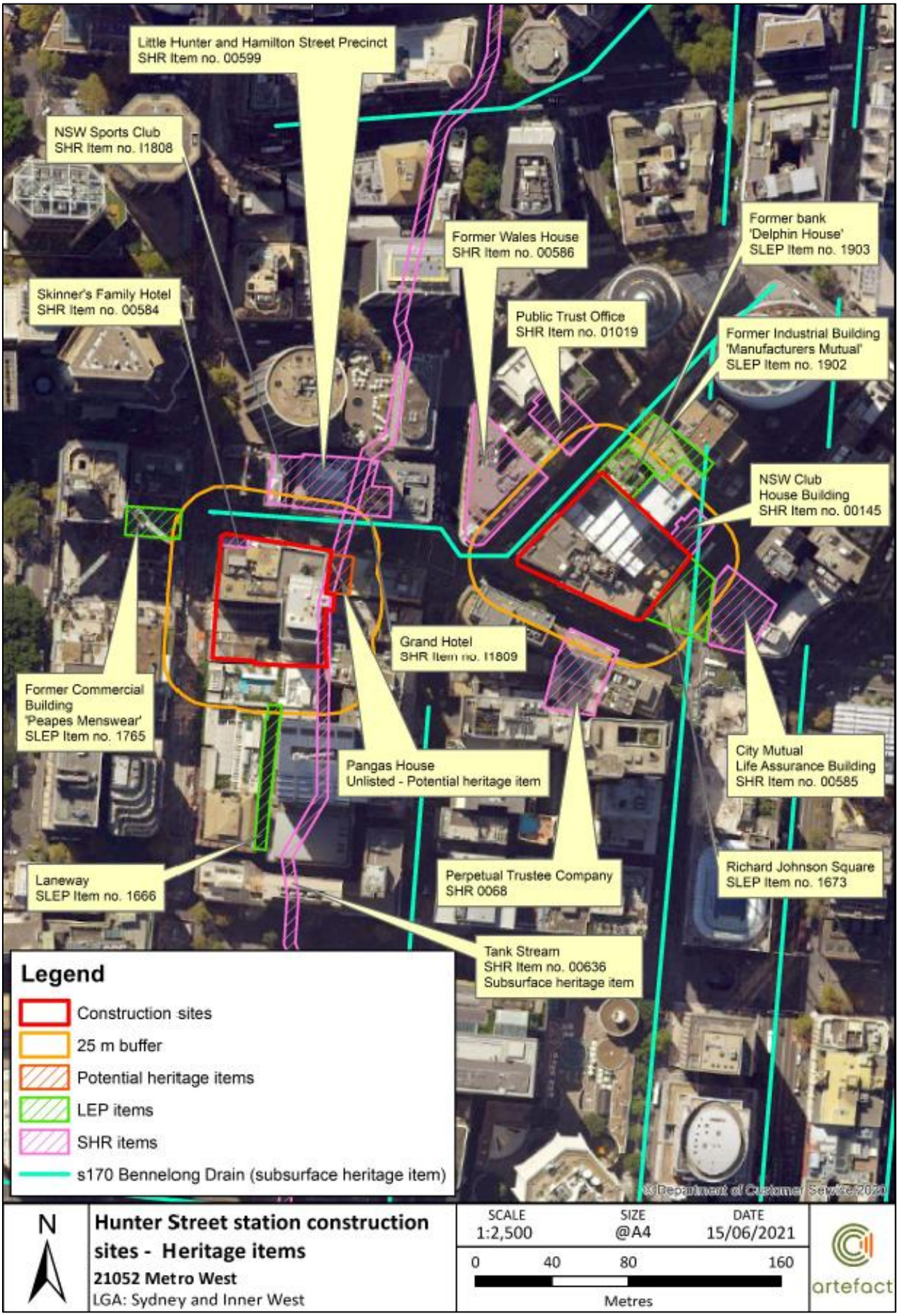


Figure 8: Heritage items in the vicinity of the Hunter Street Station construction sites (Artefact 2021, p. 157)

8.4. Historical archaeology

As a part of the ETP Works, archaeological investigations at the Pyrmont and Hunter Street Station sites must be completed in accordance with REMM NAH6, ARDa and ARDb.

The following sections outline the measures which will be undertaken to ensure compliance with Conditions D15 to D18 and REMM NAH6 and NAH7.

Excavation Directors

Condition D16 requires the nomination of an Excavation Director who complies with the *Criteria for Assessing Excavation Directors* (Heritage Council of NSW 2019) for the approval of the Planning Secretary in Consultation with Heritage NSW.

The nominated excavation directors for the Project are:

- Lian Ramage, Senior Historic Heritage Consultant, AMBS
- Ronan McEleney, Senior Historic Heritage Consultant, AMBS.

Ms Ramage and Mr McEleney both meet the requirements of the *Criteria for Assessing Excavation Directors* (Heritage Council of NSW 2019). Given the scale of the Project, two Excavation Directors have been nominated to ensure that JCG is able to comply with Condition D16, which requires an Excavation Director present to:

- Oversee excavation
- Advise on archaeological issues
- Advise on the duration and extent of oversight required during archaeological excavations under the Archaeological Research Designs.

An application for the approval of the Excavation Directors under Condition D16 was submitted to the Planning Secretary prior to the commencement of archaeological excavations. This application outlined the experience of the excavation directors in relation to the appropriate criteria.

Ms Ramage and Mr McEleney will be supported by AMBS Archaeologists, who will assist with the implementation of the ARDs, day-to-day management of archaeological investigations, and post-excavation reporting. If required, additional Site Directors will be nominated to ensure that all conditions of approval are met.

Archaeological investigations

Archaeological investigations for the Project will primarily take place in advance of construction, and in accordance with the detailed methodologies provided in the relevant ARDs. A breakdown of the proposed program for archaeological investigations is provided in Table 18. Areas of archaeological potential as identified in the ARDs are shown in Figure 9, Figure 10 and Figure 11.

Table 18: Program of archaeological investigations

Excavation Methodology	Stage of Works	Location	Description
Pyrmont Station			
Monitoring	Pre-construction, construction	▪ Pyrmont Station East: within areas of archaeological potential, during excavation for enabling works (if required) ▪ Pyrmont Station West: during excavation for enabling works (if required)	Where enabling works such as contamination or geotechnical testing are required, JCG will consult with the Excavation Director to identify an appropriate methodology for the works and determine whether archaeological monitoring is required. Within the area of moderate potential in the Pyrmont Station East Site, excavations will be monitored by an archaeologist under the supervision of the Excavation Director. If substantial intact remains are identified, the requirement for salvage may be triggered.

Excavation Methodology	Stage of Works	Location	Description
Test Excavation	Pre-construction	▪ Pyrmont Station East: N/A ▪ Pyrmont Station West: within area of moderate archaeological potential	Within the area of archaeological potential in the Pyrmont Station West Site, five test trenches measuring 1.5m by 6m are proposed. These would be completed prior to the commencement of earthworks at the site.
Salvage Excavation	Pre-construction, construction	▪ Pyrmont Station East: where appropriate triggers for salvage are met ▪ Pyrmont Station West: where appropriate triggers for salvage are met	Salvage may be proposed by the excavation director where one of the following triggers is met: ▪ Substantially intact archaeological remains in association with in-situ artefact bearing deposits that have the ability to address the research questions (and meet the local significance threshold) are identified during testing ▪ The results of the test excavation indicate that the research questions can be addressed more thoroughly through continued excavation i.e. salvage excavation ▪ Excavation of the remains to their full extent has value for heritage interpretation or public outreach purposes.
Hunter Street Station			
Test Excavation	Pre-construction	▪ Hunter Street Station West: within De Mestre Place ▪ Hunter Street Station East: N/A	Four historic test trenches and seven Aboriginal test trenches will be excavated within De Mestre Place. The Excavation Director will oversee excavation until natural intact soil profiles are identified, at which point Aboriginal test excavation will proceed.
Monitoring	Pre-construction, construction	▪ Hunter Street Station West: within areas of archaeological potential ▪ Hunter Street Station East: within areas of archaeological potential,	Monitoring will be undertaken of excavation works in all areas of low, low-moderate, and moderate potential across the Hunter Street Station West and Hunter Street Station East Sites,
Salvage Excavation	Pre-construction, construction	▪ Hunter Street Station West: within areas if archaeological potential that will be impacted by construction, including areas of potential identified during monitoring ▪ Hunter Street Station East: within areas of archaeological potential that will be impacted by construction, including areas of potential identified during monitoring, wherever existing basements have not removed all archaeology.	Salvage excavation will take place where areas of archaeological potential or features are identified during monitoring and will include excavation of larger open areas to identify spatial relationships between features and objects.

Excavation Methodology	Stage of Works	Location	Description
Conservation *in situ*	All stages of work	▪ Hunter Street Station West: any fabric of the Tank Stream and areas within a 3 metre buffer ▪ Hunter Street Station East: N/A	This provision relates specifically to the Tank Stream, to ensure that its fabric and 3 metre buffer are protected from disturbance, including the provision of adequate protection for the long term preservation and protection of the item.

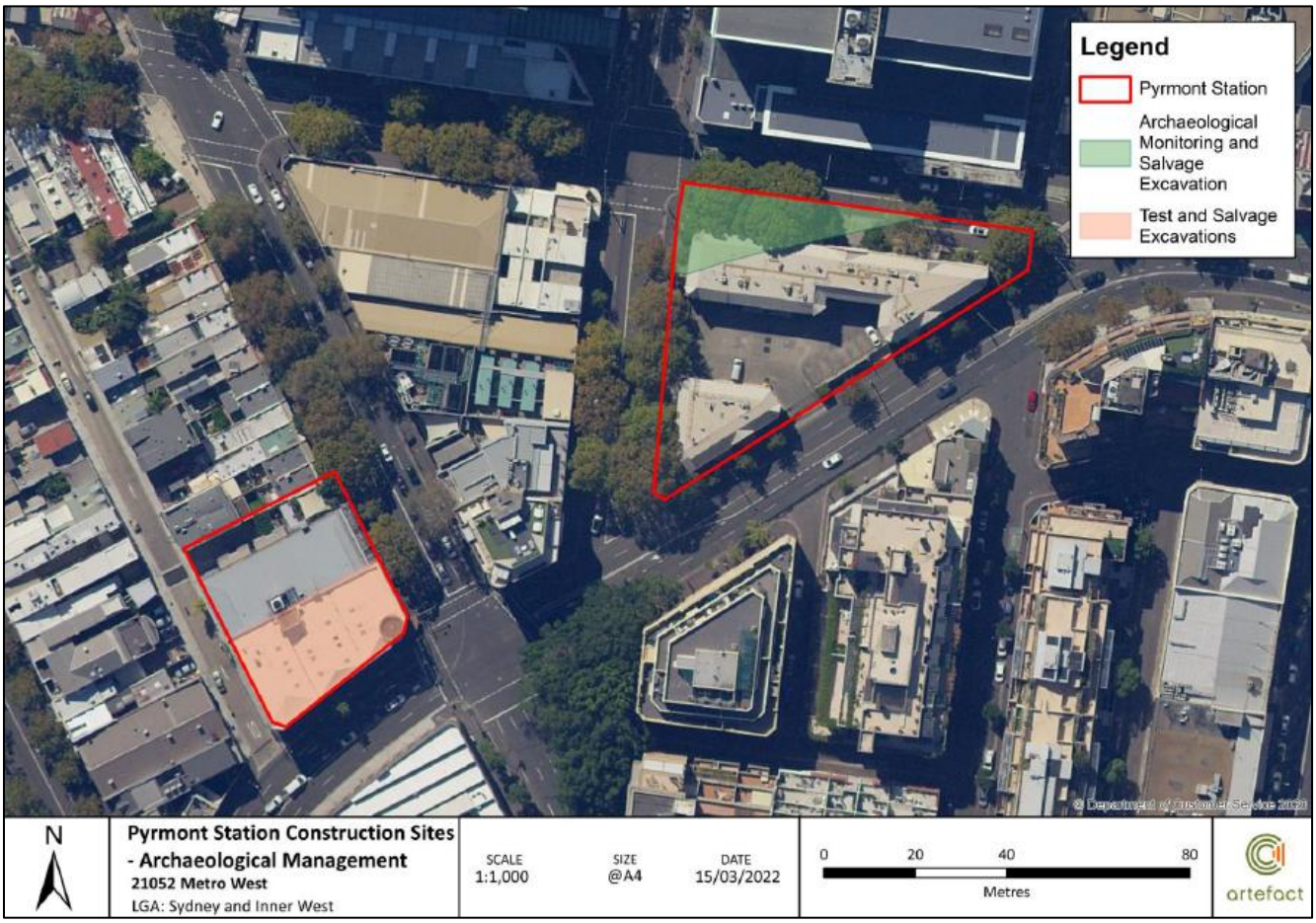


Figure 9: Areas of historical archaeological potential within the Pyrmont Station construction sites (Artefact 2022, p. 149)

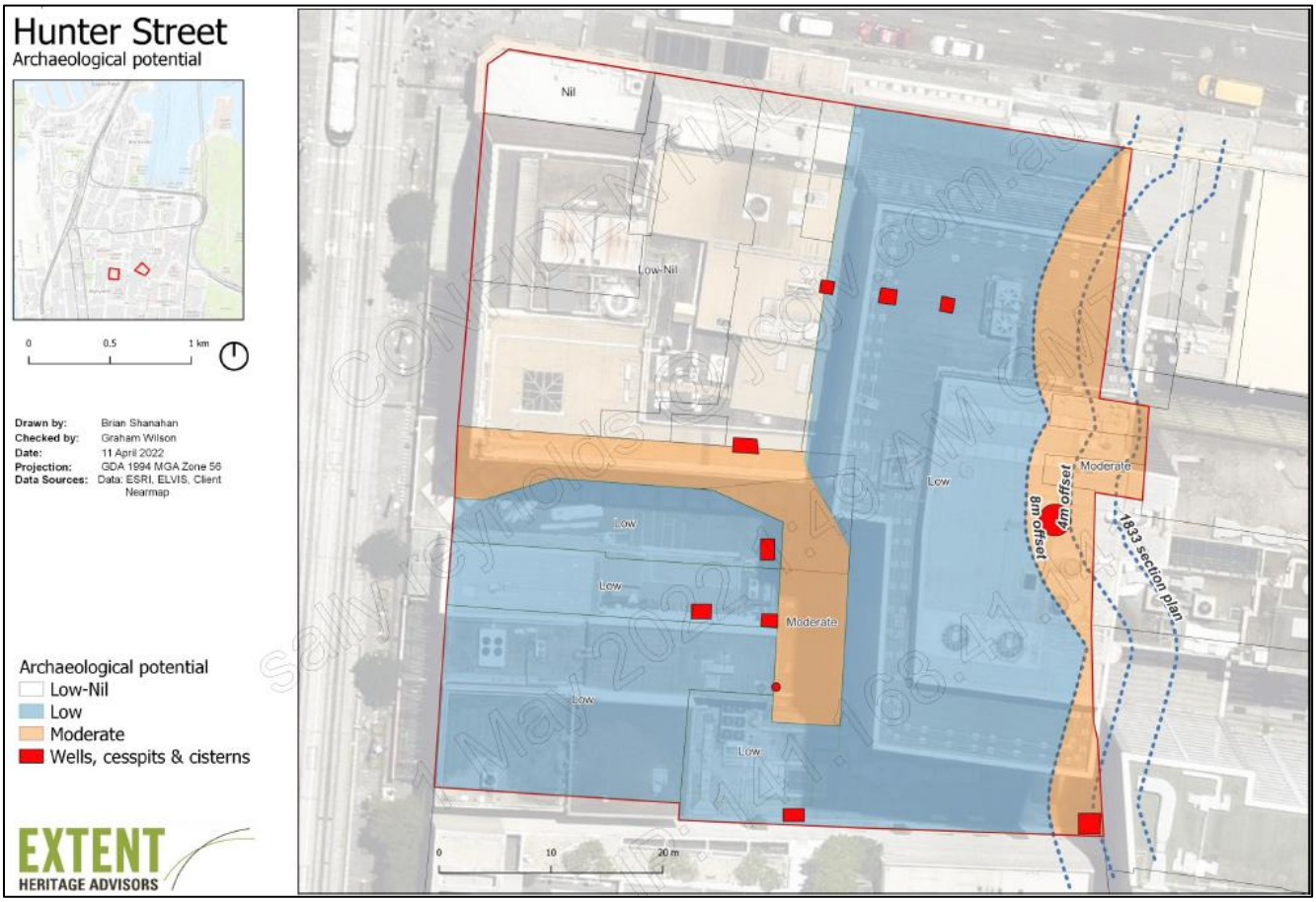


Figure 10: Areas of historical archaeological potential within the Hunter Street Station West Site (Extent 2022, p. 130)

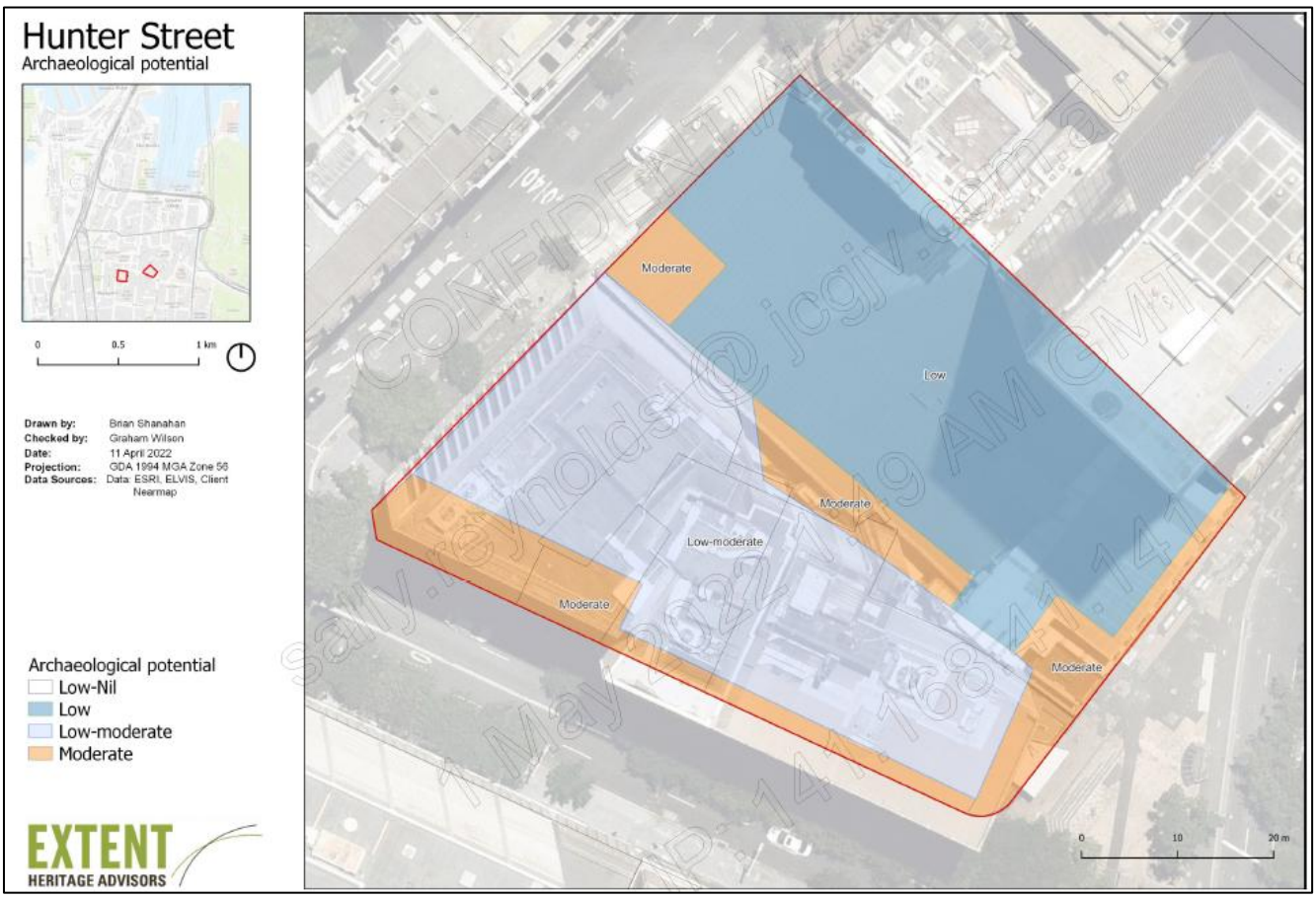


Figure 11: Areas of historical archaeological potential within the Hunter Street Station East Site (Extent 2022, p. 136)

8.4.1. Reporting

Following the completion of archaeological investigations on site, artefact analysis and reporting will be prepared to address Conditions D17, D18, and REMM NAH7. The final excavation reports will be provided to Heritage NSW within 24 months of the completion of all archaeological investigations for the Project as per Condition D13. A summary of the reporting requirements for the archaeological investigations is provided in Table 19.

Table 19: Summary of reporting requirements for archaeological investigations

Report type	Contents	Timing
Pyrmont Station		
Preliminary Reports	▪ Main archaeological findings ▪ Post-excavation and analysis requirements ▪ Identified opportunities for interpretation	To be provided to Sydney Metro within one month of completion of each stage of archaeological investigation.
Final Excavation Report	▪ Results of the archaeological excavation and analysis ▪ Additional historical information (if needed) ▪ Photographs, illustrations and plans ▪ Catalogue and analysis of artefacts ▪ Response to the research questions ▪ Reassessment of archaeological significance based on the investigation results	To be provided to Sydney Metro, Planning Secretary, Heritage NSW, and City of Sydney Council within 24 months of completion of ETP Works
Hunter Street Station – Heritage Report		
Preliminary Report	▪ Main archaeological findings ▪ Post-excavation and analysis requirements ▪ Identified opportunities for interpretation	To be provided to Sydney Metro within one month of completion of each stage of archaeological investigation.
Final Excavation Report	▪ Description of the results of the investigation ▪ Response to the research questions ▪ Results of any post-excavation analysis undertaken, including artefact or sample analysis ▪ Site records, including artefact catalogues, measured drawings, and photographs (where appropriate) ▪ Conclusions regarding the nature and extent of surviving archaeological remains ▪ Identification of the repository for material recovered from the site ▪ Opportunities for interpretation of archaeological finds	To be provided to Sydney Metro, Planning Secretary, Heritage NSW, and City of Sydney Council within 24 months of completion of ETP Works
Hunter Street Station – Aboriginal Cultural Heritage Excavation Report		
Preliminary Report	▪ Results of the test excavation and any subsequent salvage ▪ Post-excavation and analysis requirements ▪ Identified opportunities for interpretation	To be prepared following completion of excavation and provided to Sydney Metro and the RAPs. The RAPs will be given a minimum of 28 days to consider the report and provide comments.
Final Aboriginal Cultural Heritage Excavation Report	▪ Description and discussion of any Aboriginal objects retrieved from historical contexts ▪ Site records, including artefact catalogues, measured drawings, and photographs (where appropriate) ▪ Conclusions regarding the nature and extent of surviving archaeological remains	To be provided to Sydney Metro and Heritage NSW within 24 months of completion of the excavation works.

Report type	Contents	Timing
	▪ Identification of the repository for material recovered from the site ▪ Opportunities for interpretation of archaeological finds ▪	
The Bays		
Quarterly Report	▪ Report with findings of historical archaeology during the quarter	To be provided to Sydney Metro within one month of the end of the quarter.

8.4.2. Additional investigations

Condition D6 and REMM NAH2 require additional investigations to be carried out prior to construction at the Hunter Street Station site to confirm and record the location, depth, integrity, extent, and condition of both the Tank Stream and Bennelong Stormwater Channel No. 29A. With regard to the Tank Stream, these investigations may include archaeological investigations at the Hunter Street Station site in the vicinity of the Tank Stream prior to the commencement of bulk earthworks in compliance with the ARD however it is noted that the active Tank Stream drain is outside of the impact zone for the proposed works.

Where any other investigations are required, such as geotechnical works or survey, the works will be supervised by a suitably qualified heritage consultant or the Excavation Director in consultation with Sydney Water. The purpose of the supervision is to ensure that the proposed investigations will not adversely impact the heritage significance of either the Tank Stream or the Bennelong Stormwater Channel No. 29A.

The results of the investigations will be incorporated in the relevant final Heritage Report.

8.5. Unexpected heritage items

The remainder of the ETP Works will be managed under the following Sydney Metro procedures as appropriate in compliance with Conditions D4 and D19:

- Unexpected Heritage Finds Procedure (SM-20-00099497) version 4.0 dated August 2021 (Appendix A)
- Exhumation Management Procedure (SM-20-00099495) version 5.0 dated August 2021 (Appendix B).

Where either unexpected heritage finds or potential human remains are identified, the first step is to stop all works in the vicinity of the find, and to notify the Sydney Metro Environment Manager and the Excavation Director.

It is noted that neither of the ARDs has identified the potential for human remains to be present in the ETP Works footprint, and it is considered unlikely that the proposed works would impact grave sites.

Table 20: Environmental control measures

ID	Control Measures	Responsibility	Deliverables	Timing	Reference
H1	Where acoustic treatment to a heritage item is required, advice will be obtained from a heritage consultant to guide the installation of the treatment and minimise any impact to the item's significance.	Environment, Approvals and Sustainability Director Heritage consultant	Heritage advice	Pre-construction Construction	Condition D5 Section 8.1 of this Sub-plan
H2	Condition surveys of heritage buildings near the tunnel and excavation areas will be completed as required by Section 8.4.2 of the Noise and Vibration Management Sub-plan. A heritage specialist will be consulted to ensure that the heritage values of the item are considered as a part of the survey	Environment, Approvals and Sustainability Director Heritage consultant	Condition survey Heritage advice	Pre-construction	REMM NV14 Section 8.1 of this Sub-plan
H3	Vibration testing will be undertaken for works which have the potential to impact heritage items to identify safe working distances to prevent cosmetic damage. If preferred values are exceeded, the construction methodology should be reviewed, and additional mitigation measures implemented as required. If any heritage items are found to be structurally unsound, a cosmetic damage criterion of 2.5 mm/s peak component particle velocity (from DIN 4150) will be applied.	Environmental Advisor (refer to the CEMP) Heritage consultant Noise and vibration consultant (refer to the Noise and Vibration Management Sub-plan)	Vibration testing results	Construction	Condition D32, D35 REMM NV13 Section 8.1 of this Sub-plan
H4	Where noise, vibration, or movement monitoring equipment must be installed at a heritage item, advice will be obtained from a heritage consultant to guide the installation of the treatment and minimise any impact to the item's significance.	Environmental Advisor Heritage consultant Noise and vibration consultant	Heritage advice	Pre-construction Construction	Condition D33 REMM NAH9 Section 8.1 of this Sub-plan
H5	Further assessment of ground movement will be undertaken during detailed construction planning would be carried out to check the preliminary findings of the ground movement assessment in relation to listed heritage buildings. In addition, further assessment will be carried out for the following pieces of infrastructure: ▪ Tank Stream ▪ Bennelong Stormwater Channel No 29A ▪ Little Hunter and Hamilton Street Precinct ▪ Glebe Island Silos ▪ Railway Cutting ▪ St James Railway Station.	Project Manager (refer to the CEMP) Environmental Advisor Heritage consultant Noise and vibration consultant	Ground movement assessment	Pre-construction	REMM NAH8 Section 8.1 of this Sub-plan
H6	A methodology will be developed for demolition works which minimises impacts to adjacent and adjoining heritage items	Project Manager Environment Manager Heritage consultant	Demolition methodology	Pre-construction	REMM NAH3 Section 8.1 of this Sub-plan

ID	Control Measures	Responsibility	Deliverables	Timing	Reference
		Noise and vibration consultant			
H7	Prior to demolition occurring, structural engineering assessments will be carried out adjacent heritage items to ensure that the fabric and heritage significance of the item is conserved.	Project Manager Environmental Advisor Structural engineer Noise and vibration consultant	Structural engineering assessments	Pre-construction	REMM NAH3 Section 8.1 of this Sub-plan
H8	Detailed methodologies will be developed by qualified heritage engineers and consultants to protect the following heritage items during demolition: ▪ Skinners Family Hotel ▪ Tank Stream ▪ Bennelong Stormwater Channel No 29A.	Heritage consultant Environmental Advisor	Protection methodologies Heritage advice	Pre-construction	REMM NAH3 Section 8.1 of this Sub-plan
H9	Protective measures will be implemented to prevent adverse impacts to the Skinners Family Hotel during works. The advice of a heritage consultant and the Excavations Director will be obtained to ensure that the measures will not adversely affect the heritage significance of the item or significant historical archaeology.	Project Manager Environmental Advisor Excavation Director Heritage consultant	Heritage advice	Pre-construction Construction	Condition D7 Section 8.1 of this Sub-plan
H10	Where any other at-property treatment required to a heritage item, the advice of a heritage consultant be sought to ensure that the proposed work will not adversely affect the heritage significance of the item.	Project Manager Environmental Advisor Heritage consultant	Heritage advice	Pre-construction Construction	Condition D34 Section 8.1 of this Sub-plan
H11	Photographic archival recording will be completed for the following items prior to the commencement of works: ▪ Former Skinners Family Hotel ▪ NSW Club House Building ▪ Former Bank – Delfin House ▪ Richard Johnson Square ▪ Gilbey's Distillery ▪ Pangas House. Final archival recording reports will be submitted within 12 months of the completion of works.	Environmental Advisor Heritage consultant	Archival recordings	Pre-construction	Condition D17 REMM NAH1 Section 8.2 of this Sub-plan
H12	Heritage fabric salvage will occur prior to the commencement of works at Gilbey's Distillery. Where any other items of local or significance will	Environmental Advisor Heritage consultant	Significant fabric and moveable	Pre-construction	Condition D9 REMM NAH4

ID	Control Measures	Responsibility	Deliverables	Timing	Reference
	be partially or fully destroyed, they will also be subject to salvage in consultation with Heritage NSW as required.		heritage salvage register		Section 8.3 of this Sub-plan
H13	Archaeological investigations at the Pyrmont Station and Hunter Street Station sites will be carried out in accordance with the ARDs prior to the commencement of excavations.	Environmental Advisor Excavation Director	Clearance certificate Final excavation report	Pre-construction Construction	Condition D12, D15 REMM NAH6 Section 8.4 of this Sub-plan
H14	Excavation Director/s will be nominated to oversee all archaeological investigations.	Environment, Approvals and Sustainability Director	Excavation Director application DPE approval	Pre-construction	Condition D16 Section 8.4 of this Sub-plan
H15	Final Excavation Reports will be submitted within 24 months of the completion of archaeological investigations at the Pyrmont Station and Hunter Street Station sites	Environment, Approvals and Sustainability Director Excavation Director	Final excavation report	Construction	Condition D17, D18 REMM NAH7 Section 8.4 of this Sub-plan
H16	Additional investigations will be undertaken to confirm and record the location, depth, integrity, extent, and condition of both the Tank Stream and Bennelong Stormwater Channel No. 29A. These investigations will be undertaken in consultation with the heritage consultant or Excavation Director as appropriate to ensure no adverse impact to the heritage significance of items.	Environment, Approvals and Sustainability Director Excavation Director	Heritage advice Investigation results	Pre-construction	Condition D6 REMM NAH2 Section 8.4 of this Sub-plan
H17	Unexpected heritage finds will be managed in accordance with: ▪ Unexpected Heritage Finds Procedure (SM-20-00099497) version 4.0 dated August 2021 ▪ Exhumation Management Procedure (SM-20-00099495) version 5.0 dated August 2021.	Environment, Approvals and Sustainability Director Excavation Director	Heritage advice	Pre-construction Construction	Condition D4, D19 Section 8.5 of this Sub-plan
H18	Heritage inductions will be provided to all staff and contractors prior to the commencement of works at the Pyrmont Station and Hunter Street Station sites.	People and Culture Director (refer to CEMP) Environmental Advisor	Induction documentation	Pre-construction Construction	Condition D12, D15 Part B, Element 1
H19	Prepare a Post-Construction Condition Report within three months of completion of the ETP Works for the following heritage sites: ▪ Former Skinners Family Hotel (SHR 00584) ▪ NSW Club House Building (SHR 00145) ▪ Former Bank – Delfin House (SLEP I1903) ▪ Richard Johnson Square (SLEP I1673)	Environment, Approvals and Sustainability Director	Post-Construction Condition Report	Within three months of completion of the ETP Works	Condition C12

ID	Control Measures	Responsibility	Deliverables	Timing	Reference
H20	Rectify any damage caused by the ETP Works to the following Heritage items within six months of completing the ETP Works at the relevant worksite: (i) Former Skinners Family Hotel (SHR 00584) (ii) NSW Club House Building (SHR 00145) (iii) Former Bank – Delfin House (SLEP I1903) (iv) Richard Johnson Square (SLEP I1673). Conduct the rectification work in consultation with a suitably qualified and experienced heritage consultant to ensure the use of appropriate materials, appropriate conservation practices and in accordance with existing heritage management documents (for example, conservation management plans or strategies) to protect and conserve the heritage significance of the items.	Environment, Approvals and Sustainability Director Heritage Consultant	Heritage advice	Within six months of completion of the ETP Works	Condition C12
H21	Prepare an Environmental Control Map (ECM) for all construction activities. The ECM should include all heritage risks and controls, including an illustration of the site showing all heritage items, significant structures, work areas, boundaries and exclusion zones (as identified by the Excavation Director and Aboriginal Heritage Excavation Director as relevant). ECMs must be endorsed by the Environment, Approvals and Sustainability Director, or delegate, and communicated to relevant workers, including sign-off for the appropriate procedures prior to commencing works on the specific site and/or activity.	Environment, Approvals and Sustainability Director Environmental Advisors	ECMs	Construction	CEMF
H22	Prior to demolition works, engage a suitably qualified and experienced built heritage expert to prepare an assessment of significance of Pangas House and Gilbey's Distillery.	Environment, Approvals and Sustainability Director Built Heritage Expert	Assessment of significance	Prior to demolition	Condition C12(d)
H23	Architectural noise or vibration environmental management measures for heritage listed buildings will be installed by suitably qualified professionals.	Built Heritage Expert Noise and Vibration Consultant	Heritage advice	Prior to construction	Condition D5

9. Compliance management

9.1. Hold points

The activities detailed in Table 21 are recognised as hold points and will not proceed without objective review and approval by the nominated authority.

Table 21: Hold points

Hold point	Sub-plan Reference	Release of Hold Point	Responsibility
Any at-property treatment to a heritage item, including acoustic treatment and installation of noise, vibration, or movement monitoring equipment	Section 8.1	Heritage advice	Heritage consultant
Demolition adjacent to heritage items	Section 8.1	Protection methodology	Heritage consultant
Protection measures for heritage items during works	Section 8.1	Heritage advice	Heritage consultant or Excavation Director
Pre-demolition completion of archival recording	Section 8.2	Clearance certificate	Heritage consultant
Pre-demolition completion of significant fabric salvage	Section 8.3	Significant fabric and moveable heritage salvage register	Heritage consultant
Completion of a stage of archaeological investigations	Section 7.1 Section 8.4	Clearance certificate	Excavation Director or Aboriginal Heritage Excavation Director as appropriate
Identification of an unexpected heritage find	Section 7.2 Section 8.5	Heritage advice/Unexpected Finds Form or clearance certificate	Excavation Director, Aboriginal Heritage Excavation Director, or Heritage consultant as appropriate

9.2. Complaints

Environmental complaints will be recorded and managed in accordance with the process detailed in Section 3.7 of the CEMP.

9.3. Auditing

Audits (both internal and external) will be undertaken to evaluate the adequacy and effectiveness of environmental controls, and assess compliance with the Planning Approval, this Sub-plan and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.12 of the CEMP.

9.4. Reporting

Reporting requirements and responsibilities are documented in Section 3.13 of the CEMP. Specific reports required by this HMP are outlined in Table 22.

Table 22: Reporting requirements of this HMP

Task	Report	Reference
Aboriginal heritage		
Archaeological investigations	Preliminary report Final excavation report	Section 7.1
Unexpected heritage finds	Heritage advice	Section 7.2
Non-aboriginal heritage		
Acoustic treatment	Heritage advice	Section 8.1

Task	Report	Reference
Noise, vibration, and movement monitoring	Heritage advice	Section 8.1
Demolition adjacent to heritage items	Protection methodology	Section 8.1
Implementation of protection measures to heritage items	Heritage advice	Section 8.1
Other at-property treatment to heritage items	Heritage advice	Section 8.1
Archival recording	Archival recording report	Section 8.2
Salvage of significant fabric	Significant fabric and moveable heritage salvage register	Section 8.3
Archaeological investigations	Preliminary report Final excavation report	Section 8.4
Unexpected heritage finds	Heritage advice	Section 8.5

10. Review and improvement

10.1. Continual improvement

The continual improvement process will be undertaken in accordance with Section 3.15 of the CEMP. The intent of the process is to:

- Identify opportunities 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

10.2. Sub-plan review

The processes described in Section 3.6 of the CEMP may result in the need to update or revise this Sub-plan. This will occur as needed, in accordance with Section 3.14.2 of the CEMP.

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

Part B: Implementation Systems and Tools

Part B of this Sub-plan explains how the heritage impacts of the Project will be minimised. All relevant mitigation measures from the Planning Approval, REMMs and CEMF are addressed in this Section. Compliance with these requirements is required at all times to minimise the risk of unauthorised environmental harm.

Part B contains the following:

- **Expectations and Requirements:** These describe what is required of the Project to implement the objectives of the Environment and Sustainability Policy and achieve the intended environmental performance outcomes.
- **JCG Response:** These are the specific actions that will be performed to demonstrate compliance with the Elements and Requirements.
- **Responsibility:** These are the people responsible for achieving compliance with the Expectations and Requirements. The key contributor is identified in bold font.
- **Deliverables:** These are the tangible outcomes that will be produced to demonstrate compliance with the Expectations and Requirements.

Element 1. Training

Table 23: Training

ID	Expectations/Requirements	JCG Response	Responsibility	Deliverables
1.1.	All personnel have completed an induction containing relevant environmental information before they are authorised to work on the Project	All personnel working on the Project will undertake a site induction, which will provide initial training on various environmental aspects, including heritage. It will cover: ▪ Project obligations in relation to Aboriginal heritage and historic heritage ▪ Nature of the Aboriginal cultural heritage resource ▪ Identification of areas of archaeological potential and understanding the heritage significance of the anticipated archaeological resource ▪ Role of the archaeological team ▪ Unexpected finds procedures	**People and Culture Director** (refer to CEMP) Environment, Approvals and Sustainability Director	Induction presentation Training records
1.2.	Toolbox talks are used to reinforce key management requirements and lessons learnt	Toolbox talks on heritage management requirements will be held regularly and will reinforce and reiterate information from inductions.	**Environmental Advisor** Site Supervisor (refer to CEMP)	Training records

Element 2. Monitoring and reporting

Table 24: Monitoring and reporting

ID	Expectations/Requirements	JCG Response	Responsibility	Deliverables
2.1.	Worksites are regularly inspected to ensure the adequacy of controls	Site Supervisor to undertake daily inspections of worksite to assess the adequacy and effectiveness of heritage controls. Weekly inspection of heritage management controls will be undertaken by JCG and as part of joint JCG / Sydney Metro / ER / AA inspections.	**Environmental Advisors** Site Supervisor	Site Diary entries Environmental Inspection reports
2.2.	Monitoring is performed to establish baseline data and ensure compliance is maintained	In relation to non-Aboriginal heritage, inspection and monitoring requirements primarily relate to potential harm to heritage items from noise and vibration, movement and settlement, and adjacent construction activities. Monitoring for these activities will occur in accordance with Section 8.1 and the Noise and Vibration Monitoring Program. Results of monitoring will be used for: ▪ The evaluation of performance relative to legal, regulatory, contract, permit, licence and other commitments ▪ The prompt identification and correction of incidents or possible incidents ▪ Providing the basis of internal and external reporting ▪ Driving continual improvement. Heritage items at risk of vibration impacts will be inspected and monitored periodically during construction to identify any construction-related impacts. If impacts are detected, work in the area will cease and appropriate environmental management measures will be implemented.	**Excavation Director** (archaeological monitoring) **Built Heritage Expert and Noise and Vibration Consultant** (vibration monitoring)	Heritage monitoring records
2.3.	Monitoring records are maintained	The results of heritage monitoring will be documented and reflected in the relevant report (Aboriginal Culture Heritage Excavation Report(s), Heritage Report or Annual Environmental Monitoring Report (as appropriate)).	**Excavation Director** (archaeological monitoring) **Built Heritage Expert and Noise and Vibration Consultant** (vibration monitoring)	Aboriginal Cultural Heritage Excavation Report(s) Heritage Report Annual Environmental Monitoring Report

Element 3. Auditing, review and improvement

Table 25: Auditing, review and improvement

ID	Expectations/Requirements	JCG Response	Responsibility	Deliverables
3.1.	Audits are undertaken to ensure compliance with the requirements of this Sub-plan	Audits will be performed in line with the CEMP (Section 3.12), and this Sub-plan will be updated if required.	**Environment, Approvals and Sustainability Director**	Audit Reports
3.2.	All non-compliances are reported and actioned	A heritage non-compliance can generally be defined as a failure to comply with the SSI 19238057 Planning Approval. Where a non-compliance is also an environmental incident, JCG will implement the relevant notification procedures for both non-compliances and incidents (refer to Sections 3.10 and 3.12.2 of the CEMP). Non-compliances will not be automatically raised as the result of an identified issue from an environmental inspection or audit. Issues identified during an environment inspection or audit will be closed-out as part of the inspection or audit reporting process. Procedures for corrective actions are addressed in Section 3.12.2 of the CEMP.	**Environment, Approvals and Sustainability Director** Environmental Advisors	Corrective Action Reports Complaint Reports Incident Reports Audit Reports

Element 4. Project specific requirements

Planning Approval (SSI 19238057)

Table 26: Planning Approval (SSI 19238057)

ID	Requirements (Conditions)	JCG Response	Responsibility	Deliverables	Timing
D4	The Proponent must not destroy, modify or otherwise affect any Heritage item not identified in documents referred to in Condition A1. Unexpected heritage finds identified by the CSSI must be managed in accordance with the Sydney Metro Unexpected Heritage Finds Procedure (Sydney Metro 2022) and the Exhumation Management Procedure (Sydney Metro 2022) outlined in the documents list under Condition A1. Consideration of avoidance and redesign to protect state significant unexpected finds must be addressed where this condition applies. Note: Affect in this condition means any impact above "little to no impact" as defined in the Material Threshold Policy (Heritage NSW, 2020).	Refer to Section 8.5	**Environment, Approvals and Sustainability Director** Heritage Consultant	Heritage advice	Pre-construction Construction
D5	Before installing acoustic treatment at any heritage item identified in the documents listed in Condition A1, the advice of a suitably qualified and experienced built heritage expert must be obtained to guide installation to minimise impact to the heritage significance of the item or fabric.	Refer to Section 8.1 and Table 20	**Environmental Advisor** Heritage Consultant	Heritage advice Proof of implementation	Pre-construction Construction
D6	Before commencement of excavation at the Hunter Street metro station construction site, investigations must be carried out to confirm and record the location, depth, integrity, extent and condition of the Tank Stream (SHR item no. 00636) and Bennelong Stormwater Channel No.29A (Sydney Water s170 item no. 4570854). Survey investigations must be supervised by a suitably qualified heritage consultant in consultation with Sydney Water. The results of the investigations must be incorporated in the relevant final Heritage Report.	Refer to Section 8.4 and Table 20	**Environmental Advisor** Heritage Consultant	Heritage advice Investigation results	Pre-construction
D7	During construction, the Proponent must implement protective measures to prevent adverse impacts to the heritage significance of the former Skinners Family Hotel. Before installing such measures, the advice of a suitably qualified and experienced built heritage expert must be obtained and implemented to ensure any such work does not	Refer to Section 8.1 and Table 20.	**Project Manager** Environmental Advisor Heritage Consultant	Heritage advice	Pre-construction Construction

ID	Requirements (Conditions)	JCG Response	Responsibility	Deliverables	Timing
	have an adverse impact on the heritage significance of the item. Protection measures must also consider and avoid potential impacts to significant historical archaeology and seek the advice from the Excavation Director approved under Condition D16 below.				
D8	The Former Skinners Family Hotel, Tank Stream, Bennelong Stormwater Channel No. 29A, NSW Club house Building, Delfin House, Richard Johnson Square, Railway Cutting (Pyrmont), and St James Railway Station must not be destroyed, modified or otherwise affected, except as identified in the documents listed in Condition A1. Note: Affected in this condition means any impact above "little to no impact" as defined in the Material Threshold Policy (Heritage NSW, 2020).	Refer to Section 8.1 and Table 20.	**Project Manager** Environmental Advisor Heritage Consultant	Environmental inspection reports	Construction
D9	Where Heritage items, or items assessed to be of local heritage significance in the documents listed in Condition A1, are proposed to be fully or partially destroyed, heritage salvage must occur in consultation with a suitably qualified heritage specialist. The Proponent must develop a significant fabric and moveable heritage salvage register. The register must identify significant items to be salvaged. Salvage must occur for items that are assessed as having heritage significance and the potential for re-use or reinstatement has been identified. The salvage from any State-listed items must be undertaken in consultation with Heritage NSW.	Refer to Section 8.3 and Table 20.	**Environmental Advisor** Heritage Consultant	Significant fabric and moveable heritage salvage register	Pre-construction
D10	All reasonable steps must be taken not to harm, modify or otherwise impact Aboriginal objects except as authorised by this approval.	Refer to Section 7.	**Environment, Approvals and Sustainability Director**	Heritage advice	Pre-construction, Construction
D11	The Registered Aboriginal Parties (RAPs) must be kept informed about the CSSI. The RAPs must continue to be provided with the opportunity to be consulted about the Aboriginal cultural heritage management requirements of the CSSI.	Refer to Section 4.4	**Environment, Approvals and Sustainability Director** Aboriginal Heritage Excavation Director	Consultation records	Pre-construction, Construction

ID	Requirements (Conditions)	JCG Response	Responsibility	Deliverables	Timing
D12	Excavation must not commence in areas where archaeological excavation is required until the archaeological works outlined in the Archaeological Research Design/s referred to in Condition A1 have been completed or where work outlined in an approved Archaeological Research Design as adopted in accordance with Condition A9 has been completed.	Refer to Section 7.1, Section 8.4 and Table 20.	**Environment, Approvals and Sustainability Director** Excavation Director	Clearance certificate	Pre-construction
D13	At the completion of Aboriginal cultural heritage test and salvage excavations, an Aboriginal Cultural Heritage Excavation Report(s), prepared by a suitably qualified expert, must be prepared in accordance with the *Guide to Investigation, assessing and reporting on Aboriginal cultural heritage in NSW*, OEH 2011 and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*, DECCW 2010. The Aboriginal Cultural Heritage Excavation Report(s) must document the results of the archaeological test excavations and any subsequent salvage excavations. The RAPs must be given a minimum of 28 days to consider the report and provide comments before the report is finalised. The final report must be provided to Heritage NSW within 24 months of the completion of the Aboriginal archaeological excavations (both test and salvage).	Refer to Section 7.1.	**Aboriginal Heritage Excavation Director**	Final excavation reports	Construction
D14	Where previously unidentified Aboriginal objects are discovered, all work must immediately stop in the vicinity of the affected area and a suitably qualified and experienced Aboriginal heritage expert must be contacted to provide specialist heritage advice, before construction recommences. The measures to consider and manage this process must be specified in the Heritage CEMP Sub-plan required by Condition C5 and, where relevant, include registration in the Aboriginal Heritage Information Management System (AHIMS).	Refer to Section 7.2 and Appendix A.	**Site Supervisor** Environmental Advisor Aboriginal Heritage Excavation Director	Heritage advice	Pre-construction Construction
D15	Archaeological mitigation measures recommended in the Archaeological Research Design/s referred to in Condition A1 or for work outlined in an approved Archaeological Research Design as adopted in accordance with Condition A9 must be carried out in accordance with Heritage NSW guidelines, and where appropriate, supervised by a suitably qualified Excavation Director approved under Condition D16. The Archaeological Research Design/s must be	Refer to Section 8.4 and Table 20.	**Environmental Advisor** Excavation Director	Final excavation reports	Construction

ID	Requirements (Conditions)	JCG Response	Responsibility	Deliverables	Timing
	implemented throughout the entire archaeological excavation programs.				
D16	Before ground disturbance in areas subject to archaeological excavation, the Proponent must nominate a suitably qualified Excavation Director, who complies with Heritage Council of NSW's Criteria for Assessment of Excavation Director (September 2019), to oversee and advise on matters associated with historical archaeology for the approval of the Planning Secretary, in consultation with Heritage NSW. The Excavation Director must be present to oversee excavation, advise on archaeological issues, advise on the duration and extent of oversight required during archaeological excavations consistent with the approved Archaeological Research Designs under Condition A1 or for work outlined in an approved Archaeological Research Design as adopted in accordance with Condition A9. Aboriginal archaeological excavations must be conducted by a suitably qualified person in accordance with the requirements of the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010). More than one Excavation Director may be engaged for the CSSI to exercise the functions required under the conditions of this approval.	Refer to Section 8.4 and Table 20.	Excavation Director	Excavation Director application DPE approval	Pre-construction
D17	Following completion of all work described in the documents listed in Condition A1 or for work outlined in an approved Archaeological Research Design as adopted in accordance with Condition A9 in relation to heritage items, a Heritage Report including the details of any archival recording, further historical research either undertaken or to be carried out and archaeological excavations (with artefact analysis and identification of a final repository for finds), must be prepared in accordance with any guidelines and standards required by the Heritage Council of NSW and Heritage NSW.	Refer to Section 8.4 and Table 19	**Excavation Director** Heritage Consultant	Archival recording reports Final excavation reports	Pre-construction Construction
D18	The Heritage Report must be submitted to the Planning Secretary, the Heritage Council of NSW and Heritage NSW for information no later than 24 months after the completion of the work referred to in Condition D17.	Refer to Section 8.4 and Table 19.	**Environment, Approvals and Sustainability Director**	Final excavation reports	Construction

ID	Requirements (Conditions)	JCG Response	Responsibility	Deliverables	Timing
D19	The Sydney Metro Unexpected Heritage Finds Procedure (Sydney Metro 2022) and the Exhumation Management Procedure (Sydney Metro 2022), as submitted to the Planning Secretary, must be implemented for the duration of construction. *Note: Human remains that are found unexpectedly during the carrying out of work may be under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately. Management of human remains in NSW is subject to requirements set out in the Public Health Act 2010 (NSW) and Public Health Regulation 2012 (NSW).*	Refer to Section 7.1, Section 8.5, Table 20 and Appendix A	**Site Supervisor** Environmental Advisor Aboriginal Heritage Excavation Director Excavation Director Heritage Consultant	Heritage advice	Pre-construction Construction
D32	Vibration testing must be conducted 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 attended monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures. Such measures must include, but not be limited to, review or modification of excavation techniques.	Refer to Section 8.1, Table 20 and the Noise and Vibration Monitoring Program.	**Environmental Advisor** Heritage consultant Noise and Vibration consultant	Vibration testing results	Construction
D33	The Proponent must seek the advice of a heritage specialist on methods and locations for installing equipment used for vibration, movement and noise monitoring at Heritage items. *Note: The installation of noise and vibration equipment must not impact on the heritage value of the Heritage items.*	Refer to Table 20 and the Noise and Vibration Monitoring Program.	**Environmental Advisor** Heritage consultant Noise and Vibration consultant	Heritage advice	Pre-construction Construction
D34	Before conducting at-property treatment at any Heritage item identified in the documents listed in Condition A1, the advice of a suitably qualified and experienced built heritage expert must be obtained and implemented to ensure any such work does not have an adverse impact on the heritage significance of the item.	Refer to Section 8.1 and Table 20.	**Environment, Approvals and Sustainability Director** Heritage consultant Noise and Vibration consultant	Heritage advice	Pre-construction Construction
D35	If a Heritage item is found to be structurally unsound (following inspection) a more conservative cosmetic damage criterion of 2.5	Refer to Section 8.1 and Table 20.	**Environment, Approvals and**	Vibration testing results	Construction

ID	Requirements (Conditions)	JCG Response	Responsibility	Deliverables	Timing
	mm/s peak component particle velocity (from DIN 4150) must be applied.		**Sustainability Director** Heritage consultant Noise and Vibration consultant		
D47	Appropriate equipment to monitor areas in proximity of construction sites and the tunnel route during construction must be installed with particular reference to at risk buildings, structures and utilities identified in the condition surveys required by Condition D44 and / or geotechnical analysis as required. If monitoring during construction indicates exceedance of predicted impacts identified in the documents in Condition A1 or determined through geotechnical analysis, then all construction affecting settlement must cease immediately if it is safe to do so and must not resume until fully rectified or a revised method of construction is established that will ensure protection of affected buildings.	Refer to Section 8.1	**Project Manager**	Settlement monitoring results	Construction

Revised Environmental Mitigation Measures

Table 27: Revised Environmental Mitigation Measures

ID	Requirements (REMM)	JCG Response	Responsibility	Deliverables	Timing
NAH1	Archival recording and reporting of the following heritage items would be carried out 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): ▪ Former Skinners Family Hotel (SHR item no. 00584) ▪ NSW Club House Building (SHR item no. 00145) ▪ Former Bank – Delfin House (SLEP 2012 item no. I1903) ▪ Richard Johnson Square (SLEP 2012 item no. I1673). Archival recording should be carried out at the following sites as potential heritage items of local significance prior to the commencement of work for the following items: ▪ Gilbey's Distillery, 26-32 Pyrmont Bridge Road, Pyrmont (potential archaeological site and local heritage item) ▪ Pangas House, 15-17 Hunter Street, Sydney (potential local heritage item).	Refer to Section 8.2 and Table 20.	**Environment, Approvals and Sustainability Director** Heritage Consultant	Archival recordings	Pre-construction
NAH2	Investigations would be carried out for the Tank Stream (SHR item no. 00636) and Bennelong Stormwater Channel No. 29A (Sydney Water s170 item no. 4570854) to confirm and record the location, depth, and ascertain the current integrity, extent and condition of the heritage items. Surveys are to be carried out under the supervision of a heritage consultant in consultation with Sydney Water.	Refer to Section 8.4 and Table 20.	**Environment, Approvals and Sustainability Director** Heritage Consultant	Heritage advice Investigation results	Pre-construction
NAH3	A method for the demolition of existing buildings and/or structures at specified construction site would be developed to minimise direct and indirect impacts to adjacent and/or adjoining heritage items. A structural engineering investigation would be carried out to heritage items, prior to demolition of adjacent existing buildings and/or structures to ensure the conservation of the items fabric and significance. A detailed methodology for the protection of the Former Skinners Family Hotel, Tank Stream and Bennelong Stormwater Channel No.29A would be developed by suitably qualified heritage engineers and consultants.	Refer to Section 8.1 and Table 20.	**Project Manager** Structural engineer Heritage Consultant	Demolition methodology Structural engineering assessments Protection methodologies Heritage advice	Pre-Construction

ID	Requirements (REMM)	JCG Response	Responsibility	Deliverables	Timing
NAH4	Prior to commencement of demolition of Gilbey's Distillery, significance of fabric would be assessed and opportunities for reuse would be considered. Where fabric is identified for salvage, a methodology would be prepared in consultation with Heritage NSW.	Refer to Section 8.3 and Table 20.	**Environmental Advisor** Heritage Consultant	Significant fabric and moveable heritage salvage register	Pre-construction
NAH6	An Archaeological Research Design would be prepared to identify the excavation methodology for predicted locally significant non-Aboriginal archaeological resources at the Pyrmont Station and Hunter Street Station (Sydney CBD) construction sites. Archaeological mitigation measures recommended in the Archaeological Research Design would be carried out in accordance with Heritage NSW guidelines, and where appropriate, supervised by a suitably qualified Excavation Director with experience in managing State significant archaeology.	Refer to Section 8.4, Appendix C and Appendix D	**Excavation Director**	Final excavation reports	Pre-construction Construction
NAH7	An Archaeological Excavation Report would be prepared by the Excavation Director and be provided to the Heritage NSW within 12 months of the completion of archaeological excavations specified in the Archaeological Research Design.	Refer to Section 8.4 and Table 20.	**Excavation Director**	Final excavation reports	Construction
NAH8	Where required, further assessments at later design stages and during detailed construction planning would be carried out to check the preliminary findings of the ground movement assessment in relation to listed heritage buildings. Other listed heritage infrastructure would also be subject to such further assessment of ground movement where identified as being required in Technical Paper 3 (Non-Aboriginal heritage).	Refer to Section 8.1 and Table 20.	**Environment, Approvals and Sustainability Director** Heritage Consultant	Ground movement assessment	Pre-construction
NAH9	Where required, heritage items identified by NAH8 as requiring further assessment should undergo instrumentation and monitoring as part of further assessments and during the work.	Refer to Section 8.1 and Table 20.	**Environment, Approvals and Sustainability Director** Heritage Consultant	Ground movement assessment Heritage advice	Pre-construction Construction
AH1	Aboriginal stakeholder consultation for this proposal should continue based on initial consultation originally commenced on major construction work between Westmead and The Bays (Stage 1 of the planning approval process for Sydney Metro West) in accordance with	Refer to Section 4.4, Section 7.1 and Table 20.	**Environment, Approvals and Sustainability Director**	Consultation records	Pre-Construction, Construction

ID	Requirements (REMM)	JCG Response	Responsibility	Deliverables	Timing
	the NSW Office of Environment and Heritage's Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010. Additional consultation with knowledge holders about the project would be undertaken where possible.		Aboriginal Heritage Excavation Director		
AH2	If suspected human skeletal remains are uncovered at any time during the proposed work, procedures outlined in the Sydney Metro Exhumation Management Plan, the Sydney Metro Unexpected Heritage Finds Procedure and Heritage Management Plan would be implemented.	Refer to Section 7.2, Section 8.5, Appendix A and Appendix B.	**Site Supervisor** Environment, Approvals and Sustainability Director Aboriginal Heritage Excavation Director Excavation Director Heritage Consultant	Heritage advice	Pre-construction Construction
AH3	If unexpected Aboriginal objects are identified during construction work, the Sydney Metro Unexpected Finds Procedure would be implemented.	Refer to Section 7.2 and Appendix A.	**Site Supervisor** Environment, Approvals and Sustainability Director Aboriginal Heritage Excavation Director Heritage Consultant	Heritage advice	Pre-construction Construction
AH5	As the Hunter Street Station (Sydney CBD) western construction site has been assessed as having the potential for intact deposits, a stage specific Archaeological Method Statement would be prepared prior to work commencing. The Archaeological Method Statement would adhere to the archaeological management measures for Method Area 2 as outlined in Technical Paper 4 (Aboriginal Cultural Heritage Assessment Report).	Refer to Appendix C	**Environment, Approvals and Sustainability Director** Excavation Director Aboriginal Heritage Excavation Director Heritage Consultant	Heritage advice	Pre-construction

ID	Requirements (REMM)	JCG Response	Responsibility	Deliverables	Timing
NV13	Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure (in consultation with a structural engineer) and vibration monitoring would be carried out to ensure vibration levels remain below appropriate limits for that structure. For heritage items, the more detailed assessment would specifically consider the heritage values of the structure in consultation with a heritage specialist to ensure sensitive heritage fabric is adequately monitored and managed.	Refer to Section 8.1 and Table 20.	**Environmental Advisor** Noise and Vibration Consultant Heritage Consultant	Vibration testing results Heritage advice	Pre-construction Construction
NV14	Condition surveys of buildings and structures near to the tunnel and excavations would be undertaken prior to the commencement of excavation at each site, where appropriate. For heritage buildings and structures the surveys would consider the heritage values of the structure in consultation with a heritage specialist.	Refer to Section 8.1 and Table 20.	**Project Manager** Noise and Vibration Consultant Heritage Consultant	Condition survey Heritage advice	Pre-construction
GW1	A detailed geotechnical model for the proposal would be developed and progressively updated during design and construction. The detailed geotechnical model would include: • Assessment of the potential for damage to structures, services, basements and other subsurface elements through settlement or strain • Predicted changes to groundwater levels, including at nearby water supply work. Where building damage risk is rated as moderate or higher, a structural assessment of the affected buildings/structures would be carried out and specific measures implemented to address the risk of damage. Where a significant exceedance of target changes to groundwater levels are predicted at surrounding land uses and nearby water supply work, an appropriate groundwater monitoring program would be developed and implemented. The program would aim to confirm no adverse impacts on groundwater levels or to appropriately manage any impacts. Monitoring at any specific location would be subject to the status of the water supply work and agreement with the landowner.	Refer to Section 8.1 and the CEMP	**Construction Director**	Detailed Geotechnical Model	Construction

Environmental Performance Outcomes

Table 28: Environmental Performance Outcomes

Key Issue	Desired Performance Outcome	Sydney Metro West Performance Outcome	Sub-plan reference
Heritage	▪ The design and construction of the proposal, to the greatest extent possible, the long term protection, conservation and management of the heritage significance of items of environmental heritage and Aboriginal objects and places. ▪ The design and construction of the proposal avoids or minimises impacts, to the greatest extent possible, on the heritage significance of environmental heritage and Aboriginal objects and places.	**Non-Aboriginal Heritage** ▪ Direct impacts on World Heritage and National Heritage List items are avoided ▪ Impacts on State Heritage Register items are avoided or minimised so that the overall heritage value of the item is maintained ▪ Impacts to non-Aboriginal heritage items and archaeology are avoided or minimised where feasible and reasonable ▪ Accidental impacts to heritage items are avoided **Aboriginal Heritage** ▪ Impacts on areas of moderate or higher archaeological potential and significance are avoided or minimised, where feasible and reasonable ▪ Accidental impacts to heritage items are avoided	Section 7 Section 8
Noise and Vibration	▪ Construction noise and vibration (including airborne noise, ground-borne noise and blasting) are effectively managed to minimise adverse impacts on acoustic amenity, and adverse impacts on the structural integrity of buildings and items including Aboriginal places and environmental heritage.	▪ Construction noise and vibration impacts on local communities are minimised by controlling noise and vibration at the source, on the source to receiver path and at the receiver ▪ Structural damage to buildings and heritage items from construction vibration is avoided. ▪ Local communities are engaged during construction, including on noise mitigation in areas predicted to be affected by high noise impacts.	Section 8.1 and Table 20.

Construction Environmental Management Framework

Table 29: Construction Environmental Management Framework

ID	Requirements (CEMF)	Sub-plan Reference
3.5 (a)	Subject to Section 3.4(b) the Principal Contractors will prepare issue-specific environmental sub plans to the CEMP which address each of the relevant environmental impacts at a particular site or stage of the project. Issue specific sub plans will include as a minimum: i. Spoil management; ii. Groundwater management; iii. Noise and vibration management; iv. Heritage management; v. Flora and fauna management; vi. Visual amenity management; vii. Soil and water management; viii. Air quality management; and ix. Waste management.	This Sub-plan
3.6 (a)	The Principal Contractor will prepare and implement activity specific environmental procedures. These procedures should supplement environmental management sub plans, but may substitute for sub plans in agreement with Sydney Metro if a reasonable risk based justification can be made and the sub plan is not a requirement of any approval.	Appendix A Appendix B
3.6 (b)	The procedures will include: i. A breakdown of the work tasks relevant to the specific activity and indicate responsibility for each task; ii. Potential impacts associated with each task; iii. A risk rating for each of the identified potential impacts; iv. Mitigation measures relevant to each of the work tasks; and v. Responsibility to ensure the implementation of the mitigation measures.	Appendix A Appendix B Refer also to Activity Method Statements and Task Risk Assessments.
9.1 (a)	The following heritage management objectives will apply to construction: i. Consider heritage values in any architectural design, education or physical interpretation; ii. Minimise impacts on items or places of heritage value; iii. Avoid accidental impacts on heritage items; and iv. Maximise worker's awareness of Aboriginal and Non-Aboriginal heritage.	Section 1.2
9.2 (a) i	Principal Contractors will develop and implement a Heritage Management Plan which will include as a minimum:	Section 1.4

ID	Requirements (CEMF)	Sub-plan Reference
	i. Evidence of and processes for consultation with Registered Aboriginal Parties and the NSW Heritage Council	
9.2 (a) ii	Identification of all heritage buildings and structures, to guide the assessment, retention, protection, conservation, salvage and reuse of heritage elements throughout the work	Section 5
9.2 (a) iii	Identification of initiatives that will be implemented to enhance heritage values and minimise heritage impacts, including procedures and processes that will be used to implement and document heritage management initiatives	Section 7 and Section 8
9.2 (a) iv	The Heritage Management Plan must be prepared in accordance with the relevant conditions of the Planning Approval and the Construction Environmental Management Framework, and set out how the Contractor will evidence the achievement of these requirements	Part B (Table 26, Table 27 and Table 29)
9.2 (a) v	The responsibilities of key project personnel with respect to the implementation of the plan	Section 4
9.2 (a) vi	Both the methodology and critical stages within the Contractor's Activities for the identification, assessment, retention, protection, conservation, interpretation, salvage and reuse of heritage elements	Section 7 and Section 8
9.2 (a) vii	Procedures for interpretation of heritage items uncovered through salvage or excavation during detailed design	Section 7.2 and Section 8.5
9.2 (a) viii	Procedures for the investigation of archaeological relics, objects and/ or sites (where relevant), prior to works commencing that would affect them	Section 7.1 and Section 8.4
9.2 (a) ix	Details for the short and / or long term management of objects, archaeological artefacts and/or movable heritage	Section 7 and Section 8
9.2 (a) x	Archaeological management plans for both Aboriginal and non-Aboriginal archaeology	Appendix C, Appendix D
9.2 (a) xi	Details of 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)	Section 7 and Section 8
9.2 (a) xii	Procedures for unexpected heritage finds, including procedures for dealing with human remains consistent with the Sydney Metro procedures	Appendix A and Appendix B
9.2 (a) xiii	Heritage monitoring requirements	Section 8.4
9.2 (a) xiv	Compliance record generation and management	Section 9.4
9.2 (b)	The Contractor's regular inspections will include checking of heritage mitigation measures.	Part B, Table 24
9.2 (c)	Compliance records will be retained by the Contractor. These will include:	Section 9.4

ID	Requirements (CEMF)	Sub-plan Reference
	i. Inspections undertaken in relation to heritage management measures; ii. Updated salvage registers iii. Archival recordings undertaken of any heritage item; iv. Unexpected finds and stop work orders; and v. Records of any impacts avoided or minimised through design or construction methods.	

Part C Annexures

Appendix A Unexpected Heritage Finds Procedure (SM-20-00099497)

Appendix B Exhumation Management Procedure (SM-20-00099495)

Appendix C Sydney Metro West –Hunter Street Station (Sydney CBD) Aboriginal and Historical Archaeological Research Design

Appendix D Sydney Metro West –Pyrmont Station Construction Sites Archaeological Research Design and Excavation Methodology

Appendix E Sydney Metro West – The Bays Archaeological Research Design and Excavation Methodology

Appendix F Consultation Report

Appendix G Environmental Representative Endorsement

HBI Healthy Buildings International Pty Ltd
A.C.N. 003 270 693 A.B.N. 39 003 270 693

Suite 2.06, Level 2
29-31 Solent Circuit
Norwest, NSW 2153

Tel: 61 (02) 9659 5433
e-mail: hbi@hbi.com.au
Web:

www.hbi.com.au

[redacted]
A/Director Sustainability, Environment and Planning
Metro West
Sydney Metro
PO Box K659
HAYMARKET NSW 1240

6 June 2025

REF: 201208(G) HMP REV4

Dear [redacted]

RE: Sydney Metro West Stage 2 – Eastern Tunnelling Package: Heritage Management Sub Plan (Rev 4)

I refer to Sydney Metro's (SM) submission of the following document required by Condition C5 and C12 of the Sydney Metro West – The Bays to Sydney CBD Approval (SSI 1923805) which was approved by the Department of Planning and Environment (DPE, now DPHI) on 24 August 2022:

- Sydney Metro West, Eastern Tunnelling Package Heritage Management Sub-Plan Rev 4 dated 14 May 2025 (SMWSTETP-JCG-SWD-SW000-EM-PLN-002015).

It is noted that:

- The Heritage Management Sub-Plan (HMP Rev C) was prepared by AMBS Ecology & Heritage for John Holland CPB Ghella JV (JCG) to address the requirements of Condition C5(c) and C12 of the Infrastructure Approval. This revision of the HMP was approved by DPE under Condition C7 on 22 March 2023.
- This Revision 4 of the document is an update of previous revision as part of an annual review conducted by JCG. Updates were minor and included an update of the Excavation Director (ED) to reflect previously approved EDs.
- Previous versions of the document have been reviewed and updated following comments from the ER and Sydney Metro.
- Sydney Metro has reviewed and commented on previous versions of the document and have no outstanding comments on this version.

Following the above reviews, the revised document is considered to have minor amendments that are consistent with the version approved by DPE in March 2023.

As the approved Environmental Representative for the Metro West and as required by Conditions A32(j) based on the above, the Heritage Management Sub-Plan (Revision 4) is approved.

Yours sincerely

[redacted]

Environmental Representative – Sydney Metro West – Eastern Tunnelling Package
CC: [redacted]